Cross River Rail Project

Monthly Environmental Report

November 2022

Table of Contents

Executive Summary

This Monthly Environmental Report (MER) has been produced for Project Works undertaken on site for November 2022 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. 13 (March 2022)*. Plus, 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 for 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 13 covering full scope of RIS works is effective from 14 March 2022. TSD – CEMP Revision 11 covering full scope of TSD works is effective from 24 November 2022.
5.	**Compliance and Incident management** – Non-compliance events, notifications and reporting.	Yes	No non-compliance events (NCEs) occured in November 2022.

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, has 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 met project noise requirements at Sensitive Places. RIS – Noise monitoring was undertaken to validate predictive noise assessments for the relevant project works and in response to a noise complaint. Noise monitoring results confirmed project requirements were met. Refer to **Appendix A** (Table 4 and Section 3.1.6). TSD – Noise monitoring was undertaken to validate predicted noise modelling. Noise monitoring confirmed project requirements were met. Refer to **Appendix B** (Table 3 and Section 3.2).
	Vibration – Project Works must aim to achieve vibration goals for cosmetic damage, human comfort and sensitive building contents.	Yes	Vibration monitoring met project vibration requirements at Sensitive Places. RIS – Vibration monitoring occurred at RNA. The results met the requirements of the endorsed CEMP. TSD – Vibration monitoring was not triggered during the reporting period.
12.	**Property damage** – relating to ground movement.	Yes	RIS – 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 residential

Imposed Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
			buildings at RNA, Northern Corridor and Dutton Park 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. No enquiries relating to property damage were received during November.
13.	**Air quality** – Works must aim to achieve air quality goals for human health and nuisance.	Yes	Air quality monitoring met Project air quality project requirements. RIS – Contractor confirmed they continued to meet the requirements under Condition 14 and the OEMP. Refer to **Appendix A** (Tables 7, 8 and 9 and Section 3.2, plus Figures 1, 2 and 3). TSD – Refer to **Appendix B** (Tables 4.2 and 5 plus Section 3.3).
14.	**Traffic and transport** – Works must minimise adverse impacts on road safety and traffic flow.	Yes	Traffic Management Plans are covered in the CEMPs. Sub-plans for all active worksites have been reviewed by the EM.
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 during November. Surface water discharge occurred at Clapham Yard during the reporting period. Monitoring results showed the parameters meet the discharge criteria. See **Appendix A** (Section 3.3.5) for further details. Post-rainfall monitoring occurred at Breakfast Creek, Moolabin Creek and Rocky Water Holes Creek. See **Appendix A** (Section 3.3.2 and Tables 10) for further details. TSD – Active discharge of groundwater occurred from Roma Street, Albert Street, Woolloongabba and Boggo Road worksites. Monitoring results of groundwater quality prior to discharge is consistent with the pre-construction water quality levels. Surface water discharges occurred at the Northern Portal worksite on 25 occasions and at the Southern Portal on 5 occasions. The monitoring results demonstrated the

Imposed Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
			surface water discharges met project water quality discharge criteria. Post-rainfall monitoring in receiving waters of the Northern Portal, Roma Street, Albert Street, Woolloongabba and Boggo Road sites occurred due to a rainfall event. Routine in stream monthly monitoring met project water quality requirements. Refer to **Appendix B** (Table 6) for ground water monitoring results. Refer to **Appendix B** (Tables 7 and 8) for surface water monitoring results.
16.	**Water resources** – Evaluate potential impact, plan works, implement controls and monitor inflow of groundwater associated with drawdown.	Yes	RIS – There is 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 continuously 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.

Imposed Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
20.	**Landscape and open space** – general requirement to minimise impacts on landscapes and open space values and specific requirements around Victoria Park.	Yes	The construction of a temporary access road through Victoria Park was undertaken under a Heritage Exemption Certificate approved by the Department of Environment and Science (DES) on 24 June 2021. Consideration has been taken to minimise loss of trees and the area of park impacted during these temporary works.
21.	**Worksite rehabilitation** – worksites rehabilitated as soon as practicable upon completion of works or commissioning, and in consultation with Brisbane City Council.	NA	N/A

Non-Compliance Events

There were no NCEs raised in November 2022.

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 13 was endorsed in March 2022 by the Coordinator-General.

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.

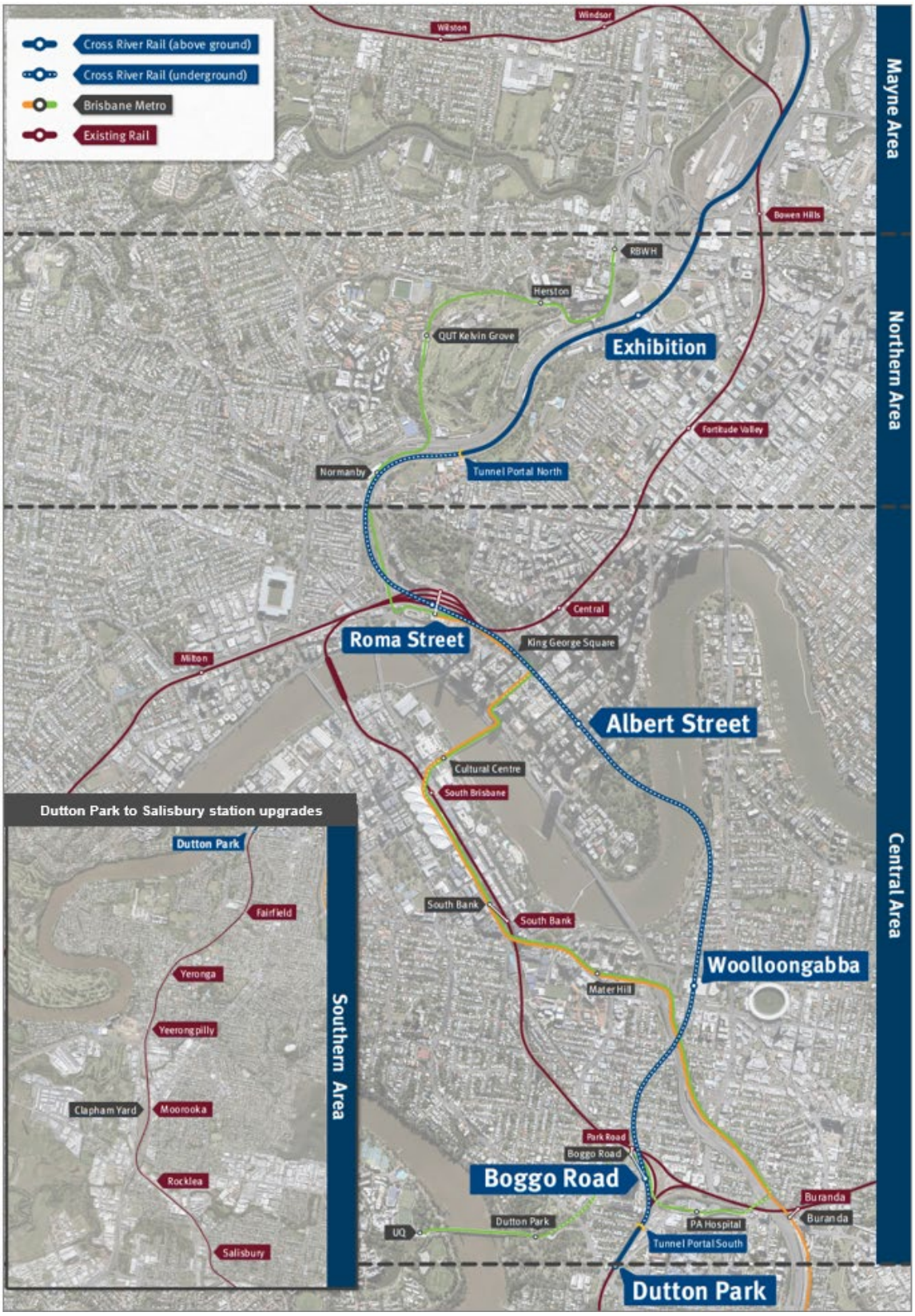
The two main delivery packages which require reporting under the Coordinator-General's imposed conditions are:

- 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
Wilston
Windsor
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
Mater Hill
Woolloongabba
Park Road
Boggo Road
Boggo Road
Buranda
Buranda
PA Hospital
Tunnel Portal South
Dutton Park
UQ
Dutton Park
Mayne Area
Northern Area
Central Area
Dutton Park to Salisbury station upgrades
Dutton Park
Fairfield
Yeronga
Yeerongpilly
Clapham Yard
Moorooka
Rocklea
Salisbury
Southern Area

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, including the annual 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 November 2022:

Area	Project Works
Mayne Area	**Mayne Yard North –** • Mayne Yard North QR familiarization has commenced. Graffiti Removal Facility is undergoing further modifications and pending QR acceptance; • Breakfast Ck Bridge (BR08) – RW150 completed and temp works for Super-T installation ongoing; and • Drainage works for Shunt Road has commenced and surcharge loading of CRR embankment has been released. **Mayne Yard East / West –** • Tripod Bridge (BR11/13) incl RSS walls completed, with only barriers pending; • RW130 – Retaining wall on Eastern side under ICB overpass nearing completion; • BR12 new QR ped bridge to MY-E commenced with piling pad construction and abutment works; and • Demolition of Diesel Locomotive Provisioning (DLP) area nearing completion.
Northern Area	**RNA/ Northern Corridor –** • Demolition of RNA facilities and QR facilities completed (eastern side of Exhibition Station); • Line drilling and rock excavation (eastern side of Exhibition Station) commenced to partially mitigate the delayed Stage 2 Switch. Localised areas are being de-linked from the Switch so that some drainage and some FRP scope can commence; • CSR nearing completion for Stage 2 switch (95% completed); • Victoria Park Feeder Station civil scope nearing completion for handover to HV-team by 18-Nov; and • QR Carpark – fencing and drainage commenced. **Northern Portal –** • Fire wall is complete under the covered section ongoing in open trough section;

Area	Project Works
	• TBM Extraction box roof topping slab pour; • Ongoing cavi-drain install on MC02 and base slab FRP works; and • Liner wall and retaining wall FRP works ongoing.
Central Area	**Roma Street** – • Station cavern – permanent arch pours complete, BoH slab and wall pours and delivery of mezzanine beam segments; • Station Building – B2 to L0 BoH and FoH wall FRP works in progress, and slabs for B1 BoH and L0 FoH in progress; • Services building – L0 precast walls 100% complete and Energex pit works ongoing; and • INB Underpinning – infill pour 4 of 6 compete.
	Albert Street – • Lot 1 – B9 suspended slab 100% complete, B9 level Jump form system (external perimeter walls) completed slips 1, 2 and 3, (4.1m heigh); • Lot 2 – permanent cavern arch pours ongoing and ongoing FRP works in AS1 shaft; and • Lot 3 – steel fixing continued for B4-B1 perimeter walls and completed first lift on eastern perimeter wall using a Jump Form System.
	Woolloongabba – • SW5 and SW3 External wall pours in progress; • Blockwork complete in services building and main station levels and still ongoing in southern cavern BoH; • Mechanical and Electrical Building Services commenced on B9, B8, B7, B6 and B3, including both stairwells; • Energex installed RMUs; • Northern mezzanine beam units installed (49 of 49); • Upline track slab works complete; and • Platform culvert install complete in the southern cavern and commenced in the Northern cavern.
	Tunnels – • Drill rig completed in MC02 and MC01 Gabba to Albert St; • Ongoing track installation between Roma Street and Northern portal; • Boggo Rd to Woolloongabba floating slab track installed in MC01 ongoing in MC02; • Walkway construction commenced between Gabba and Albert St; and • Albert Street to Roma Street track installation ongoing.
	Boggo Road – • Concrete to in-situ structure at 59% complete; • Reinforcement to in-situ structure 67% complete; • Precast Vierendeel installation ongoing 16/230 installed; and • Northern cavern BoH fit out and blockwork complete.
	Southern Portal – • Detailed excavation and shotcrete within cut and cover trough complete; • Final live sewer tie in works occurring; • Base slab and drainage works ongoing within cut and cover structure and in open trough section; • Firewall FRP works commenced; • Liner wall steel fixing works ongoing; • Continued fabrication of PAH Bridge main bridge girders and pylon. Fabrication 89% complete; and

Area	Project Works
	• Completion of Park Rd TSC foundation.
Southern Area	**Dutton Park** – • CSR Scope including UTXs; • Cope St Noise barrier removal; • Cope St site access finalisation; • Fenton St RMAR works; • Ensign Ave batter excavation and stabilisation for RW455; and • Completion of Park Rd TSC foundation. **Fairfield Station** – • Overpass modules installed (screening complete, roofing completed); • Stair 2 installed (structural steel, landings, stair treads); • Stair 3 installed (structural steel, landings, stair treads); • Existing timber overpass bridge removed; • Platform 1, 2, 3 canopy structural steel progressed; • Platform 1, 2, 3 slab pours progressed; • Platform 1, 2 tactiles progressed; • Platform 1, 2, 3 roofing edge and fall protection progressed (in readiness for Nov roofing install); • Perimeter blockwork walls progressed – Equity St; and • Gravity Wall – Stage 1 structurally completed. **Yeronga Station –** • Open new pedestrian overpass; • Remove existing pedestrian scaffold overpass; • Demolition of existing temporary platform slabs; • FRP of infill permanent platform slabs – Platform 1 incl coping & tactiles; • Stair 1,2,3 Finishing Works; • FAT testing and delivery of the electrical boards; • Fairfield Rd West civil completion work progression; • Removal of temporary ticketing office at Lake Street; • Commencement of Lake St civil completions and preparation for landscaping; • Relocation of ticketing equipment & SACIDs; and • Various trades and activities both on and off platform leading toward partial re-opening. **Clapham Yard** – • BR93 (Moolabin Ck Track Bridge) deck units placed; • RSS wall construction of BR94 (Chale Street Road over Rail Bridge) – northern side RW645 completed; • Retaining Wall RW650 (in front of Aurizon facility) completed, minor extensions requested by Aurizon; and • Oct SCAS successful completed incl Southern formation tie-in, precast relieving slabs at Muriel Ave Bridge, CSR UTXs, northern tie-in earthworks and drainage under track crossing. **Rocklea Station** – • Relocation of waiting shelter structure; • Demolition of remaining platform building; • Demolition of platforms 1 & 2; • Dual gauge lowering scope; • Install Platform 3 precast units; • Install PL1, 2, 3 temporary hoarding fence; • Complete RCBC installation under the Dual Gauge;

Area	Project Works
	• Complete sewer installation under the Dual Gauge; • Demolition of overpass stairs and replacement with scaffold stairs; • Site office mobilisation preparation; • Installation of Dual Gauge crossing (strail rubber crossing); and • Complete site access entry and setup.

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 RNA showgrounds during the use of a hydraulic hammer for rock breaking activities. The RIS contractors reported that the project noise requirements have been met during this reporting month. Monitoring results are detailed in **Appendix A** (Table 4).

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

In the Southern Area, noise monitoring was undertaken by the RIS contractors to validate predictive modelling for Southern/Dutton Park works. The monitoring was consistent with the predicted noise levels. Three monitoring sessions were undertaken in response to a noise complaint at a residence near the Southern/Dutton Park works. Monitoring was taken internally and externally from the complainants residence and the results confirmed the noise goals + 20dBA were not exceeded. The RIS contractors reported that the project noise requirements have been met during this reporting month. Monitoring results for the Southern Area are detailed in **Appendix A** (Table 4).

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

OBJ

2.2.2. Vibration

In the Northern Area, vibration monitoring continued at RNA during the use of a 7.5T hydraulic hammer vibration goal and are detailed in **Appendix A** (Table 5).

2.2.3. Air Quality

2.2.3.1. Dust Deposition

Dust deposition monitoring was conducted at Mayne, Northern, Central and Southern Areas. Results met the project air quality goal[1] for all active worksites.

At Dutton Park, the measured dust deposition level of 120 mg/m2/day equalled the goal of 120 mg/m2/day. Due to the constrained site boundaries and the close proximity of residents, the dust deposition gauge is located close to the project works (dust generation sources). The scale, duration and intensity of the activities was consistent with the activities reviewed as part of the predictive air quality assessment.

The Dutton Park deposited dust indicate an ongoing decrease in generation of dust emissions, which directly correlates to the reduction in cut and fill earthworks activities. Plus the work the project team continues to actively implement in relation to a range of dust mitigation measures at the site. This includes erosion control, dust suppression using water carts, using stabilised access points and utilising the street sweeper as required.

Unity continues to meet the requirements under Condition 14 and the OEMP.

Dust deposition results are detailed in **Appendix A** (Table 7 and Figure 1) and **Appendix B** (Table 4.2).

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	- Monitoring was extended beyond Australian Standard exposure period - Results met air quality goal, however, are indicative only
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	- Results met air quality goal
	Southern Portal	Dutton Park Station	- Results met air quality goal

[1] CG air quality goal for dust deposition - 120µg/m^2 (over an averaging period of 30 days).

Air Quality – Dust Deposition Monitoring			
Area	**Worksite**	**Monitoring Location**	**Comments**
		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
Southern Area	Dutton Park	Dutton Park	- Results met air quality goal
	Clapham Yard	Clapham Yard	- 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 Northern, Central and Southern Area worksites. Results met the project goals at all active worksites.

Across the RIS worksites, the Mayne Yard East and Clapham Yard air quality monitors temporarily experienced power failures associated with continuous overcast conditions. The TSP and PM_{10} results are indicative for 3 November 2022 for Mayne Yard East, and 16 and 30 November 2022 for Clapham Yard.

Since the most recent power failure at Clapham Yard, UNITY has relocated the DMP to an area within the yard where there are no structures that might limit sun exposure of the solar panel. Whilst this new location has been vetted by the Project CAQP, it is within the Construction boundary (as opposed to being on the edge of the works previously) and therefore closer to potential particulate sources and further away from residents. To ensure the ongoing current functioning of this DMP and obtainment of valid air quality data at Clapham Yard. This is however the best available location considering the ongoing issues with power failure.

Particulates results are detailed in **Appendix A** (Section 3.2.2 and Figures 2 and 3) and **Appendix B** (Table 5).

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	- Monitoring not required as per Project's CAQP advice
	Mayne Yard	Mayne Yard East	- Results met air quality goals - Monitoring unit experienced power failure and failed to record at least 75% of data on 3 November 2022. With indicative results only available on this day.
Northern Area	RNA / Exhibition	RNA showgrounds	- 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

Air Quality – PM_{10} / TSP Monitoring			
Area	**Worksite**	**Monitoring Location**	**Comments**
	Boggo Rd / Southern Portal	North-east of Boggo Road worksite	- Results met air quality goals
	Woolloongabba	Place Park, Woolloongabba	- Results met air quality goals
Southern Area	Clapham Yard	Clapham Yard	- Results met air quality goals - Monitoring unit experienced power failures and failed to record at least 75% of data on 16 and 30 November 2022. Indicative results only on these days.

2.2.4. Water Quality

Water quality monitoring and reporting was undertaken in accordance with the contractors CEMP and Water Quality Management Plans.

2.2.4.1. Surface Water

Active surface water discharges occurred across the Mayne Yard, Northern Portal, and Southern Portal worksites through dewatering activities. Post-rainfall water quality monitoring occurred in the receiving waters of the following sites: Mayne Yard, Northern Portal, Roma Street, Albert Street, Woolloongabba, Boggo Road and Clapham Yard during the month.

In the Northern Area, water quality monitoring was triggered on 25 occasions from the Northern Portal worksite as water used for construction activities and stormwater was treated and actively discharged to the stormwater network. The TSD contractors confirmed the discharge criteria was met on all occasions. See **Appendix B** (Table 7) for further details.

In the Central Area, water quality monitoring was triggered on 5 occasions from the Southern Portal worksite as stormwater was treated and actively discharged to the stormwater network. The contractor confirmed the discharge criteria was met. See **Appendix B** (Table 7) for further details.

Post-rainfall monitoring was triggered in receiving waters of the Mayne Yard, Northern Portal, Roma Street, Albert Street, Woolloongabba, Boggo Road and Clapham Yard worksites due to a rainfall event that exceeded the trigger to monitor. Downstream locations that exhibited an increase of more than 5mg/L or 10% Total Suspended Solids (TSS) (whichever is greatest) were still below the off-site discharge limit for the relevant receiving waters. Therefore, compliance with Imposed Conditions 15 and 18 were met. See **Appendix A** (Section 3.3.2.1 and Table 10) and **Appendix B** (Table 8) for further details.

Routine surface water quality monitoring was undertaken in the receiving waters of all TSD worksites in accordance with the Contractor's Water Quality Management Plan. The monitoring results reflect the condition of a broader catchment upstream from the worksites. See **Appendix B** (Table 8) for further details.

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	No	- Post-rainfall monitoring undertaken. - ESC was implemented in accordance with site specific ESC Plan.
Northern Area	Northern Portal	Yes	Yes	Yes	- Active surface water discharge met water quality investigation criteria. - Post-rainfall monitoring undertaken. - Routine in-stream monitoring undertaken in accordance with WQMP.
	Northern Corridor	No	No	N/A	- ESC was implemented in accordance with site specific ESC Plan.
	RNA/Exhibition	No	No	N/A	- ESC was implemented in accordance with site specific ESC Plan.
Central Area	Albert Street	No	Yes	Yes	- Post-rainfall monitoring undertaken. - Routine in-stream monitoring undertaken in accordance with WQMP.
	Boggo Road	No	Yes	Yes	- Post-rainfall monitoring undertaken. - Routine in-stream monitoring undertaken in accordance with WQMP.
	Roma Street	No	Yes	Yes	- Post-rainfall monitoring undertaken. - Routine in-stream monitoring undertaken in accordance with WQMP.
	Woolloongabba	No	Yes	Yes	- Post-rainfall monitoring undertaken. - Routine in-stream monitoring undertaken in accordance with WQMP.
	Southern Portal	Yes	Yes	Yes	- Active surface water discharge met water quality investigation criteria. - Post-rainfall monitoring undertaken. - Routine in-stream monitoring undertaken in accordance with WQMP.

Surface Water Quality Monitoring					
Area	**Worksite**	**Discharge**	**Post-Rain Monitoring**	**Routine Monitoring**	**Comments**
Southern Area	Fairfield Station	No	No	No	- ESC was implemented in accordance with site specific ESC Plan.
	Clapham Yard	Yes	Yes	No	- Active surface water discharge met water quality criteria. - Post-rainfall monitoring undertaken. - ESC was implemented in accordance with site specific ESC Plan.

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, Woolloongabba and Boggo Road worksites Groundwater discharge results exceeded relevant water quality objectives (WQO's)[2] for total nitrogen, ammonia nitrogen, oxidised nitrogen, organic nitrogen and dissolved oxygen. However, these results are consistent with the receiving environment baseline monitoring pre-construction data. The contractor confirmed no changes have occurred onsite to the construction methodologies that would have affected the groundwater results.

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.
	Boggo Road / Southern Portal	Yes	- Groundwater discharge (dewatering). - Discharge of groundwater did not meet Project WQO's but was generally consistent with pre-construction conditions.
	Roma Street	Yes	- Groundwater discharge (dewatering). - Discharge of groundwater did not meet Project WQO's but was generally consistent with pre-construction conditions.
	Woolloongabba	Yes	- Groundwater discharge (dewatering).

[2] 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**
			- Discharge of groundwater did not meet Project WQO's but was generally consistent with pre-construction conditions
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, Dutton Park, Fairfield, Yeronga, Clapham Yard and Rocklea worksites.

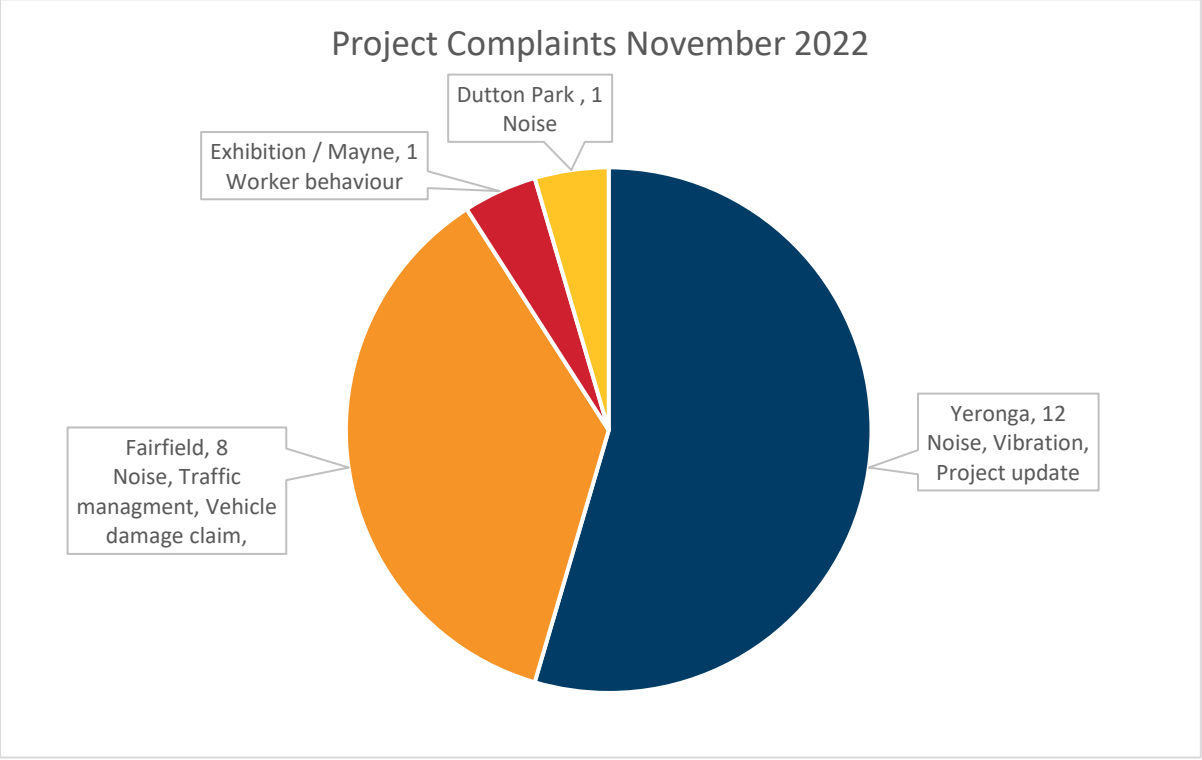
2.3. Complaints Management

A total of 22 complaints were received during the month all of which were project related.

RIS works received all 22 complaints this month related to odour, noise and traffic management at Fairfield, noise, traffic management and vehicle damage claim at Rocklea and noise, odour and worker behaviour at Yeronga. For further details refer to **Appendix A** (Table 3).

No complaints were received for TSD activities during the reporting period.

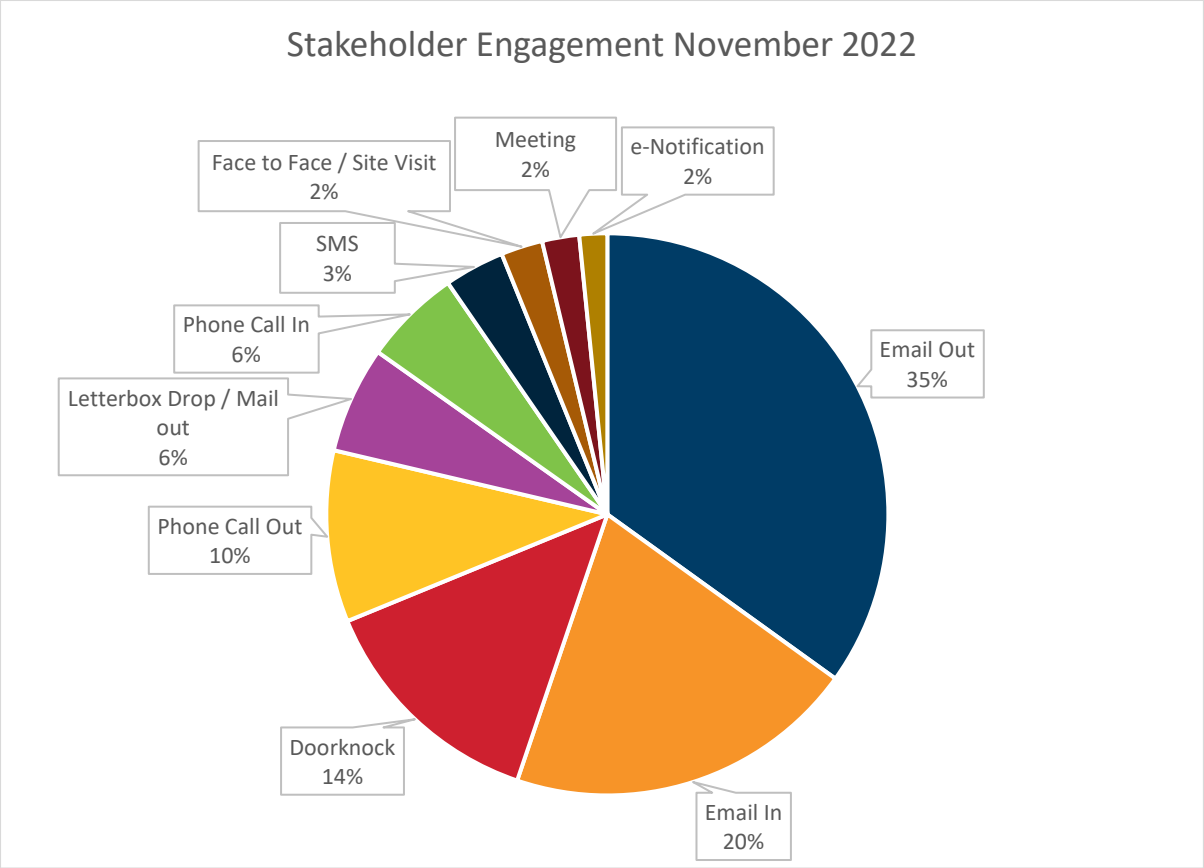
The Project Works complaints summary for the month is provided in the following chart.



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 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** – • Access road construction, CSR, pavement, road furniture (North of Ferny Grove Flyover); • Surcharge Load release and commence cross drainage modifications of pre-load impacted drainage; and • BR08 (Breakfast Creek Bridge) completing all temp works prior to Christmas 2023. **Mayne Yard East / West** – • Commence soil nailed wall RW115; • Christmas SCAS 2022 lowering of Mayne Yard West Entry roads.
Northern Area	**RNA/ Northern Corridor** – • Service relocations East (between Bowen Bridge Road and Ekka Station);

Area	New planned works in the coming months
	• Rock excavation south-eastern area of Ekka Station (not impacted by EXH Stage 2 switch); • Christmas SCAS 2022 lowering of Wash Road; • Commence OHLE foundations through the corridor; and • Victoria Park Feeder Station handover to HV team by the civil team. **Northern Portal** – • Dowel installation of the second stage invert (rail works); • Destressing of anchors; and • Open trough base slab, retaining wall and liner wall FRP works.
Central Area	**Roma Street** – • Mezzanine beam installation; • Station building ongoing wall and slab and column pours; • Services building pre-cast panel installation and concrete pours; and • Infill around INB underpinning columns and demolition of redundant columns. **Albert Street** – • Lot 1 – Complete slip form pours (B7 – B4); • Lot 2 – commence BoH (South) FRP works and arrival of mezzanine beam loader; and • Lot 3 – complete sloping slab pours and perimeter wall jump pours. **Woolloongabba** – • Switchboards for L9 received and to be installed and connected in the new year; • Delivery and installation of 2 transformers to be installed in B7; and • High Voltage (HV) riser platforms installation on B1. **Boggo Road** – • Concrete wall steel fixing and concrete pours ongoing; and • Delivery and installation of precast mezzanine beams and super-T ongoing. **Southern Portal** – • Ongoing base slab and liner wall FRP works; • Delivery of main girders to Brisbane planned for December; • Completion of sewer tie in works at leukemia Foundation; and • TSD36 SCAS - Cleveland line reconditioning & OHLE adjustment.
Southern Area	**Dutton Park** – • CSR scope in upcoming SCAS closures through November; • UP Platform closure planned for 28 Nov; • Commence piling scope in late Nov – Cope St retaining walls; and • Embankment widening in preparation for UP Sub realignment in Q2 2023. **Fairfield Station –** • All works associated with accelerating the opening permanent overpass as thoroughfare on 28 Nov 2022 and the station opening by 19 December 2022 • Continue FRP various platform slabs; • Continue tactile, coping installation for PL1 / PL2; • Commence rubber gap 'fingers' installation for PL1 / PL2; • PL1 / 2 / 3 – Canopy Roofing; • Lift 2 installation (steelwork, precast); and • Lift 3 installations (steelwork, precast).

Area	New planned works in the coming months
	Yeronga Station – • Aiming for completion of all remaining scope by the end of November 2022 (excluding Lift 3 and other miscellaneous items due to supply chain challenges). **Clapham Yard** – • Complete BR93 (Moolabin Ck track bride – Stage 1); • Complete BR94 FRP works to install super T girders by December 2022; and • Complete Drainage and RW650 in front of Aurizon prior to Christmas 2022. **Rocklea Station** – • Commencement of foundation piles for overpass, stairs; and • Commencement of inground services (stormwater, sewer, etc) to PL 1 / 2 / 3.

2.5 Non-Compliance Events

No new NCEs were 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	Relevant Condition	Gate 1	Gate 2	Gate 3	Gate 4
Open								
Closed								
CRRDA-001-RIS-001	9/11/19	Noise	Yeronga Station	4, 10, 11	10/11/19	14/11/19	26/11/19	18/12/19
CRRDA-002-TSD-001	27/03/20	ESC	Woolloongabba	4, 15, 18	30/03/20	31/03/20	22/04/20	11/06/20
CRRDA-003-TSD-002	27/03/20	ESC	Boggo Rd	4, 15, 18	30/03/20	31/03/20	22/04/20	11/06/20
CRRDA-004-TSD-003	28/03/20	Traffic	Boggo Rd	4, 10, 14	30/03/20	31/03/20	22/04/20	11/06/20
CRRDA-005-TSD-004	27/03/20	Reporting	Multiple sites	4, 6, 11, 13	30/03/20	31/03/20	22/04/20	11/06/20
CRRDA-006-TSD-005	27/03/20	Air Quality	Multiple sites	13	30/03/20	31/03/20	22/04/20	11/06/20
CRRDA-009-RIS-003	6/05/22	ESC	Clapham Yard	4, 15, 18	28/10/22	28/10/22	12/12/22	12/12/22
CRRDA-010-RIS-004	10/05/22	Potential Acid Sulphate Soils Management	Clapham Yard	4, 19	28/10/22	28/10/22	12/12/22	12/12/22
Withdrawn								
CRRDA-007-RIS-002	1/04/20	Air Quality	Multiple sites	13	28/04/20	30/04/20	Withdrawn	
CRRDA-008-TSD-006	8/04/20	Working Hours	Roma Street	4,10	28/04/20	30/04/20	Withdrawn	

Appendix A RIS Monthly Report

Monthly CGCR Report November 2022

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** • Mayne Yard North QR familiarisation has commenced. Graffiti Removal Facility is undergoing further modifications and pending QR acceptance • Breakfast Ck Bridge (BR08) – RW150 completed and temp works for Super-T installation ongoing • Drainage works for Shunt Road has commenced and surcharge loading of CRR embankment has been released. **Mayne Yard East / West** • Tripod Bridge (BR11/13) incl RSS walls completed, with only barriers pending • RW130 – Retaining wall on Eastern side under ICB overpass nearing completion. • Demolition of DLP area nearing completion. • BR12 new QR ped bridge to MY-E commenced with piling pad construction and abutment works.
Northern Area	**RNA** • Demolition of RNA facilities and QR facilities completed (Eastern side of Exhibition station). • Line drilling and rock excavation (Eastern side of Exhibition station) commenced to partially mitigate the delayed Stage 2 Switch. Localised areas are being de-linked from the Switch so that some drainage and some FRP scope can commence. **Northern Corridor** • CSR nearing completion for Stg 2 switch (95% completed) • Victoria Park Feeder Station civil scope nearing completion for handover to HV-team by 18-Nov-22. • QR Carpark – fencing and drainage commenced.
Southern Area	**Southern Portal / Dutton Park** • CSR Scope including UTX's • Cope St Noise barrier removal • Cope St site access finalisation • Fenton St RMAR works • Ensign Ave batter excavation and stabilisation for RW455 • Completion of Park Rd TSC foundation.
Southern Area	**Fairfield Station** • Overpass modules installed (screening complete, roofing completed) • Stair 2 installed (structural steel, landings, stair treads) • Stair 3 installed (structural steel, landings, stair treads) • Existing timber overpass bridge removed • Platform 1, 2, 3 canopy structural steel progressed • Platform 1, 2, 3 slab pours progressed • Platform 1, 2 tactiles progressed • Platform 1, 2, 3 roofing edge and fall protection progressed (in readiness for Nov roofing install) • Perimeter blockwork walls progressed – Equity St • Gravity Wall – Stage 1 structurally completed.

Area	Project Works
Southern Area	**Yeronga Station** • Open new pedestrian overpass • Remove existing pedestrian scaffold overpass • Demolition of existing temporary platform slabs • FRP of infill permanent platform slabs – Platform 1 including coping and tactiles • Stair 1,2,3 Finishing Works • FAT testing and delivery of the electrical boards • Fairfield Rd West civil completion work progression • Removal of temporary ticketing office at Lake Street • Commencement of Lake Street civil completions and preparation for landscaping • Relocation of ticketing equipment and SACID's • Various trades and activities both on and off platform leading toward partial re-opening.
Southern Area	**Clapham Yard** • BR93 (Moolabin Ck Track Bridge) deck units placed • RSS wall construction of BR94 (Chale Street Road over Rail Bridge) – Northern side RW645 completed • Retaining Wall RW650 (in front of Aurizon facility) completed, minor extensions requested by Aurizon • Oct SCAS successful completed incl Southern formation tie-in, precast relieving slabs at Muriel Ave Bridge, CSR UTX's, Northern tie-in earthworks and Drainage under track crossing.
Southern Area	**Rocklea Station** • Relocation of waiting shelter structure • Demolition of remaining platform building • Demolition of platforms 1 and 2 • Dual gauge lowering scope • Install platform 03 precast units • Install PL1, 2, 3 temporary hoarding fences • Complete RCBC installation under the DG • Complete sewer installation under the DG • Demolition of overpass stairs and replacement with scaffold stairs • Site office mobilisation preparation • Installation of DG crossing (strail rubber crossing) • Complete site access entry and setup.

Acronyms:

CIP – Cast in Situ Piles
CSR – Combined Services Route
DL – Drainage Line
FRP – Form Reo Pour
HV – High Voltage
OHLE – Overhead Line Equipment
OTV – On Track Vehicle
PUP – Public Utility Plant
RNA - Royal National Agricultural and Industrial Association of Queensland
R&R – Remove and Replace
RSS – Reinforced Soil Slopes
RW – Retaining Wall
SCAS – Scheduled Corridor Access Schedule
UTX – Under Track Crossing

The following table summarises the upcoming Project Works:

Table 2: Summary of upcoming Project Works

Area	Project Works
Mayne Area	**Mayne Yard North** • Access Road construction, CSR, pavement, road furniture (North of Ferny Grove Flyover) • Surcharge Load removal and commence cross drainage modifications of pre-load impacted drainage • BR08 (Breakfast Creek Bridge) completing all temp works prior to Christmas '23. **Mayne Yard East / West** • Commence soil nailed wall RW115 • Christmas SCAS '22 lowering of MY-West entry roads.
Northern Area	**RNA** • Rock excavation south-eastern area of Exhibition station (not impacted by EXH Stage 2 switch) • Service relocations East (between Bowen Bridge Road and Exhibition station). **Northern Corridor** • Victoria Park Feeder Station handover to HV team by the civil team • Commence OHLE foundations through the corridor.
Southern Area	**Southern Portal / Dutton Park** • CSR scope in upcoming Christmas SCAS closures • UP Platform closure on 28 Nov and ensuing platform 1 demolition • Continue piling – Cope St retaining walls • Embankment widening in preparation for UP Sub realignment in Q2 2023. • Christmas SCAS works
Southern Area	**Fairfield Station** • Ongoing station upgrades • Christmas SCAS works
Southern Area	**Yeronga Station** • Aiming for the accelerated completion of all remaining scope by end of Nov-22 (excluding Lift 3 and other miscellaneous items due to supply chain challenges).
Southern Area	**Clapham Yard** • Complete BR93 (Moolabin Ck track Bridge - Stage 1) • Complete BR94 FRP works to install super T girders by Dec '22 • Complete Drainage and RW650 in front of Aurizon prior to Christmas '22.
Southern Area	**Rocklea Station** • Commencement of foundation piles for overpass, stairs • Commencement of inground services (stormwater, sewer, etc) to PL 1 / 2 / 3.

2 Complaints

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

Table 3: Summary of Complaints

Date Received	Location	Issue	Project Works / Activity source of the concern	Reporting Period	Complaint Detail	Unity Response	Status
Friday 4 November 2022	Yeronga	Noise	Station upgrade works	November 2022	Stakeholder complained about the Fairfield Road works at Yeronga Station.	Team provided information about the works including the Yeronga Station November construction notice.	Closed
Saturday 5 November 2022	Fairfield	Noise	Station upgrade works	November 2022	Stakeholder reported vehicle incident on Mildmay Street. Stakeholder advised that they did not want to escalate the incident, but advised they are fatigued from construction noise.	Team advised that their feedback will be passed onto the site team. Team investigated noise mitigation and noise blankets were installed on site fencing to reduce noise.	Closed
Thursday 10 November 2022	Fairfield	On street parking	Station upgrade works	November 2022	The complainant advised a yellow no parking line was installed in front of their property without notice.	Notifications were sent to affected residents between May – July 2022. The site team reinstated 5m of the area two weeks later.	Closed
Monday 14 November 2022	Yeronga	Noise	Out of hours works	November 2022	A representative who owns and manages a nearby residential building, advised that four residents had complaints about the levels of noise coming from site in November. They advised another two residents had relocated.	Project team reached out to the representative to obtain further details about the nature of the complaints. Team provided further details on the upcoming program and likely completion of night work activities. Ear plugs were also provided for the affected residents.	Closed
Tuesday 15 November 2022	Yeronga	Noise	Out of hours works	November 2022	Stakeholder complained about the noise coming from site, specifically the traffic controllers talking loudly and vehicles idling in front of their property.	Team contacted stakeholder and provided an overview of upcoming works. The team dropped off formable ear plugs in the stakeholders' letterbox.	Closed
Thursday 17 November 2022	Yeronga	Noise	Out of hours works	November 2022	Stakeholder complained about the noise coming from site during the night and advised traffic controllers were talking loudly and had left vehicles idling in front of their property.	Team contacted stakeholder and provided an overview of upcoming works. The team dropped off formable ear plugs in the stakeholders' letterbox.	Closed

Date Received	Location	Issue	Project Works / Activity source of the concern	Reporting Period	Complaint Detail	Unity Response	Status
Sunday 20 November 2022	Fairfield	Noise from generator	Out of hours works	November 2022	A resident advised the noise coming from a site generator was disturbing their sleep. They wanted to know how long this would be going for.	Team informed the resident that generators would be in use until the mains power was cut over. Team spoke with Site Manager to investigate possible mitigation measures on site. The generators were turned off overnight and noise blankets were installed the following day.	Closed
Tuesday 22 November 2022	Fairfield	Noise	Out of hours works	November 2022	Stakeholder reported the noise from a generator was disturbing their sleep.	Team offered internal noise mitigation, acoustic blanket noise mitigation across front boundary fence to assist, and a respite voucher for an upcoming SCAS. Stakeholder accepted external noise mitigation and respite voucher.	Closed
Tuesday 22 November 2022	Fairfield	Noise	Out of hours works	November 2022	Stakeholder called about noise and light spill at Fairfield during night works. They did not want to lodge a formal complaint but thought it should be raised with the team.	Team advised stakeholder of current and upcoming works and raised the issues with the Fairfield team for him. Team will follow up with him as agreed.	Closed
Tuesday 22 November 2022	Yeronga	Noise	Out of hours works	November 2022	Stakeholder emailed the project to complain about noise from Yeronga Station during night works.	Team emailed the stakeholder respite options. Stakeholder did not respond to email.	Closed
Wednesday 23 November 2022	Yeronga	Noise	Out of hours works	November 2022	Stakeholder emailed complaint about noise from Yeronga station during night works.	Team advised of current and upcoming works. Stakeholder accepted respite voucher and formable earplugs.	Closed
Wednesday 23 November 2022	Yeronga	Noise, vibration, parking and traffic	Out of hours works	November 2022	Stakeholder complained about disruptive works during the night at Yeronga. They advised of recent impacts from increased work activity included noise, vibration, parking and traffic.	Team provided information about current and upcoming works at Yeronga. Matter was discussed with Supervisors to resolve parking issues and discussed respite for upcoming SCAS.	Closed
Wednesday 23 November 2022	Yeronga	Noise and vibration	Out of hours works	November 2022	Stakeholder emailed complaint about noise and vibration from Yeronga Station during night works.	Team provided information about current and upcoming works. Team thanked stakeholder for positive feedback.	Closed

Date Received	Location	Issue	Project Works / Activity source of the concern	Reporting Period	Complaint Detail	Unity Response	Status
Wednesday 23 November 2022	Fairfield	Noise	Out of hours works	November 2022	Stakeholder complained about noise from recent Fairfield Station night works.	Team provided an update on current and upcoming works at Fairfield Station. Team offered respite accommodation and stakeholder accepted.	Closed
Wednesday 23 November 2022	Yeronga	Noise, traffic and pedestrian access	Out of hours works	November 2022	Stakeholder complained about increased work at Yeronga Station impacting traffic, noise, pedestrian access.	Team provided an update on current and upcoming works at Yeronga Station and passed their feedback onto the team. Stakeholder requested formable ear plugs. Earplugs were provided to the stakeholder.	Closed
Thursday 24 November 2022	Fairfield	Workforce parking	Station upgrade works	November 2022	Stakeholder called to complain about workforce parking in local streets around Fairfield Station.	Team contacted the site team to address the parking matter through their daily pre-starts and to direct workforce to use the Fairfield Gardens designated parking area.	Closed
Friday 25 November 2022	Yeronga	Noise	Out of hours works	November 2022	Stakeholder complained about jack hammer noise at Yeronga Station.	Team called to provide an update on works and discuss respite options. Stakeholder accepted respite voucher.	Closed
Friday 25 November 2022	Yeronga	Noise	Out of hours works	November 2022	Stakeholder complained about jack hammer noise at Yeronga station.	Team called to provide an update on works and discuss respite options. Stakeholder accepted formable ear plugs and respite voucher.	Closed
Sunday 27 November 2022	Yeronga	Noise and workforce parking	Out of hours works	November 2022	Stakeholder advised they would like the project to use the workforce designated parking over at Fairfield Gardens Shopping Centre for night works.	Team provided an update regarding Yeronga Station, including information about night works decreasing in the area.	Closed
Sunday 27 November 2022	Fairfield	Dust and workforce behaviour	Station upgrade works	November 2022	Stakeholder emailed the Project regarding workforce behaviour and dust at Fairfield Station	Team responded to advise that their feedback has been passed onto the team to action.	Closed
Monday 28 November 2022	Dutton Park	Noise	Out of hours works	November 2022	Stakeholder emailed to complain about night works occurring on Fenton Street on a Sunday evening. Specifically metal work and asphalt works.	Team passed on the feedback to the site team. Email was sent to the stakeholder to provide an update on upcoming works in the local area.	Closed

Date Received	Location	Issue	Project Works / Activity source of the concern	Reporting Period	Complaint Detail	Unity Response	Status
Monday 28 November 2022	Mayne Yard East	Parking	Sewer relocation works	November 2022	Stakeholder was forced to park around the corner of their office due to works being undertaken on Campbell Street and received a BCC parking fine.	Team contacted the stakeholder and arranged for alternative parking while the sewer works were being undertaken.	Closed

3 Environmental Monitoring Results

The below section summarises the monitoring results to be reported in accordance with Imposed Condition 6(b)(i).

3.1 Acoustics

Imposed Condition 11(b) 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 (C-EMP) occurs.

3.1.1 Noise Monitoring

Attended noise monitoring was triggered based on the predictive noise assessments for the Relevant Project Works during the reporting period.

Complaint-based noise monitoring because of Project Works was triggered during the reporting period.

3.1.2 Noise Monitoring Results

Table 4: Summary of Noise Monitoring Data

Location	Receiver Type Details	Type of Monitoring	Work Hours	Monitoring date and time	Noise Type	Purpose of Monitoring	Predictive model (dBA)	Performance Goal 1 (dBA) (Condition 11(a), Table 2, $LA_{10/eq}$ 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 For interpretation, please refer to section 3.1.6
Southern	Residential	Attended - outdoors	Standard Hours And Extended Hours	Saturday 5 November, 2022 08:43 AM	Intermittent	Construction Monitoring at Sensitive Places - Model Verification	65	**Standard Hours Work** 65 (Outdoors) (55dBA + 10dBA façade reduction) **Extended Hours Work** 52 (Outdoors) (42dBA + 10dBA façade reduction)	**Standard Hours Work** 85 (Outdoors) (65dBA + 20dBA) **Extended Hours Work** 72 (Outdoors) (52dBA + 20dBA)	64	64	Yes Case by case	Yes Goal 1 only (Extended Hours)	Plant movements (no excavation works) were recorded. Monitor was set up on property boundary to gather background data. The monitor was set up approximately 28m from the excavator and 8m from the property façade. The vac truck leaving site was dominant noise source.
RNA Showgrounds	Commercial	Attended - outdoors	Standard	Monday 7 November, 2022 10:47 AM	Intermittent	Buffer Distance Test - Model Verification	79	65 (Outdoors) (55dBA + 10dBA façade reduction)	85 (Outdoors) (65dBA + 20dBA)	79	74	Yes Generic notification	Yes Goal 1 only	Monitoring was undertaken approximately 27m from the hydraulic hammer on the rock cut (previously the station platform). Monitoring was completed to confirm sound level of 7.5T hydraulic hammer during rock breaking as this hammer size had not previously been verified. The hammer was the dominant noise source.
Southern	Residential	Attended - outdoors	Standard	Saturday 26 November, 2022 12:35 PM	Intermittent	Construction Monitoring at Sensitive Places - Model Verification	60	65 (Outdoors) (55dBA + 10dBA façade reduction)	85 (Outdoors) (65dBA + 20dBA)	64	63	Yes Generic notification	No	Concrete pour was monitored which included a piling rig in lieu of a crane to lift and hold the line pump. The concrete truck and line pump were the dominant noise sources. The concrete truck was approximately 38m from the façade of the closest property, and the piling rig was ca. 20m from the property façade.
Southern	Residential	Attended – indoors	Standard	Monday 28 November, 2022 02:35 PM	Intermittent	Complaint response	81 internal (assuming no façade due to window open)	55 (indoors)	75 (indoors)	72 (internal)	72	Yes Case by case	Yes Goal 1 only	Monitoring was undertaken in response to complaint. Monitoring was carried out inside the complainants' residence at the back of the property with direct line of sight to the work site. A vac truck was the dominant noise source. The vac truck was approximately 8.5m from the property's open window.
Southern	Residential	Attended – indoors	Standard	Monday 28 November, 2022 02:47 PM	Intermittent	Complaint response	71 internal (with 10dBA façade attenuation included)	55 (indoors)	75 (indoors)	65 (internal)	60	Yes Case by case	Yes Goal 1 only	Monitoring was undertaken and set up at the same property as the session above. The windows were closed during monitoring to confirm actual façade attenuation at the property.
Southern	Residential	Attended – outdoors	Standard	Monday 28 November, 2022 03:25 PM	Intermittent	Complaint response	76 (with 10dBA façade attenuation excluded)	65 (Outdoors) (55dBA + 10dBA façade reduction)	85 (Outdoors) (65dBA + 20dBA)	75	72	Yes Case by case	Yes Goal 1 only	Monitoring was undertaken at the same property as the session above but on the back deck of the property. The monitor was approximately 13m from the vac truck which was the dominant noise source.

- 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 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, several 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.

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

3.1.3 Vibration Monitoring

Vibration monitoring to validate the predictive model was triggered for:

- The use of a 7.5T hammer at the RNA Showgrounds in proximity to a State heritage listed building (Royal International Convention Centre).

The results are presented in the below Table.

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

Vibration monitoring to address property damage was not triggered by the predictive assessment.

3.1.4 Vibration Monitoring Results

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	Vibration intensive equipment	Maximum predicted vibration Level (mm/s)	Shortest distance between Equipment and Sensitive Place (m) @Time of Monitoring"	Maximum recorded vibration level (mm/s)	Vibration goal for receiver (mm/s)	Exceedance of vibration limit?	Comments
Royal International Convention Centre	01/11/2022 to 30/11/2022	24 hours/ 7 days	Royal International Convention Centre	Heritage – DIN4150 Group 3	Construction Monitoring at Sensitive Places – Model Verification	7.5T hydraulic hammer	3.0mm/s	26m	1.2mm/s	3 mm/s	No	Monitor was installed at the façade of the building within a storage room approximately 28m from the hydraulic hammer. Short bursts of hammering were recorded and the peak VSUM was 1.2mm/s. Line drilling had been carried out ahead of the rock breaking to create fracture zones and facilitate rock hammering. The line drilling is likely to be the reason the actual vibration levels are significantly lower than the predicted level.

3.1.5 Interpretation

The RIS scope of works continues to achieve the outcomes set out by the Imposed Conditions and OEMP.

3.1.6 Noise Monitoring

3.1.6.1 Model Verification

Two (2) rounds of noise monitoring of noise intensive activities were carried out externally during Standard Work Hours to validate the noise modelling outputs.

These activities were undertaken at residential and commercial places closest to the Works.

The noise monitoring confirmed that the actual noise emissions are consistent with he predicted noise emissions. Providing assurance to the Project Team that the predictive noise modelling can be used as a reliable tool to guide community engagement prior to and during the Project Works.

Since:

- The Works were authorised to proceed under Imposed Condition 10 as they were carried out during Standard Work Hours, and
- DAP engagement had also occurred with the level of consultation as per the requirements of Imposed Condition 11 (c)

The RIS scope of works continues to achieve the outcomes set out by the CGCR and OEMP.

3.1.6.2 Complaints Response

Three (3) rounds of noise monitoring of vac truck activities during station upgrade works were undertaken externally and internally.

Monitoring was undertaken during standard work hours.

The measured LA_{10} readings exceeded the noise goal.

The works were authorised to proceed under Condition 10 as they were carried out during Standard Work Hours. DAP engagement had also occurred with the level of consultation as per the requirements of Condition 11 (c).

3.1.7 The RIS scope of works continues to achieve the outcomes set out by the CGCR and OEMP. Vibration Monitoring

3.1.7.1 Model Verification

Vibration monitoring during rock breaking works at the RNA Showgrounds was undertaken at the foundation of the State heritage listed Royal International Convention Centre inside a storage room. This location was selected based on the outcomes of predictive assessments.

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

3.2 Air Quality

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

Visual monitoring was undertaken during routine environmental inspections. A total of 31 inspections were undertaken by the Environment Team across Mayne Yard, RNA Showgrounds, Northern Corridor, Southern Area, Fairfield Station, Yeronga Station, Clapham Yard and Rocklea Station.

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	1 February 2021	Active
Dust Deposition Gauge	Yeronga Station	AQ-07	12 August 2021	Inactive DDG was decommissioned on 10 December 2021 following the completion of earthworks
Dust Deposition Gauge	Dutton Park	AQ-08	8 July 2022	Active
TSP / PM_{10} Monitor	Mayne Yard North (Eastern Air Shed)	AQ-04	26 August 2022	Inactive as of 11 May 2022 CAQP confirmed that the Mayne Yard DMP can be temporarily decommissioned following the completion of Mayne Yard North earthworks. DMP was reinstated for Mayne Yard East Works on 26 August 2022 – see below
TSP / PM_{10} Monitor	Mayne Yard East (Eastern Air Shed)	Mayne Yard East	26 August 2022	Active
TSP / PM_{10} Monitor	Clapham Yard (Eastern Air Shed)	Clapham Yard	9 August 2021	Active
TSP / PM_{10} Monitor	RNA (Western Air Shed)	RNA	25 August 2020	Active

3.2.1 Dust results

As passive dust deposition gauges (DDG) are analysed monthly, results span:

- RNA and Dutton Park:
  - 11 October 2022 to 11 November 2022
- Clapham Yard:
  - 11 October 2022 to 10 November 2022
- Mayne Yard
  - 15 September 2022 to 11 November 2022

The deposited dust results are detailed below. RNA and Clapham Yard 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 ($mg/m^2/day$)	AQ-08 – Dutton Park ($mg/m^2/day$)
120 $mg/m^2/day$ 11 October 2022 – 10 November 2022	N/A	N/A	23	N/A

CGCR Goal (mg/m²/day)	AQ-01 - RNA Showgrounds (mg/m²/day)	AQ-04 Abbotsford Rd (E Mayne) (mg/m²/day)	AQ-06– Clapham Yard (mg/m²/day)	AQ-08 – Dutton Park (mg/m²/day)
120 mg/m²/day 11 October 2022 – 11 November 2022	110	N/A	N/A	120
120 mg/m²/day 15 September 2022 – 11 November 2022	N/A	27*	N/A	N/A
120 mg/m²/day 11 November 2022 – 12 December 2022	60	33	47	80
Total Rainfall during Period 11 October 2022 – 11 November 2022)	116mm	107.2	130.2mm	59.4mm
Total Rainfall during Period 11 November 2022 – 12 December 2022)	113mm	71.6mm	91mm	59.8mm

**Results are indicative only*

AQ-04 results for 15 September 2022 – 11 November 2022 are indicative only as the results span 57 days.

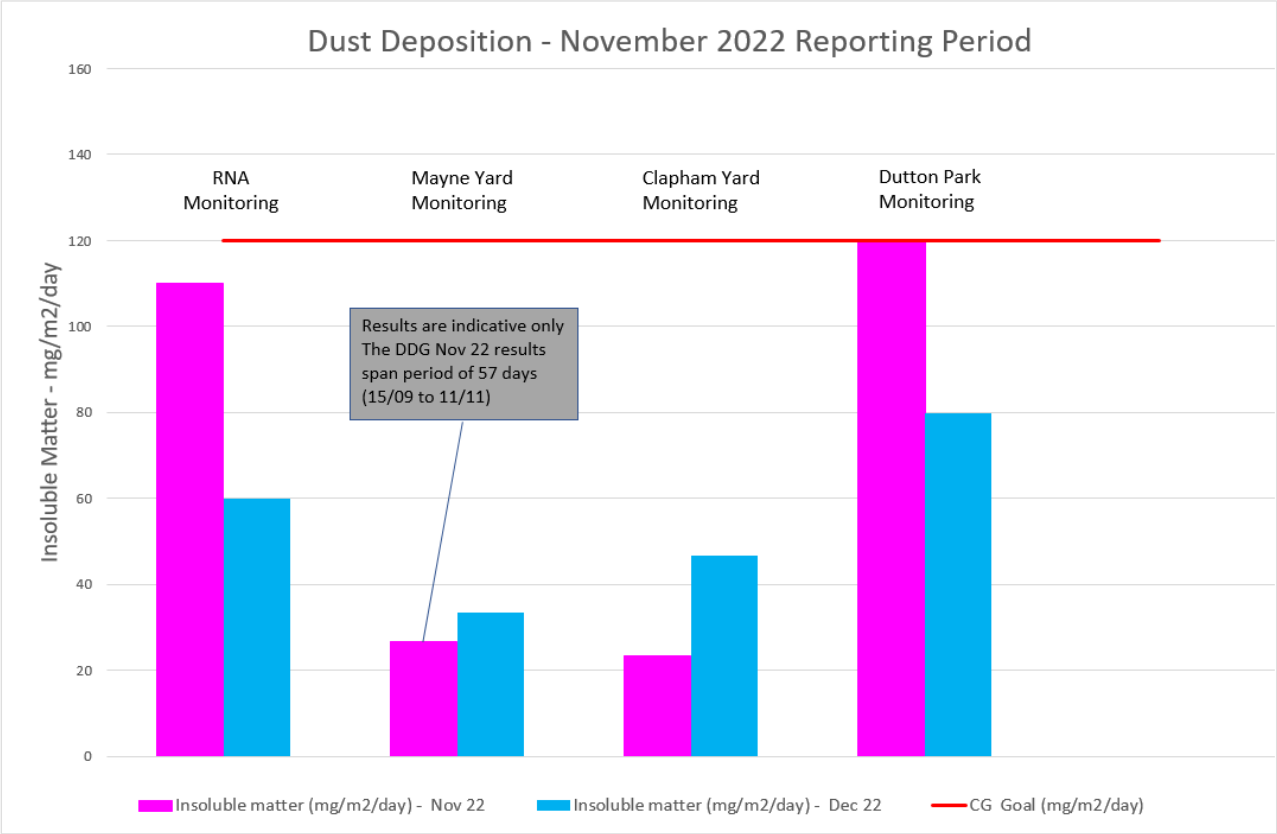


Figure 1 Air Quality Monitoring (Deposited Dust) Results

3.2.2 Interpretation

3.2.2.1 Dutton Park DDG Results

A predictive air quality assessment was carried out by the Project's certified air quality professional prior to Relevant Project Works commencing.

The assessment did not trigger the need for particulate monitoring. However, due to the proximity of residents to the Project Works, UNITY thought it prudent to install a DDG.

The DDG is located on the construction area boundary between 15 Cope Street (Project Works) and 211 Annerley Road (residential receivers) to monitor dust generation from construction activities.

As reported in the October Report, the siting of the Dutton Park DDG is limited due to the constrained site boundaries and is therefore closer to dust emission sources than the nearest receptor.

As demonstrated in Figure 1, the Dutton Park November 2022 deposited dust results were elevated and reached the CG Goal (120mg/m^2/day). The Dutton Park December 2022 deposited dust results (80mg/m^2/day) indicate a decline in generation of dust emissions, which directly correlates to the reduction in cut and fill earthworks activities.

3.2.3 Particulates results

3.2.3.1 Air Quality Monitoring Stations

UNITY had three (3) active air quality monitoring stations in place for the reporting period as detailed in Table 6.

3.2.3.2 Monitoring Results – Reporting Period

External ambient air quality data was collected for total suspended particles (TSP), and particulate matter less than 10 µm (PM10).

TSP is one of the indicators for which the Coordinator-General has imposed a goal of 80 µg/m3 (over an averaging period of 24 hours) the project must aim to achieve under Imposed Condition 13(a).

PM10 is one of the indicators for which the Coordinator-General has imposed a goal of 50 µg/m3 (over an averaging period of 24 hours) the project must aim to achieve under Imposed Condition 13(a).

These stations have been installed on-site as per AS/NZS 3850 1.1 following consultation with UNITY air quality professionals. The results are represented in the below figures.

It is noted that the results for TSP and PM10 are indicative only for the following periods:

- Mayne Yard East:
  - 3 November 2022
- Clapham Yard:
  - 16 November 2022
  - 30 November 2022

Two (2) of the DMPs (Mayne Yard East and Clapham Yard) experienced power failure. The power failures were associated with continuous overcast conditions ranging from 2 November to 3 November 2022 and 27 November to 30 November during wet weather periods.

This resulted in a lack of sufficient sun exposure and therefore less than 75% of data were collected over a 24-hour period during these days.

Since the most recent power failure, UNITY has relocated the DMP to within an area within Clapham Yard where there are no structures that might limit sun exposure of the solar panel.

- It is noted that whilst this new location has been vetted by the Project CAQP, it is within the Construction boundary (as opposed to the being on the edge of the works previously) and therefore closer to potential particulate sources and further away from residents.
- This is however the best available location considering the ongoing issues with power failure.

The date of relocation (16 November 2022) also did not record the minimum 75% of data during a 24-hour period. This is due to the DMP being relocated and switched back on in the new monitoring location at 10:05am. Therefore, all data recorded up until 10:05am is deemed invalid as it does not represent the air quality of the new monitoring location over a 24-hour period.

UNITY has also procured a larger power pack (larger panel and battery) which is to be delivered and installed by the supplier on 23 January 2022. Delivery has been delayed due to the suppliers Christmas shutdown and anticipated courier delays due to the power pack being classified as dangerous goods (batteries).

It is also noted that during the reporting period there were no complaints pertaining to air quality from the three-air sheds where the DMPs are located.

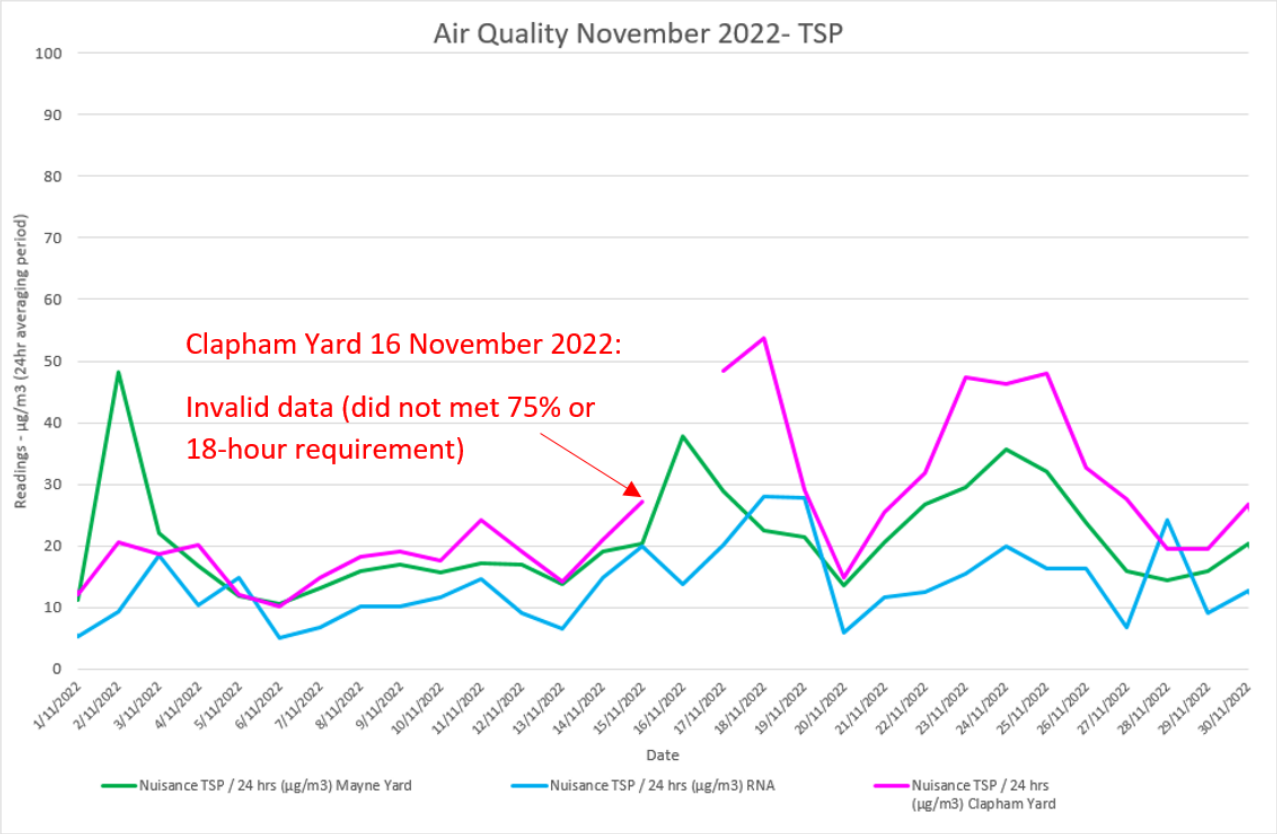


Figure 2 Air Quality Monitoring (TSP) Results

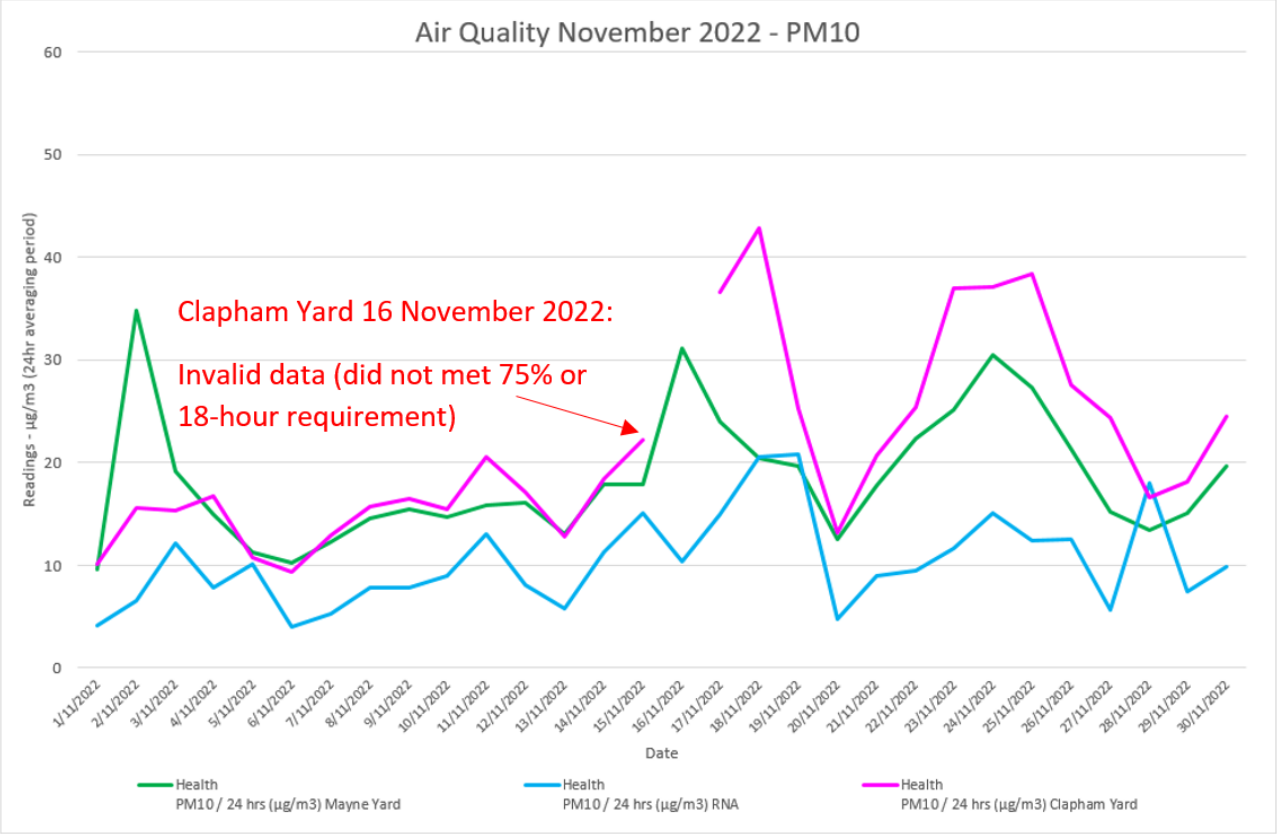


Figure 3 Air Quality Monitoring (PM10) Results

3.2.4 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 have 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-d92804e4d3a4b25c/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 was 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 12 months

Monitoring Device Installed by UNITY	Area	Date Installed	Date Decommissioned	Number of days data was captured over 365 days period	Data capture over an annual period	Annual performance reporting
TSP / PM_{10} Monitor	Northern Corridor (Eastern Air Shed)	23 April 2020	13 January 2021	260 over 365 days	71% over 365 days	*Indicative only* Data capture did not meet the minimum data capture requirements
TSP / PM_{10} Monitor	Mayne Yard North (Eastern Air Shed)	23 April 2020	11 May 2022	**Period 1** (to 23 April 2021) 358 over 365 days **Period 2** (24 April 2021 to 25 April 2022) 364 over 365 days **Period 3** (26 April 2022 to 11 May 2022) 3 days over 16 days	**Period 1** 98% over 365 days **Period 2** 99% Over 365 days **Period 3** 17% Over 17 days	**Applicable for Period 1** Data capture met minimum data capture requirements **Applicable for Period 2** Data capture has met minimum data capture requirements **Applicable for Period 3** Data capture has not met minimum data capture requirements
TSP / PM_{10} Monitor	Mayne Yard East (Eastern Air Shed)	26 August 2022	Not yet decommissioned	**Period 1** (Started 26 August 2022) 95 over 97 days	**Period 1** 98% Over 97 days	**Applicable for Period 1** Data capture has not yet met minimum data capture requirements
TSP / PM_{10} Monitor	RNA (Western Air Shed)	11 June 2020	Not yet decommissioned	**Period 1** (to 11 June 2021) 314 over 365 days **Period 2** (12 June 2021 to 12 June 2022) 290 over 365 days **Period 3** (Started 13 June 2022) 123 over 171 days	**Period 1** 86% over 365 days **Period 2** 79% Over 365 days **Period 3** 72% Over 171 days	**Applicable for Period 1** Data capture met minimum data capture requirements **Applicable for Period 2** Data capture met minimum data capture requirements **Period 3** Data capture has not yet met minimum data capture requirements

Monitoring Device Installed by UNITY	Area	Date Installed	Date Decommissioned	Number of days data was captured over 365 days period	Data capture over an annual period	Annual performance reporting
TSP / PM_{10} Monitor	Clapham Yard (Eastern Air Shed)	1 February 2021	Not yet decommissioned	**Period 1** (to 31 January 2022) 326 over 364 days **Period 2** (01 February 2022 to 16 November 2022) 174 over 287 days **Period 3** (started 16 November 2022) 13 over 14 days	**Period 1** 90% over 364 days **Period 2** 61% Over 287 days **Period 3** 93% over 14 days	**Applicable for Period 1** Data capture met minimum data capture requirements **Applicable for Period 2** Data capture has not met the minimum data capture requirements **Period 3** Data capture has not yet met minimum data capture requirements

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	Period	Northern Corridor	Mayne Yard North	Mayne Yard East	RNA	Clapham Yard
TSP	90 µg/m^3	Period 1	*8 µg/m^3*	11 µg/m^3	Not yet applicable	18 µg/m^3	8 µg/m^3
		Period 2	-	10 µg/m^3	-	15 µg/m^3	*11 µg/m^3*
		Period 3	-	Not applicable	-	Not yet applicable	Not yet applicable
PM_{10}	25 µg/m^3	*Period 1*	*5 µg/m^3*	7 µg/m^3	Not yet applicable	11 µg/m^3	5 µg/m^3
		Period 2	-	7 µg/m^3	-	10 µg/m^3	*9 µg/m^3*
		Period 3	-	Not yet applicable	-	Not yet applicable	Not yet applicable

**Italicised results are indicative only*

3.2.4.1 Particulates Results

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

TSP is one of the indicators for which the Coordinator General has imposed a goal of 80µg/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 50µg/m^3 (over an averaging period of 24 hours) the project must aim to achieve under Imposed Condition 13(a).

These stations have been installed on-site as per AS/NZS 3850 1.1 following consultation with UNITY Certified Air Quality Professionals (CAQP).

During the reporting period:

- None of the particulate results exceeded their relevant goals for TSP and PM10
- There were no complaints received associated with air quality concerns during the reporting period for the sites of Mayne Yard, RNA and Clapham Yard.

3.3 Water Quality

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

Imposed 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*.

Imposed 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 Imposed Condition 15(a) was not triggered during the reporting period. There were no groundwater discharges during the reporting period.

Water quality monitoring to demonstrate compliance with Condition 15(b) and Condition 18 was triggered during the reporting period. Post rainfall response monitoring and dewatering monitoring were undertaken.

3.3.1 Rainfall Records

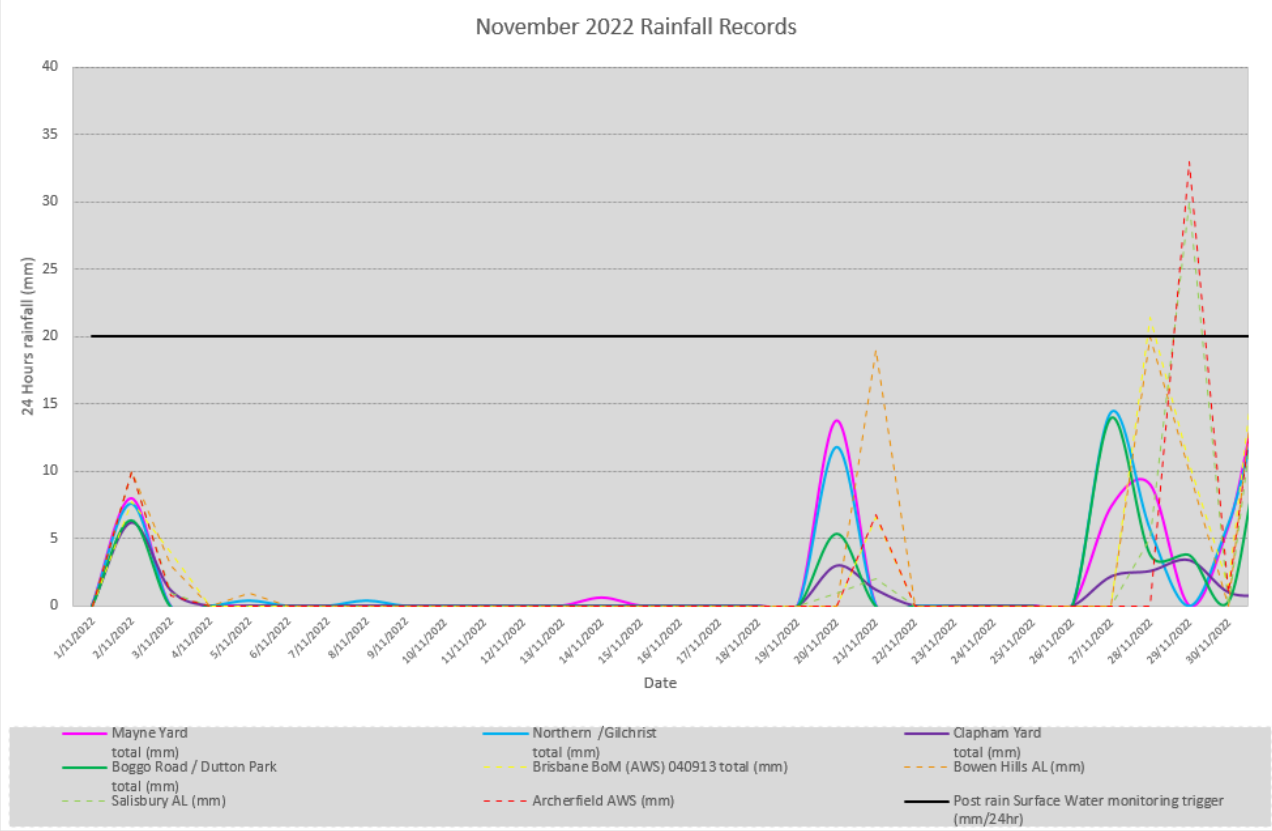


Figure 6: November 2022 Rainfall Records

3.3.2 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 of a higher intensity may cause run-off which would also trigger post-rain monitoring consistent with the C-EMP.

Post rainfall monitoring was triggered as per Condition 15(b) and Condition 18.

Table 10 Surface Water Post Rainfall Monitoring Results

Date	Location	Waterway	Tide	Discharge Criteria[2]				TSS Delta
				Turbidity (NTU) Nil until Turbidity / TSS correlation achieved[3]	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	change of 5mg/L or 10% increase (whichever is the greatest)
21/11/22	SW-1 (Upstream)	Breakfast Creek	Ebb tide	Field: 20.6 Lab: 12.2	10	61	7.6	No
21/11/22	SW-2 (Midstream)	Breakfast Creek	Ebb tide	Field: 8.41 Lab: 5.5	6	34	8.0	
21/11/22	SW-3 (Downstream)	Breakfast Creek	Ebb tide	Field: 9.6 Lab: 13.1	17	5	7.4	
28/11/22	SW-1 (Downstream)	Breakfast Creek	Ebb tide	Field: 49.3 Lab: 24.6	25	70	7.6	Yes Refer to section 3.3.2.1 for details
28/11/22	SW-2 (Midstream)	Breakfast Creek	Ebb tide	Field: 22.1 Lab: 15.9	20	55	7.2	
28/11/22	SW-3 (Upstream)	Breakfast Creek	Ebb tide	Field: 16.2 Lab: 14.2	16	61	7.3	
29/11/22	SW-5 (Upstream)	Moolabin Creek	N/A	Field: 19.9 Lab: 9.2	16	58	7.8	Yes Refer to section 3.3.2.1 for details
29/11/22	SW-6 (Midstream)	Moolabin Creek	N/A	Field: 7.9 Lab: 7.2	17	53	7.0	
29/11/22	SW-6a (Downstream)	Moolabin Creek	N/A	Field: 43.0 Lab: 39.4	48	55	6.7	
29/11/22	SW-7a (Upstream)	Rocky Water Holes Creek	N/A	Field: 27.4 Lab: 25.8	22	86	7.4	Yes Refer to section 3.3.2.1 for details
29/11/22	SW-7 (Downstream)	Rocky Water Holes Creek	N/A	Field: 39.9 Lab: 41.0	34	70	6.9	
29/11/22	SW-8 (Downstream)	Rocky Water Holes Creek	N/A	Field: 43.2 Lab: 38.2	34	55	6.7	
29/11/22	SW-8a (Downstream)	Rocky Water Holes Creek	N/A	Field: 43.3 Lab: 41.6	34	46	6.9	

3.3.2.1 Post Rainfall Monitoring Results Interpretation

The post rainfall monitoring event identified that water quality was visually more turbid throughout the systems at all monitoring locations.

Where in situ monitoring was carried out, in three (3) instances, downstream water quality data exhibited changes of >5mg/L or 10% increase for TSS or 10% for turbidity.

However, all increases in TSS were below the off-site discharge limit for the relevant receiving waters. Therefore, compliance with Imposed Conditions 15 and 18 were met

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

[3] 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 discharges 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.

3.3.3 Routine Surface Water Monitoring Results

During the reporting period, UNITY did not undertake routine surface water quality monitoring.

A review of the data sample has identified that over 12 months of continuous data collection has occurred with over 20 monitoring events. The frequency of background monitoring has therefore been reduced to bi-annually, with the dry season monitoring completed in June 2022.

Wet season (September to March) monitoring will be required to occur prior to March 2023.

This reduction of monitoring frequency is acceptable to continue informing the Dis-1 Credit for the ISCA 'Excellent Rating' the Project is pursuing.

3.3.4 Groundwater Discharge Monitoring Results

Groundwater discharge monitoring was not triggered during the reporting period.

3.3.5 Surface Water Discharge Monitoring

Surface water discharge monitoring was not triggered during the reporting period.

4 Compliance Review

4.1 Non-Compliance Events

The below section summarises the events to be reported in accordance with Imposed Condition 5 and Imposed Condition 6(b)(ii). 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
N/A for reporting period					

4.2 C-EMP Compliance

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

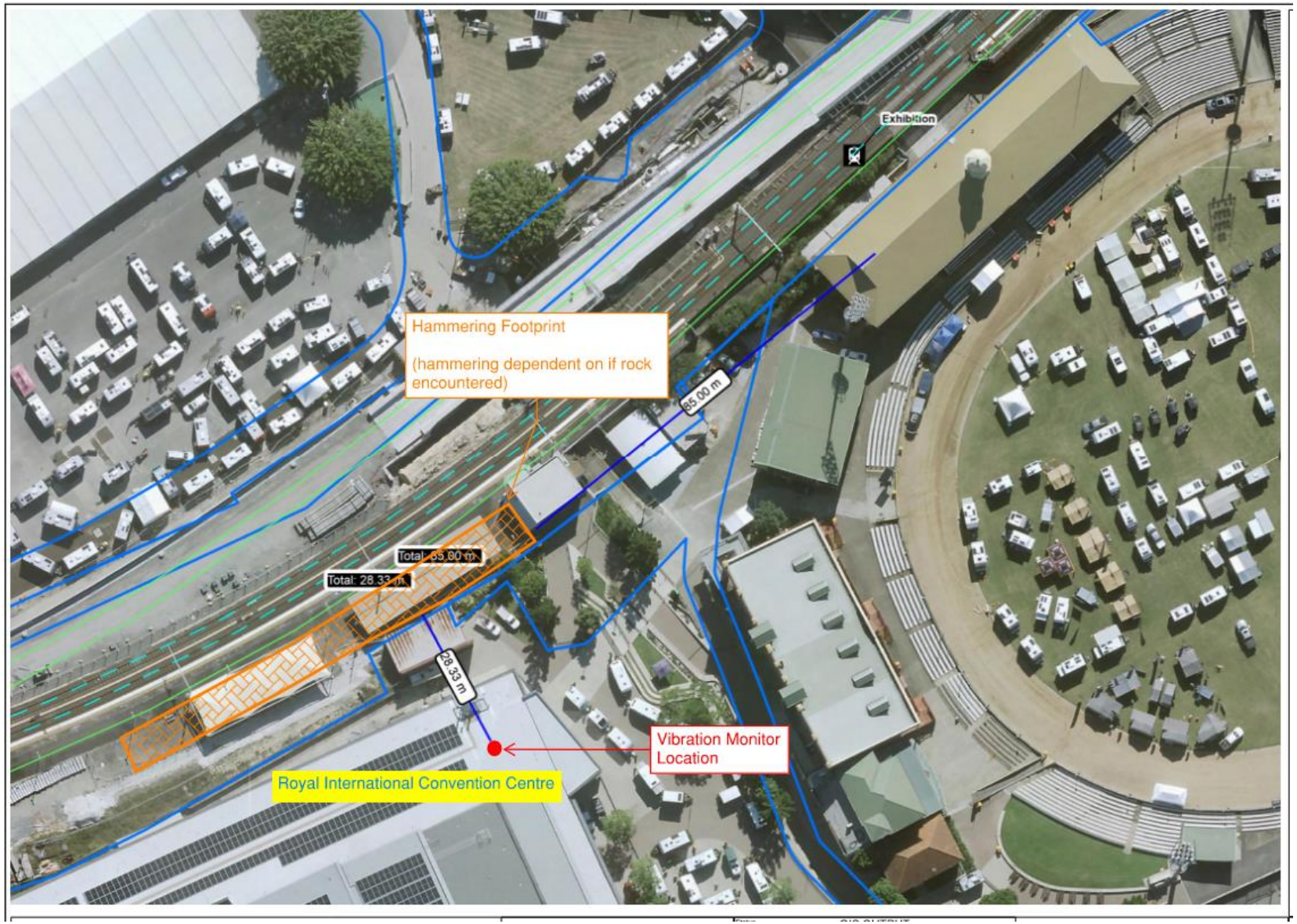
Table 12 C-EMP and relevant Subplans monitoring requirements – Compliance Status for the reporting period

Aspect	Monitoring requirement	Activities risk profile	Monitoring undertaken	Compliance status with C-EMP / 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 is undertaken as part of routine inspections. Monitoring for TSP, PM_{10}, and deposited dust was also undertaken TSP, PM_{10} monitoring was carried out for three active Worksites	Compliant Compliant Compliant	Not Applicable
Air Quality	Complaint's response	Moderate to High	No – not triggered	N/A	Not Applicable
Noise	Buffer distance tests based on the outcomes of the predictive assessment based / risk profile of activities	Moderate to High	Yes – monitoring triggered for out of hours works	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	Complaint's response	Moderate to High	Yes – monitoring triggered for one complaint	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 – monitoring triggered for RNA Stage 2 rock breaking	Compliant	Not Applicable
Vibration	Complaint's response	Moderate to High	Not triggered No complaints	N/A	Not Applicable
Water Quality	Bi-Annual monitoring	N/A	Wet season monitoring completed in January 2022 Dry Season monitoring completed in June 2022	Compliant	Not Applicable

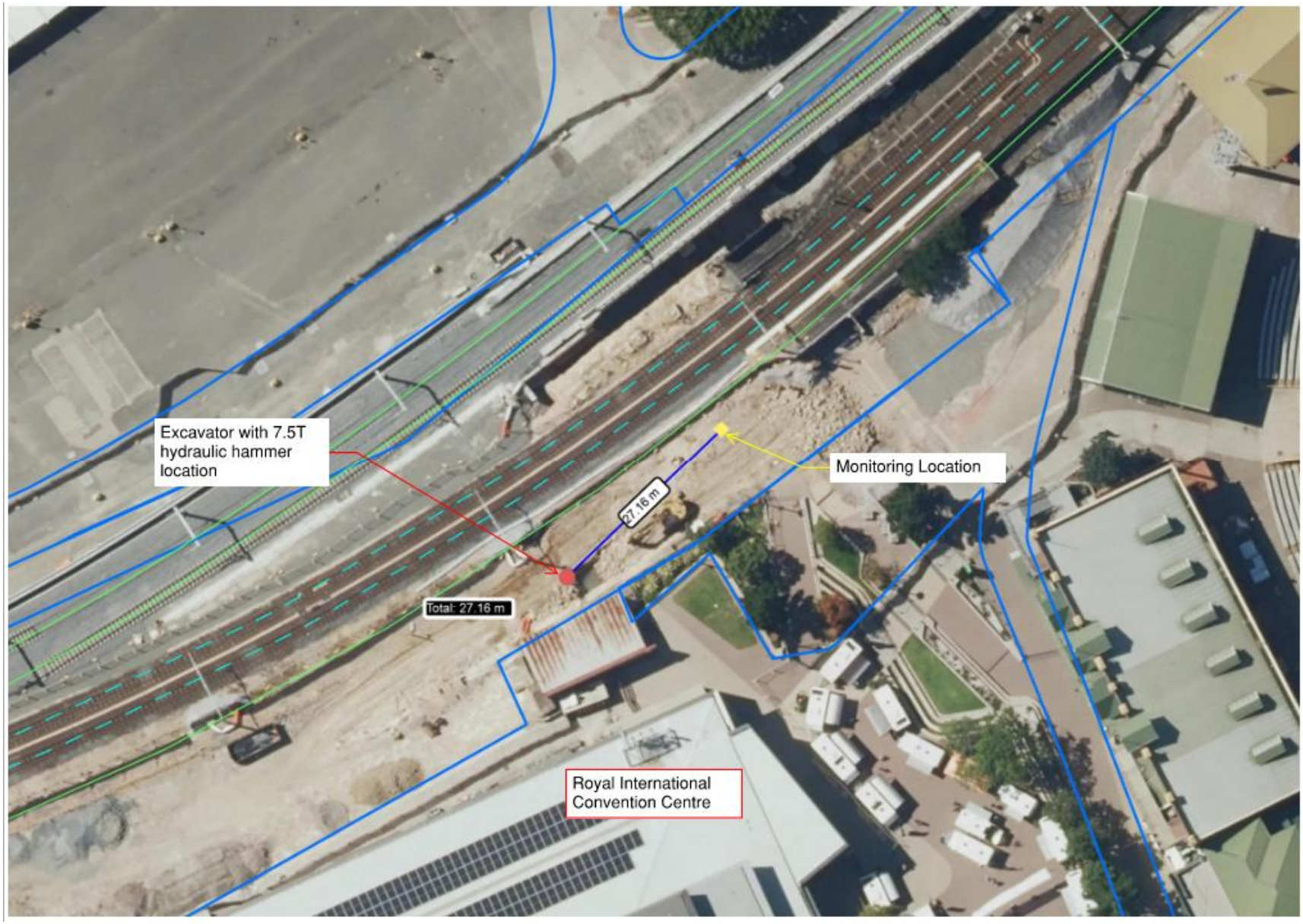
Aspect	Monitoring requirement	Activities risk profile	Monitoring undertaken	Compliance status with C-EMP / Subplan	Effect of the non-compliance
Water Quality	Post Rainfall	Moderate to High	Yes – three monitoring events (total of 9 locations) undertaken 21, 28 & 29 November 2022	Compliant	Not Applicable
Water Quality	Dewatering	Moderate to High	Yes – one discharge event during reporting period	Compliant	Not Applicable

Attachment 1 Imposed Conditions Non-Compliance Event Report (if required)

Attachment 2 Monitoring Locations – Noise and Vibration


Exhibition
Hammering Footprint
(hammering dependent on if rock encountered)
85.00 m
Total: 85.00 m
Total: 28.33 m
28.33 m
Vibration Monitor Location
Royal International Convention Centre

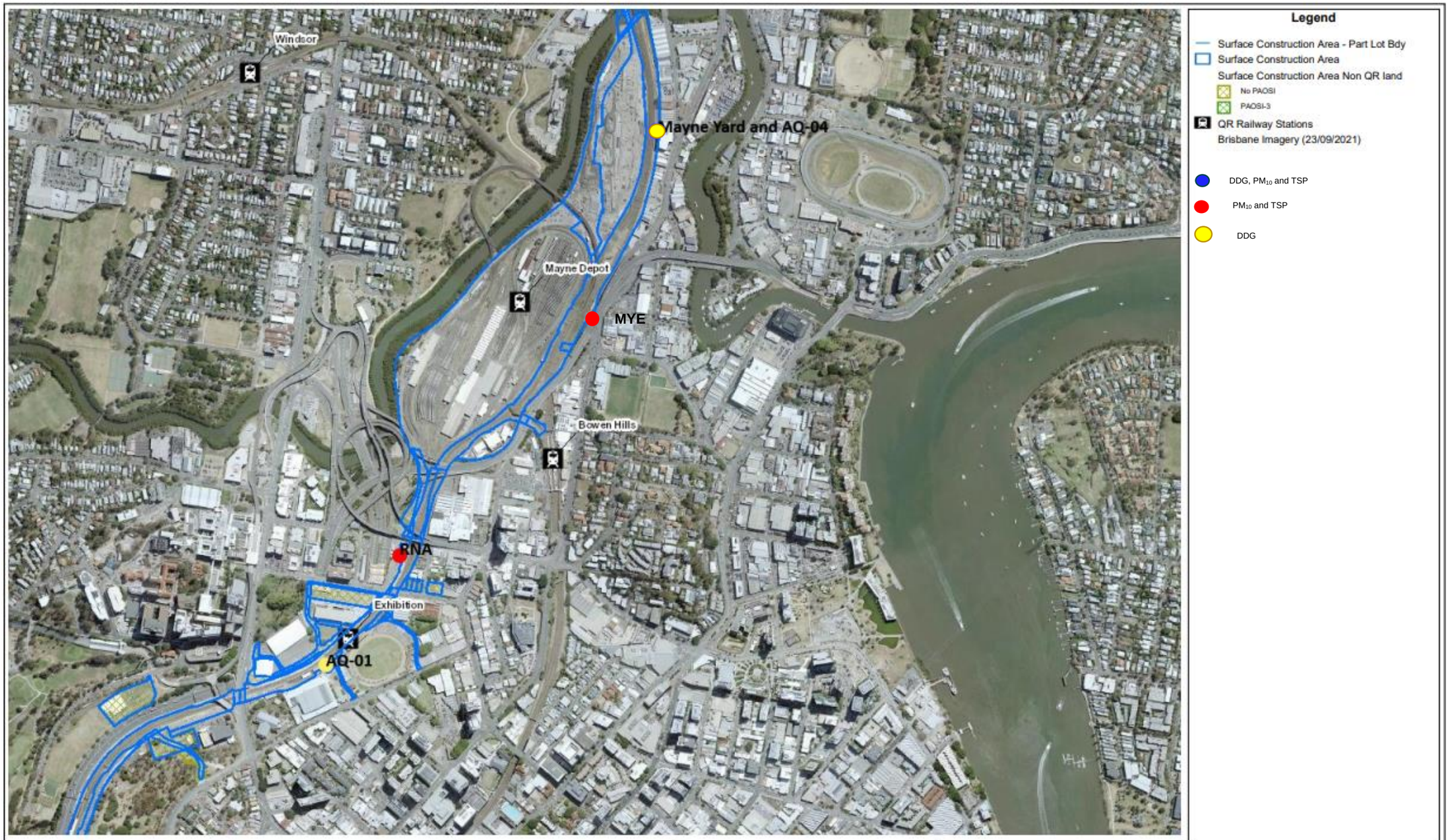

Annerly Road
Total: 24.99 m
24.99 m
Excavator Location
Cope Street
Monitoring Location


Excavator with 7.5T hydraulic hammer location
Monitoring Location
27.16 m
Total: 27.16 m
Royal International Convention Centre


piling rig
Total: 28.99 m
Total: 15.40 m
15.40 m
28.99 m
monitor
agi and line pump


Vac Truck
8.46 m
13.49 m
Total: 8.46 m
10 Cope St - Monitoring Lo

Attachment 3 Monitoring Locations – Air Quality



A FOR INFORMATION

Issue	Description	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	9-Feb-2022

Assured Integration for a New Era

Cross River Rail - RIS Alliance

Air Quality Monitoring

Legend

210 - Alignment Lines
- Centre Line
- Chainage Symbol
- Centre Line - Cleveland
- Centre Line - Cleveland Proposed
- Centre Line - Dual Gauge Proposed
- Centre Line - Dual Gauge
- Centre Line - Fisher Proposed
- Centre Line - Freight
- Centre Line - Freight Proposed
- Sub_CRR_UP_CL; Sub_UP_CRR_CL
- Sub_UP_CRR_CL_Mainline
- Track - Centreline - Dual Gauge
- Track - Centreline - Narrow Gauge
- Track - Centreline Dual Gauge New
- Track - Centreline Existing
- Track - Centreline Proposed
- Track - Centreline To Be Removed
- Centre Line - Turnout Above
- Centre Line - Turnout Proposed
- Centre Line - Sub CRR Existing

Surface Construction Area - Part Lot Bdy
Surface Construction Area
QR Railway Stations
Brisbane Imagery (12/07/2022)

DDG
DDG, PM_{10} and TSP
PM_{10} and TSP

Issue	Description	Date	Approved
A	FOR INFORMATION		
	Dutton Park		

Scale 1: 1,606

82 0 40.8 82 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	19-Sep-2022

UNITY
Assured Integration for a New Era

Cross River Rail - RIS Alliance

Air Quality Monitoring

Dutton Park

Legend

- Surface Construction Area - Part Lot Bdy
- Surface Construction Area
- Surface Construction Area Non QR land
- No PAOSI
- PAOSI-3
- QR Railway Stations
- Brisbane Imagery (23/09/2021)
- DDG
- DDG, PM10 and TSP
- PM10 and TSP

Issue	Description	Date	Approved
A	FOR INFORMATION		

Scale 1: 6,865

349 0 174.4 349 Meters

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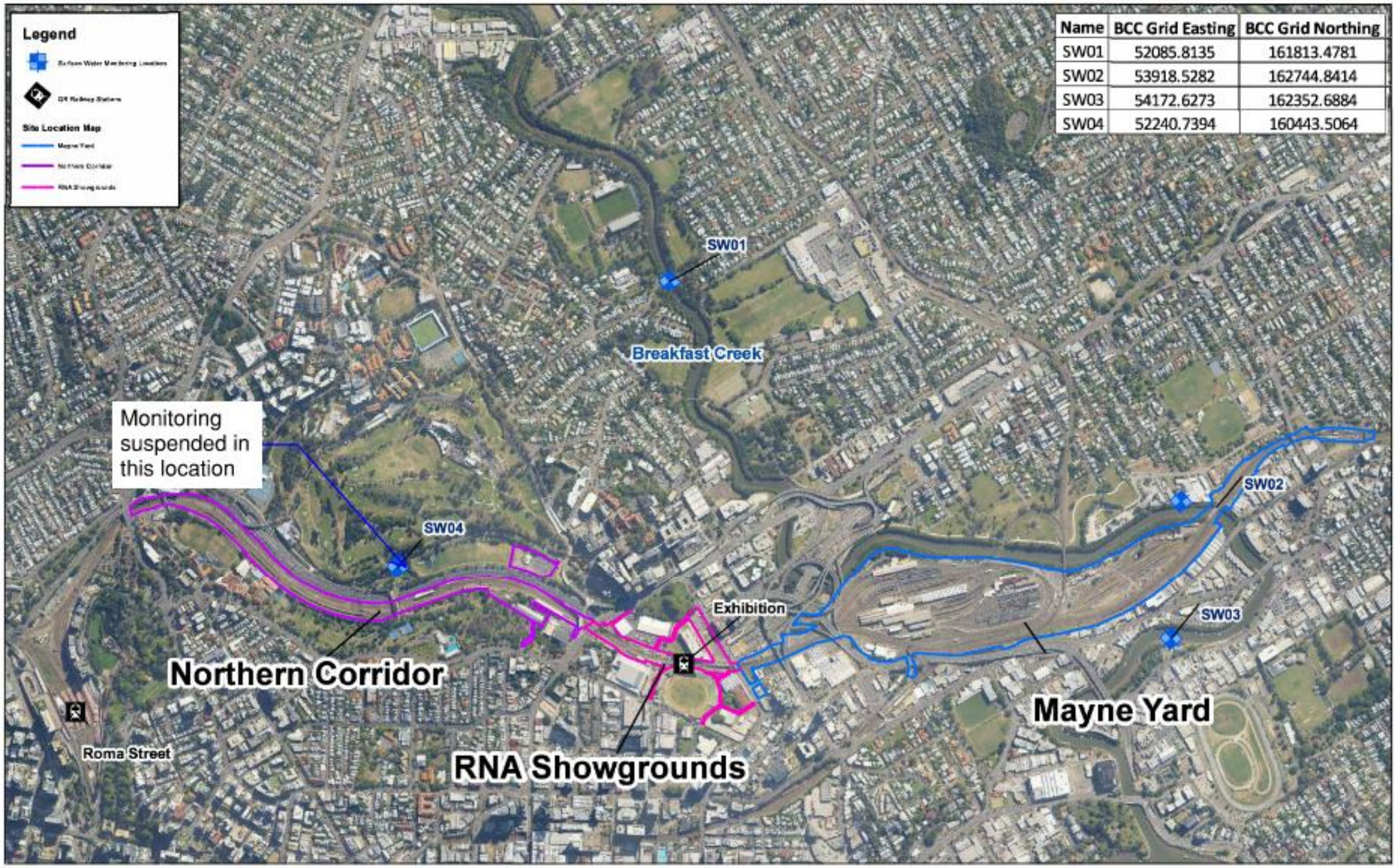
Original Size	A3	Drawn	
Coordinate System	GDA MGA94-56	Designed	
Height Datum	AHD	Date Printed	9-Feb-2022

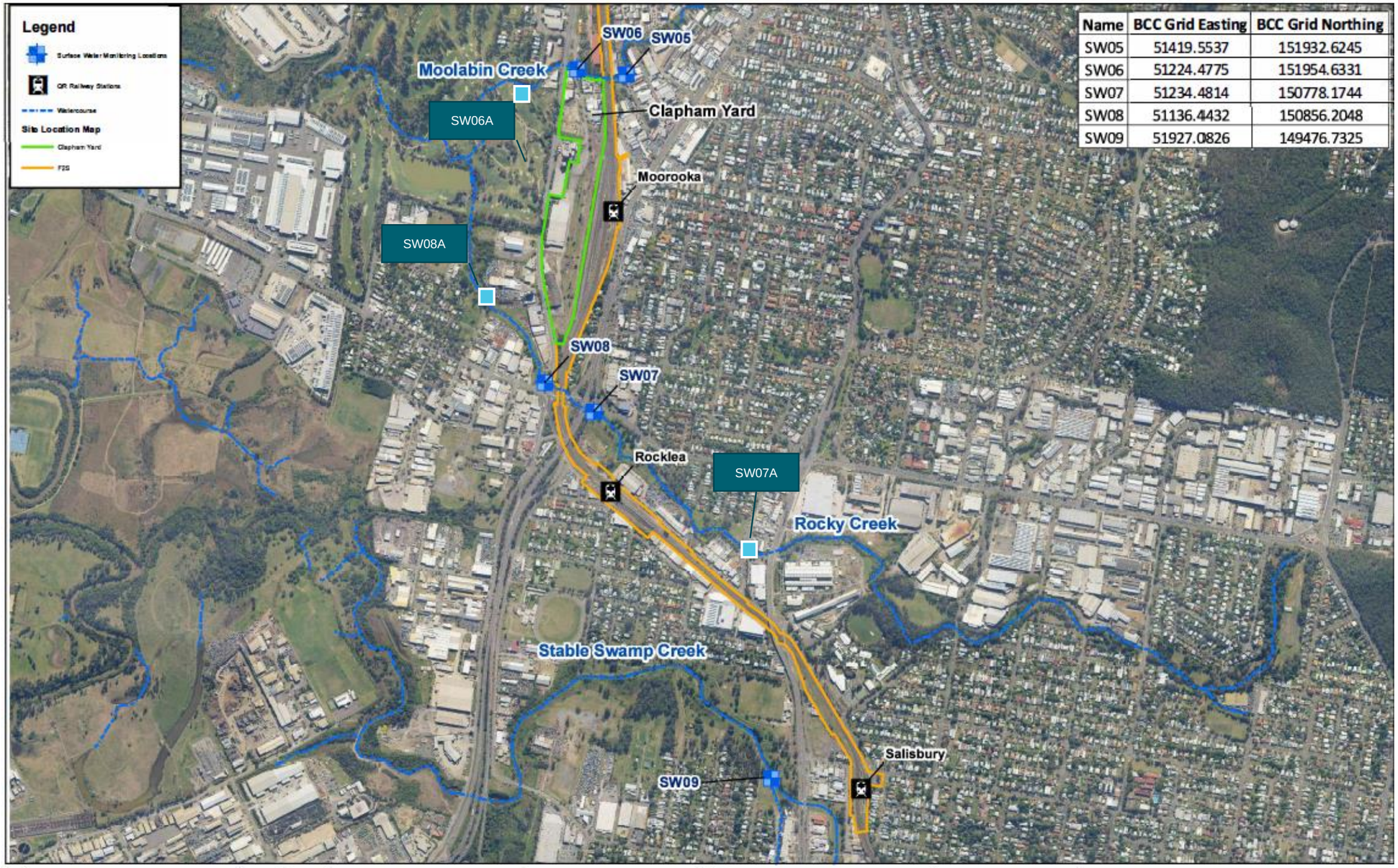
Assured Integration for a New Era

Cross River Rail - RIS Alliance

Air Quality Monitoring

Attachment 4 Monitoring Locations – Surface Water


Legend
Site Location Map
Mayne Yard
Northern Corridor
RNA Showgrounds
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
SW01
Breakfast Creek
Monitoring suspended in this location
SW04
SW02
Exhibition
SW03
Northern Corridor
Roma Street
RNA Showgrounds
Mayne Yard
0 100 200 400 600 m
Scale 1 : 12,000 cm
Status
Issued for Information
Original Size A3
Drawn GIS
Coordinate System GDA 1994 BCSC07
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 ENV
Document PL
Document Number 002
Rev 1
1 Overview Map 1/08/2019 UNITY
Rev Description Date Approved


Legend
Surface Water Monitoring Locations
QR Railway Stations
Watercourse
Site Location Map
Clapham Yard
FDS
SW06
SW05
Moolabin Creek
SW06A
Clapham Yard
Moorooka
SW08A
SW08
SW07
Rocklea
SW07A
Rocky Creek
Stable Swamp Creek
Salisbury
SW09
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
0 100 200 400 600 m
Scale 1 : 12,000 cm
1 | Southern Overview Map | 17/09/2019 | Unity
Rev | Description | Date | Approved
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

Appendix B TSD Monthly Report

COORDINATOR-GENERAL'S MONTHLY REPORT: November 2022

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.

Noise monitoring was conducted on two (2) occasions during November 2022. Nil vibration monitoring was required during the month of November 2022. Each noise monitoring event that was undertaken 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 November 2022. Air quality monitoring confirmed works adhered to project requirements.

Water quality monitoring was conducted before the release of water from the site on thirty (30) occasions. Each monitoring event confirmed project requirements were adhered to. Two (2) rounds of surface water quality monitoring were conducted; the 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 10).
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.
22.	**Flood Water –** Temporary emission to allow the release of Flood Waters to high flow receiving waters.	Yes	CBGU project works have been conducted in accordance with the provisions available to manage floodwaters.

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 Reports acknowledges instances that exist that these goals may not be achieved.

During November there were no new (vibration-generating) construction activities or changes in construction methodologies. As such, no vibration monitoring was performed.

Table 2: Vibration Monitoring Data

No.	Start Date	Time (AM/PM)	Finish Date	Location	Average Vibration level (mm/s)	Max Vibration Level (mm/s)	Vibration Goal (mm/s)	Receiver / Goal Type	Adhered to Project Requirements (Yes / No)
Nil									

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 two (2) occasions during November 2022. 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	Noise Goal LAeq[2]	Noise level LAeq	Adhered to Project Requirements (Yes / No)
1.	8/11/2022	12:05:00 AM	Roma Street (Roma Street Precinct)	Model Verification	External	Structural Reinforcement	Construction and Road Traffic	54	67.8	49	65.2	Yes
2.	25/11/2022	10:56:00 PM	Albert Street (Albert Street Precinct)	Model Verification	External	Public Utilities Relocation [3]	Construction	59	82.6	52	78.1	Yes

- *[1] Intermittent noise goal (LA10)*
- *[2] Continuous noise goal (LAeq)*
- *[3] Works performed in accordance with imposed condition 11(d) and the road authorities permit.*
- *Note: 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.*

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 that exist that these goals may not be achieved. Dust deposition monitoring was performed in November 2022. The dust deposition gauges result for the reporting period are detailed below, and all monitoring data adhered to project requirements.

Table 4.2: 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	35.48	*Air quality monitoring was performed during the reporting period. All results adhered to project requirements.*
Roma Street Precinct				13.33	
Albert Street Precinct (North)				22.58	
Albert Street Precinct (South)				12.90	
Woolloongabba Precinct (North)				19.35	
Woolloongabba Precinct (South)				38.71	
Boggo Road Precinct (North)				18.75	
Boggo Road Precinct (South)				28.13	
Southern Portal (South)				18.75	
Southern Portal (East)				15.63	

3.3.2 Particulates and Ambient Air Quality Results

Total Suspended Particles (TSP) and particulate matter less than 10µm (PM10) monitoring were conducted during November 2022.

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 November 2022. 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[1]	PM10 Project Goal	Woolloongabba		Albert		Boggo Road		Northern Portal	
			TSP	PM 10	TSP	PM 10	TSP	PM 10	TSP	PM 10
	(µg/m3/24 hr)									
01-Nov-22	80	50	7.84	7.52	10.14	10.05	4.48	4.47	5.63	5.54
02-Nov-22	80	50	4.50	4.01	6.22	5.98	1.21	1.19	2.64	2.39
03-Nov-22	80	50	4.10	3.91	13.02	10.45	2.19	2.17	3.52	3.40
04-Nov-22	80	50	5.69	5.50	11.49	11.32	3.43	3.39	5.68	5.61
05-Nov-22	80	50	5.91	5.84	10.00	9.92	3.85	3.84	5.50	5.47
06-Nov-22	80	50	5.44	5.37	8.10	8.06	3.48	3.47	4.97	4.95
07-Nov-22	80	50	5.81	5.70	9.87	9.77	3.61	3.61	5.81	5.78
08-Nov-22	80	50	7.77	7.59	10.74	10.64	3.73	3.71	5.78	5.73
09-Nov-22	80	50	6.06	5.93	12.04	11.91	3.73	3.73	6.02	5.94
10-Nov-22	80	50	5.67	5.58	12.13	11.99	3.30	3.29	6.59	6.53
11-Nov-22	80	50	7.90	7.74	12.60	12.50	5.37	5.36	8.67	8.57
12-Nov-22	80	50	13.35	13.03	16.47	16.39	9.64	9.63	13.17	13.11
13-Nov-22	80	50	7.28	7.19	9.32	9.30	4.57	4.56	7.87	7.82
14-Nov-22	80	50	10.13	9.96	12.84	12.69	6.01	6.00	9.74	9.64
15-Nov-22	80	50	13.02	12.51	15.44	15.23	6.73	6.70	10.42	10.18
16-Nov-22	80	50	8.34	7.73	10.00	9.80	3.96	3.88	6.78	6.50
17-Nov-22	80	50	6.06	5.73	10.83	10.70	2.99	2.94	4.89	4.69
18-Nov-22	80	50	9.33	9.06	15.03	14.92	5.24	5.18	8.69	8.57

Date	TSP Project Goal[1]	PM10 Project Goal	Woolloongabba		Albert		Boggo Road		Northern Portal	
			TSP	PM 10	TSP	PM 10	TSP	PM 10	TSP	PM 10
	(µg/m3/24 hr)									
19-Nov-22	80	50	12.77	12.53	12.18	12.10	6.79	6.77	9.98	9.89
20-Nov-22	80	50	13.93	13.73	15.02	14.95	9.51	9.48	11.76	11.66
21-Nov-22	80	50	11.09	10.56	12.41	12.24	5.71	5.67	7.87	7.61
22-Nov-22	80	50	6.33	5.78	9.71	9.48	2.62	2.56	4.91	4.63
23-Nov-22	80	50	11.08	10.27	12.39	12.18	5.41	5.36	8.11	7.71
24-Nov-22	80	50	11.93	11.24	15.08	14.88	6.48	6.44	10.99	10.66
25-Nov-22	80	50	15.29	14.57	16.23	16.04	9.10	9.06	13.38	13.09
26-Nov-22	80	50	13.30	12.86	15.62	15.48	8.14	8.12	12.39	12.18
27-Nov-22	80	50	12.81	12.70	14.28	14.24	8.30	8.28	11.20	11.15
28-Nov-22	80	50	9.65	9.44	14.21	14.14	6.35	6.34	9.49	9.38
29-Nov-22	80	50	15.12	14.97	18.89	18.83	10.52	10.51	14.89	14.81
30-Nov-22	80	50	12.65	12.53	20.52	20.44	7.39	7.37	12.35	12.29

- [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.

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

- Brisbane CBD: PM10 daily Maximum average: **26.8 µg/m3/24 hr** (https://apps.des.qld.gov.au/air-quality/chart/?station=cbd&parameter=18&date=1/11/2022&timeframe=month)
- South Brisbane: PM10 daily Maximum average: **28.4 µg/m3/24 hr** (https://apps.des.qld.gov.au/air-quality/chart/?station=sbr&parameter=18&date=1/11/2022&timeframe=month)
- Woolloongabba: PM10 daily Maximum average: **111.3 µg/m3/24 hr** (https://apps.des.qld.gov.au/air-quality/chart/?station=woo&parameter=18&date=1/11/2022&timeframe=month).

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

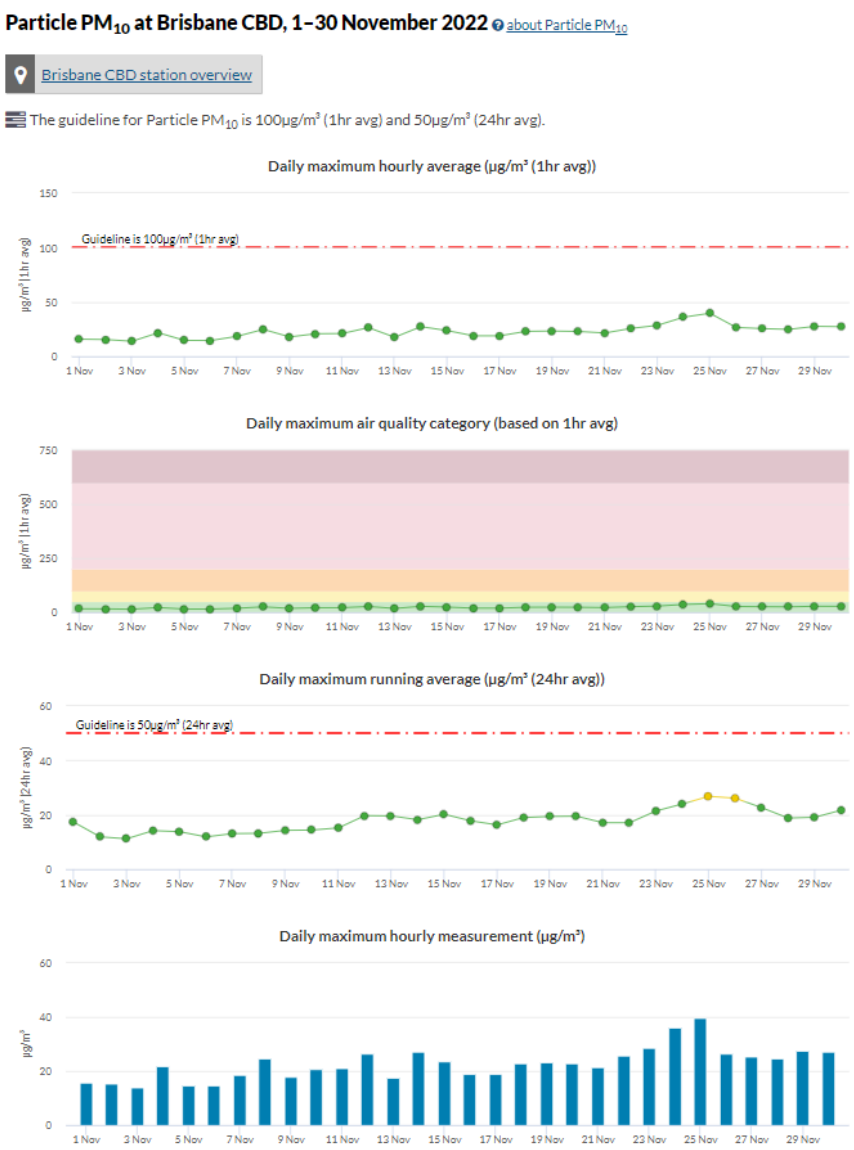


Figure 1: Brisbane CBD – DES Station - PM10 graph for November 2022 (reproduction from the DES website).

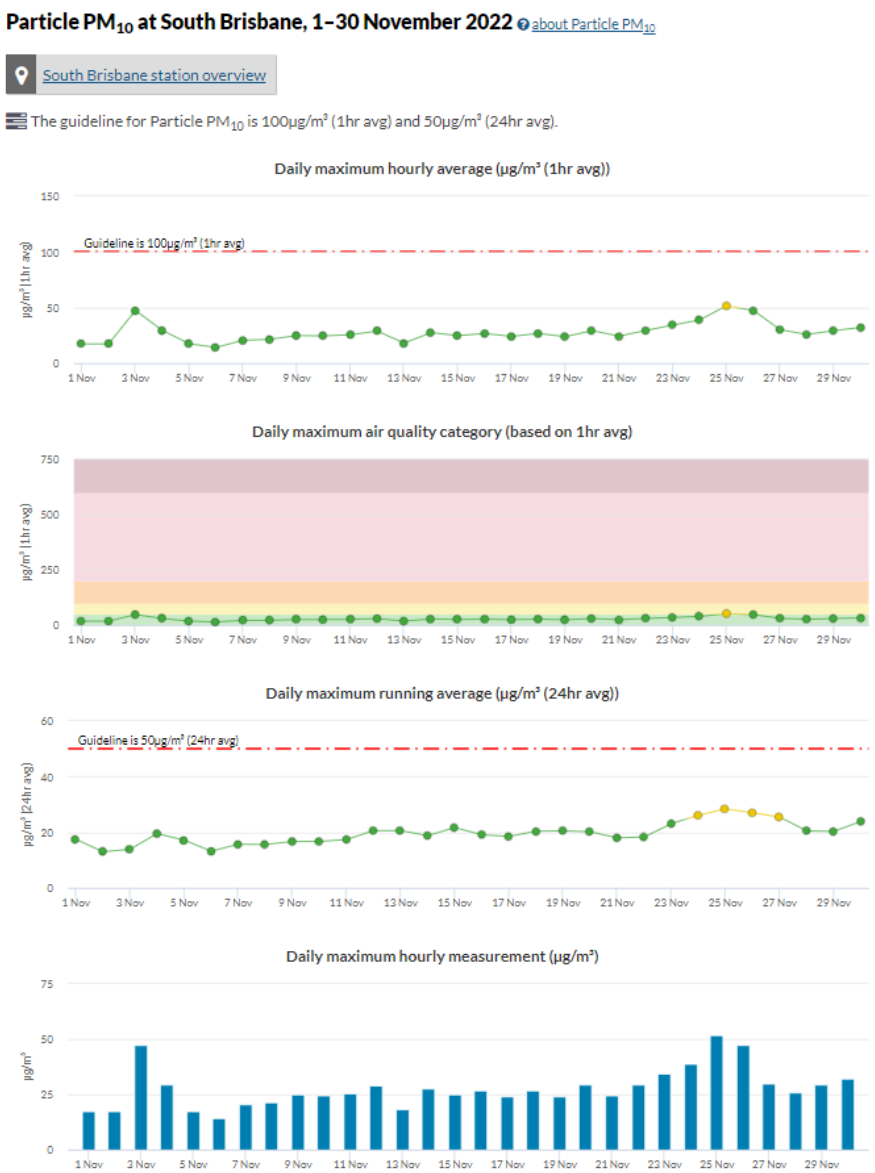


Figure 2: South Brisbane – DES Station - PM10 graph for November 2022 (reproduction from the DES website).

Figure 3: Woolloongabba – DES Station - PM10 graph for November 2022 (reproduction from the DES website).

3.4 Water Quality – Discharge

CBGU undertook four (4) water quality monitoring events prior to the release (groundwater and surface water) from the site.

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) [4]	Total phosphorus (µg/L)	Filterable Reactive phosphorus (FRP) (µg/L)	Chlorophyll a (µg/L)	Dissolved oxygen (%) [2]	
Roma Street	11/11/2022	7.79	<1	0.87	220	460	300	1000	20	<10	<5	92.44	Yes
Albert Street	14/11/2022	7.70	<5	1.21	50	550	800	1400	100	<10	<1	99.60	Yes
Boggo Road	14/11/2022	8.00	<5	2.20	10	710.00	400	1200	20	<10	5	100.46	Yes
Woolloongabba	15/11/2022	7.91	<5	3.40	170	700	600	1500	30	<10	<1	103.52	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] All results adhere to project requirements in that site practices are designed to aim to achieve the water quality objectives. 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] All results adhere to project requirements in that site practices aim to achieve the water quality objectives. These samples identified results generally consistent with pre-construction conditions, and no external influences were introduced by construction activity.
- [4] Total nitrogen levels adhered to project requirements in that site practices are designed to aim to achieve the water quality objectives. The results are mostly below that of the receiving environment. They are also considered abnormal compared to results from previous months, and are influenced by external factors (e.g., high rainfall events, overloaded sewage systems, fertilising natural areas, etc) rather than related to construction activities.
- 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

Discharged ponded/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.	Northern Portal	1/11/2022	8.25	1.20	Yes
2.	Northern Portal	2/11/2022	8.27	0.92	Yes
3.	Southern Portal	3/11/2022	7.52	32.10	Yes
4.	Northern Portal	3/11/2022	8.25	1.10	Yes
5.	Southern Portal	4/11/2022	7.91	39.90	Yes
6.	Northern Portal	4/11/2022	8.26	1.14	Yes
7.	Northern Portal	5/11/2022	8.31	2.47	Yes
8.	Northern Portal	7/11/2022	8.31	0.80	Yes
9.	Northern Portal	8/11/2022	8.22	2.17	Yes
10.	Northern Portal	9/11/2022	8.28	3.20	Yes
11.	Northern Portal	11/11/2022	8.30	1.62	Yes
12.	Northern Portal	12/11/2022	6.90	1.10	Yes
13.	Northern Portal	14/11/2022	7.40	1.33	Yes
14.	Northern Portal	15/11/2022	7.40	1.29	Yes
15.	Northern Portal	16/11/2022	7.40	1.22	Yes

16.	Northern Portal	17/11/2022	7.40	1.31	Yes
17.	Northern Portal	18/11/2022	7.40	1.30	Yes
18.	Northern Portal	19/11/2022	7.50	1.41	Yes
19.	Southern Portal	21/11/2022	7.42	35.70	Yes
20.	Northern Portal	21/11/2022	7.50	1.40	Yes
21.	Northern Portal	22/11/2022	7.80	1.38	Yes
22.	Northern Portal	23/11/2022	7.60	1.55	Yes
23.	Northern Portal	24/11/2022	7.50	1.69	Yes
24.	Northern Portal	25/11/2022	7.60	2.01	Yes
25.	Northern Portal	26/11/2022	7.60	1.93	Yes
26.	Southern Portal	28/11/2022	8.01	37.20	Yes
27.	Northern Portal	28/11/2022	7.50	1.91	Yes
28.	Southern Portal	29/11/2022	7.93	35.70	Yes
29.	Northern Portal	29/11/2022	7.60	12.02	Yes
30.	Northern Portal	30/11/2022	8.07	7.87	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 November 2022, CBGU JV undertook two (2) rounds of surface water sampling at five (5) site locations (upstream and downstream). A rain event that occurred on 23rd November 2022 triggered post-rainfall sampling at all precincts.

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 also 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
Albert Street	Upstream	9/11/2022	Monthly	4.41	35200	84.73	7.8
Albert Street	Downstream	9/11/2022	Monthly	4.77	38600	90.27	7.82
Woolloongabba	Upstream	9/11/2022	Monthly	11.23	35800	93.79	7.84
Woolloongabba	Downstream	9/11/2022	Monthly	9.34	25600	92.54	7.83
Boggo Road[1]	Downstream	9/11/2022	Monthly	5.82	6610	56.51	7.17
Roma Street	Upstream	11/11/2022	Monthly	3.41	30200	82.45	7.82
Roma Street	Downstream	11/11/2022	Monthly	12.45	26400	78.09	7.78
Northern Portal	Upstream	14/11/2022	Monthly	2.36	1140	186.99	9.13
Northern Portal	Downstream	14/11/2022	Monthly	10.67	895	148.96	8.88
Albert Street	Upstream	28/11/2022	Post Rainfall	3.55	-[2]	-[2]	7.55
Albert Street	Downstream	28/11/2022	Post Rainfall	3.74	-[2]	-[2]	7.63
Woolloongabba	Upstream	28/11/2022	Post Rainfall	5.26	-[2]	-[2]	7.7

Location	Upstream / Downstream	Date	Purpose of Monitoring	Turbidity (NTU)	EC (µS/cm)	Dissolved oxygen (%)	pH
Woolloongabba	Downstream	28/11/2022	Post Rainfall	5.64	-[2]	-[2]	7.76
Boggo Road[1]	Downstream	28/11/2022	Post Rainfall	24.6	-[2]	-[2]	6.97
Roma Street	Upstream	28/11/2022	Post Rainfall	4.78	-[2]	-[2]	7.91
Roma Street	Downstream	28/11/2022	Post Rainfall	9.71	-[2]	-[2]	8.02
Northern Portal	Upstream	28/11/2022	Post Rainfall	19.25	-[2]	-[2]	8.25
Northern Portal	Downstream	28/11/2022	Post Rainfall	43.1	-[2]	-[2]	8.17

- [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.
- [2] At the time of reporting, these results had not been received from the laboratory. The results will be included in next month's report.

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 this Month

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					

5 Complaints

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

During November 2022, nil 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
Nil					