

The background of the entire page is a detailed, light blue map of the Cross River area. The map shows a complex network of streets, including major thoroughfares and local roads, as well as several large bodies of water, likely reservoirs or lakes, interspersed among the urban areas. The map is rendered in a monochromatic blue color scheme, providing a geographical context for the project.

Cross River Rail Project

Monthly Environmental Report

February 2022

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Executive Summary

This Monthly Environmental Report (MER) has been produced for Project Works undertaken on site for February 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. 12 (January 2022)* and the individual contractor's Construction Environmental Management Plans (CEMPs) which have been developed generally in accordance with the Project's Outline Environmental Management Plan (OEMP). The Cross River Rail Delivery Authority (Delivery Authority), as the Proponent of the Cross River Rail Project, is required to submit a monthly report to the Coordinator-General to demonstrate compliance with the imposed conditions.

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

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

The CEMPs prepared by both Unity Alliance (RIS Contractor) and CBUG 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 8 covering full scope of TSD works is effective from 9 June 2021.
5.	Compliance and Incident management – Non-compliance events, notifications and reporting.	Yes	There were no non-compliance events (NCEs) in February 2022. Refer to Section 2.5 of this report.

Imposed Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
6.	Reporting – Monthly and Annual reporting.	Yes	This MER, including RIS and TSD Monthly Reports, 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 modelling and confirmed that project requirements were met. Refer to Appendix A (Table 4 and Section 3.1.2). TSD – Noise monitoring was undertaken to validate predicted noise modelling and for stakeholder enquiries. 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 – There were no vibration sensitive activities that triggered vibration monitoring or required monitoring to validate predictive modelling. Refer to Appendix A (Table 5 and Section 3.1.4). TSD – Vibration monitoring was undertaken to validate predicted vibration modelling. The TSD contractor confirmed the monitoring results met project goals. Refer to Appendix B (Table 2 and Section 3.1).

Imposed Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
12.	Property damage – relating to ground movement.	Yes	<p>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 buildings at RNA, Northern Corridor and Fairfield to Salisbury stations.</p> <p>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 January.</p>
13.	Air quality – Works must aim to achieve air quality goals for human health and nuisance.	Yes	<p>Air quality monitoring met Project air quality goals.</p> <p>RIS – Refer to Appendix A (Tables 7, 8 and 9 and Section 3.2.1 and 3.2.2, and Figures 1, 2 and 3).</p> <p>TSD – Refer to Appendix B (Tables 4, 5 and 6 and Sections 3.3.1 and 3.3.2).</p>
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.	<p>Water quality – Works must not discharge groundwater from the construction site above the relevant environmental values and water quality objectives.</p> <p>Monitor and report on water quality in accordance with CEMP and Sub-plans.</p>	Yes	<p>Monitoring and reporting on groundwater and surface water quality was undertaken in accordance with RIS and TSD Water Quality Management Plans.</p> <p>RIS – No groundwater discharges occurred.</p> <p>Post-rainfall monitoring was triggered at Mayne Yard and Clapham Yard and erosion and sediment control (ESC) inspections were undertaken in accordance with site specific ESC Plans.</p> <p>Refer to Appendix A (Table 10 and 11 and Section 3.3.2 and 3.3.5) for results.</p> <p>TSD – Active discharge of groundwater occurred from Roma Street, Albert, Woolloongabba and Boggo Road worksites. Monitoring results of groundwater quality prior to discharge is consistent with the pre-construction water quality levels.</p>

Imposed Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
			<p>Active discharge of surface water occurred at the Northern Portal and Roma Street. Results met water quality discharge criteria.</p> <p>Routine in stream monthly monitoring met project water quality requirements.</p> <p>Refer to Appendix B (Table 7) for ground water monitoring results. Refer to Appendix B (Tables 8 and 9) for surface water monitoring results.</p>
16.	Water resources – Evaluate potential impact, plan works, implement controls and monitor inflow of groundwater associated with drawdown.	Yes	<p>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.</p> <p>TSD – Inflow of groundwater into the worksites is being continuously monitored to validate the predictive modelling.</p>
17.	Surface water – Must be designed to avoid inundation from stormwater due to a 2-year (6hr) ARI rainfall event and flood waters due to a 5-year ARI rainfall event and constructed to avoid afflux or cause the redirection of uncontrolled surface water flows, including stormwater flows, outside of worksites.	Yes	Contractors continue to consider this condition in their site planning and design.
18.	Erosion and sediment control – Provisions for erosion and sediment control must be consistent with the Guidelines for Best Practice Erosion and Sediment Control (International Erosion Control Association, 2008) and the Department of Transport and Main Roads' Technical Standard MRTS52.	Yes	Site specific ESC plans for all active work sites have been reviewed by the EM and implemented on site.
19.	Acid sulfate soils – managed as per the Queensland Acid Sulfate Soil Technical Manual.	Yes	Acid Sulfate Soil Management Plans have been prepared and implemented for all active worksites.
20.	Landscape and open space – general requirement to minimise impacts on landscapes and open space values and specific requirements around Victoria Park.	Yes	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

Imposed Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
			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 February 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	<i>State Development and Public Works Organisation Act 1971</i>
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 12 was endorsed in January 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.

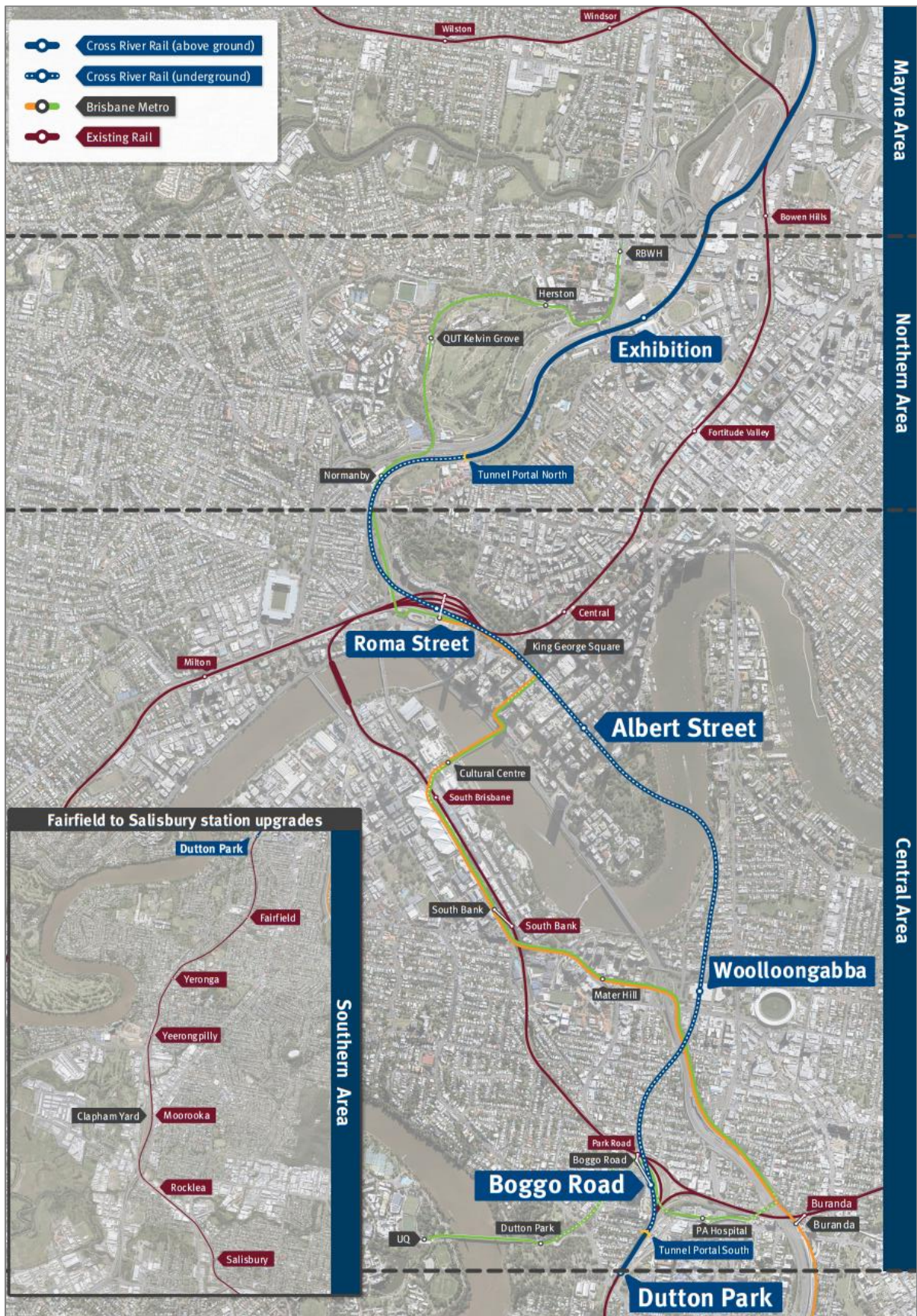
The two main delivery packages which require reporting under the Coordinator-General's imposed conditions are:

- 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.



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 February 2022:

Area	Project Works
Mayne Area	Mayne Yard North – <ul style="list-style-type: none">• Ballast, sleeper, rail placement and tamping Road 5-1 complete;• OHLE structure installation ongoing;• CRR lines embankment construction including Stage 1 preload commenced;• Graffiti Removal Facility cladding commenced; and• Crew Change Building external works nearing completion with car park construction commenced.
Northern Area	RNA/ Northern Corridor – <ul style="list-style-type: none">• BR43 western viaduct deck pours complete;• O'Connell Tce Bridge pier protection complete;• Retaining wall RW210 complete;• Drainage Stage 1 ongoing; and• Victoria Park Feeder Station inground scope commenced. Northern Portal – <ul style="list-style-type: none">• TBM Extraction ongoing;• Waterproofing on deck units;• Blinding works commenced; and• Ongoing excavation of dive structure.
Central Area	Roma Street – <ul style="list-style-type: none">• Services building Level B4 suspended slab poured and B4 to B5 precast wall installation complete;• Station building lift and escalator overruns 4 of 4 complete, base slab 1 poured and base slab 2 in progress;• Station cavern invert slab, kickers and waterproofing ongoing; and

Area	Project Works
	<ul style="list-style-type: none"> Inner Northern Busway (INB) underpinning works in progress with 8 of 9 columns complete.
	Albert Street – <ul style="list-style-type: none"> Lot 1 – station box excavation and ground retention continues including blast preparation; Lot 2 – excavation and retention of bench and invert layers; and Lot 3 – excavation continuing (~65% complete), and ongoing ground retention.
	Woolloongabba – <ul style="list-style-type: none"> Station jump form system lift 14 reinforcement fixing; Climbtrack system on external walls on final lift before removal; Southern cavern back of house internal structure Stage 5 works ongoing; Northern cavern headwall works and waterproofing ongoing, and arch form installed in cavern in preparation for the first permanent lining section pour; and Strip out of conveyor structure in station box complete.
	Boggo Road – <ul style="list-style-type: none"> Northern cavern waterproofing complete, and 9 of 10 permanent lining arch pours complete; Northern cavern back of house B5 slab steel fixing commenced; Wall 4 steel fixing and form installation and wall 9 steel fixing for final jump; and B7 concrete slabs continuing and wall B6 commenced.
	Southern Portal – <ul style="list-style-type: none"> Detailed excavation and shotcrete within cut and cover trough ongoing; Sewer and stormwater micro tunnelling towards Shaft 1 on Railway Terrace and Shaft 8 on Kent Street achieved, 94% of overall micro tunnelling completed; Dual Gauge support structure waterproofing completed, reinforcement and formwork installation for the Freight Flyover Underpinning structure ongoing; and Ongoing piling in Zone E with two piling rigs at 94% complete.
Southern Area	Dutton Park – <ul style="list-style-type: none"> Nil Yeronga Station – <ul style="list-style-type: none"> Platform 1 upgrade works; Platform 2 and 3 canopy structures; and Installation of drainage and services. Fairfield Station – <ul style="list-style-type: none"> Nil. Clapham Yard – <ul style="list-style-type: none"> Piling for retaining wall RW265 and RW260 completed; Under-bore for Energex relocation nearing completion; and Drainage scope ongoing and CSR scope commenced.

2.2. Key Environmental Elements

2.2.1. Noise

The Coordinator-General's conditions establish a framework for managing the impacts of noise. The Imposed Conditions do not establish noise limits. Compliance with the Imposed Conditions noise requirements involves demonstrating the implementation of the endorsed CEMP and associated Noise

and Vibration Management Plan. This establishes the management measures to be applied which aims to achieve the identified noise goals as far as reasonably practicable. The CEMP also includes requirements for the provision of the required community notifications of upcoming work, potential impacts, and how the project team can be contacted in relation to any potential impacts.

For Project Works where potential noise impacts are modelled to be above the noise goal but below the noise goal plus 20dBA, this work is authorised where the endorsed CEMP and associated Noise and Vibration Management Plan is being implemented, including communicating construction activities to potential and actual Directly Affected Persons (DAPs). For Project Works where potential noise impacts are predicted to be more than 20dBA above the relevant noise goal, specific engagement is required with DAPs for these works.

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

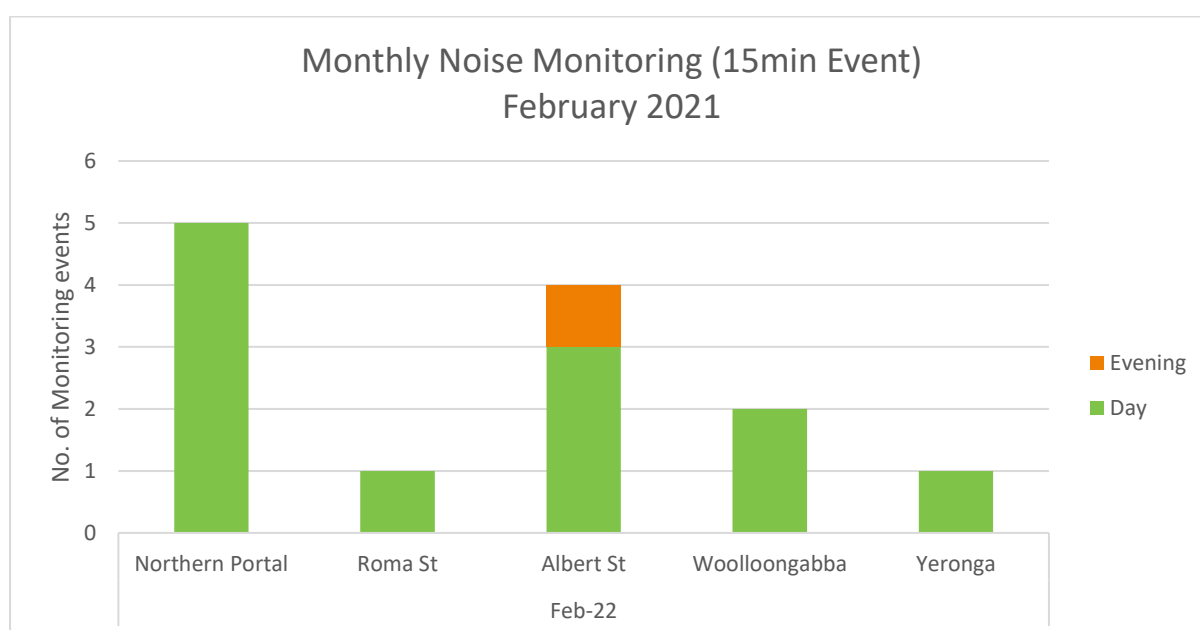
Noise monitoring in the Mayne Area was not triggered.

In the Northern Area, noise monitoring was undertaken to validate predictive modelling for TBM extraction works at the Northern Portal and for cross passage blasting at Petrie Terrace. Monitoring results for the Northern Area are detailed in **Appendix B** (Table 3). The TSD contractors reported that the project noise requirements have been met.

In the Central Area, noise monitoring was undertaken to validate predictive modelling at Sensitive Places close to the project worksites and in response to noise enquiries and complaints. 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 to validate predictive modelling at Sensitive Places near Yeronga Station during standard hours and extended work hours. Monitoring results confirmed noise levels met project noise goals for standard hours however not for extended work hours. Although consultation had taken place with directly affected persons and works were authorised to proceed under an approved possession the contractor did not undertake these works out of standard hours. Monitoring results are detailed in **Appendix A** (Table 4).

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



2.2.2. Vibration

Vibration monitoring at Mayne and Southern Area's was not triggered.

In the Northern Area, vibration monitoring took place at the Northern Portal as TBM extraction works were occurring and at Petrie Terrace where cross passage blasting occurred. The reported results met the project goals. Vibration monitoring results for the Central Area are detailed in **Appendix B** (Table 2).

In the Central Area, vibration monitoring took place to validate predictive modelling for controlled blasting at Roma Street and Albert Street. Monitoring results met the project goals. Vibration monitoring results for the Central Area are detailed in **Appendix B** (Table 2).

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 goal¹ for all active worksites. Dust deposition results are detailed in **Appendix A** (Table 7) and **Appendix B** (Table 5). Dust deposition results for Boggo Road and Southern Portal for January have been included in the February TSD Report as the results had not been received from the laboratory at the completion of the January reporting period. Refer to **Appendix B** (Table 4).

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	- Results met air quality goal
Northern Area	RNA / Exhibition	RNA Showgrounds	- Results met air quality goal
	Northern Portal	Northern Portal (near Brisbane Girls Grammar School)	- Results met air quality goal
Central Area	Albert Street	Mary Street	- Results met air quality goal
		Elizabeth Street	- Results met air quality goal
	Boggo Road	Quarry Street (north of the site)	- Results met air quality goal in January and February 2022
		Peter Doherty Street/Leukemia Foundation	- Results met air quality goal in January and February 2022
	Southern Portal	Dutton Park Station	- Results met air quality goal in January and February 2022
		PA Hospital - Central Energy Unit along Kent Street	- Results met air quality goal in January and February 2022
	Roma Street	Roma Street Station	- Results met air quality goal

¹ CG air quality goal for dust deposition - 120µg/m² (over an averaging period of 30 days).

Air Quality – Dust Deposition Monitoring			
Area	Worksite	Monitoring Location	Comments
	Woolloongabba	Russian Orthodox Cathedral	- Results met air quality goal
		Woolloongabba Busway	- Results met air quality goal
Southern Area	Clapham Yard	Clapham Yard	- Results met air quality goal

2.2.3.2. Particulate Matter and Total Suspended Particulates

Monitoring for particulate matter (PM₁₀) and total suspended particulates (TSP) was conducted at Mayne, Northern, Central and Southern Area worksites. Results met the project goals at all active worksites.

The Woolloongabba air quality unit experienced technical difficulties and stopped functioning between 1-3 and 28 February 2022. The review of a nearby DES air quality monitoring station (South Brisbane) demonstrated PM₁₀ levels between 1-3 and 28 February were compliant with project air quality goals. The Boggo Road air quality unit also experienced technical difficulties and stopped function on the 28 February 2022. The review of a nearby DES air quality monitoring station (Woolloongabba) demonstrated PM₁₀ levels between on 28 February were compliant with project air quality goals.

Particulates results are detailed in **Appendix A** (Figure 2 and Figure 3) and **Appendix B** (Table6)

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

Air Quality – PM ₁₀ / TSP Monitoring			
Area	Worksite	Monitoring Location	Comments
Mayne Area	Mayne Yard	Mayne Yard North	- Results met air quality goals
Northern Area	RNA / Exhibition	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
	Boggo Rd / Southern Portal	North-east of Boggo Road worksite	- Results met air quality goals - Monitoring unit experienced a technical fault with no results on 28 February
	Roma St	Roma Street Station	- Results met air quality goals.
	Woolloongabba	Place Park, Woolloongabba	- Results met air quality goals. - Monitoring unit experienced a technical fault with no results between 1-3 and 28 February
Southern Area	Clapham Yard	Clapham Yard	- Results met air quality goals

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

Post-rainfall monitoring was triggered at Mayne, Northern, Central and Southern Area worksites, and active surface water discharges occurred from the Northern Portal and Roma Street worksites during dewatering.

At Mayne Yard post-rainfall monitoring was triggered in receiving waters at Breakfast Creek following rain events throughout February. Where visual assessments determined there was a difference in water quality when comparing upstream and downstream monitoring locations, in-situ water quality monitoring was undertaken. Downstream locations did not exhibit an increase of more than 10% turbidity therefore water quality investigation criteria were met. See **Appendix A** (See Section 3.3 and Table 10 and Table 11) for further details.

In the Northern Area at the Northern Portal worksite water quality monitoring was triggered on 25 occasions as water used for washing down the TBM components and stormwater run-off was treated and actively discharged to the stormwater network. Water quality met project water quality discharge criteria. See **Appendix B** (Table 8) for further details.

In the Central Area at Albert Street, Woolloongabba and Boggo Road worksites, post-rainfall monitoring in receiving waters at the Brisbane River and Norman Creek identified exceedances of the water quality investigation criteria on 4 February 2022. As monitoring results reflect the condition of a broader catchment upstream from the worksites, it was determined that the exceeded levels could not be reasonably related to project works. See **Appendix B** (Table 9) for further details. Water quality monitoring was triggered at Roma Street on 28 February to support active dewatering of treated stormwater run-off that was discharged to the stormwater network. Water quality met project water quality discharge criteria. See **Appendix B** (Table 8) for further details.

In the Southern Area post rainfall monitoring was triggered at Clapham Yard in receiving waters of Moolabin and Rocky Water Holes Creeks following rain events throughout February. Where visual assessments determined there was a difference in water quality when comparing upstream and downstream monitoring locations, in-situ water quality monitoring was undertaken. On 3 February Moolabin and Rocky Water Holes Creek exhibited an increase of more than 5mg/L total suspended solids (TSS) or 10% increase turbidity triggering further investigation. The rain events on 2 and 3 February was determined to be above design criteria however ESC measures were not damaged by the event. Furthermore, the presence of external influences of sediment determined that elevated turbidity could not be reasonably related to project works. See **Appendix A** (See Section 3.3 and Table 10 and Table 11) 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.

On 26-28 February and into early March 2022, Southeast Queensland experienced the start of a severe rainfall event that resulted in flooding impacts to the greater Brisbane area including some Cross River Rail worksites. Throughout the course of this event, including the period prior to the rainfall during the forecast of severe weather the TSD and RIS projects implemented their flood preparation processes as committed to in their CEMPs and respective applicable Flood Management Sub-plan and Water Quality Management Plan. The flood response actions will be discussed in the future March MER in which the flood response actions occurred.

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	Yes	Yes	No	<ul style="list-style-type: none"> - Post-rainfall monitoring was triggered. In-situ water quality monitoring was undertaken when passive discharge occurred. - ESC was implemented in accordance with site specific ESC Plan.
Northern Area	Northern Portal	Yes	Yes	Yes	<ul style="list-style-type: none"> - Active surface water discharge met water quality investigation criteria. - Post-rainfall monitoring undertaken in late January and reported in February in accordance with WQMP. - Routine in-stream monitoring undertaken in accordance with WQMP.
	Northern Corridor	No	No	Yes	<ul style="list-style-type: none"> - Routine biannual in-stream monitoring undertaken in accordance with WQMP.
	RNA/Exhibition	No	No	N/A	<ul style="list-style-type: none"> - Monitoring not triggered
Central Area	Albert Street	No	Yes	Yes	<ul style="list-style-type: none"> - Post-rainfall and routine in-stream monitoring undertaken in accordance with WQMP.
	Boggo Road	No	Yes	Yes	<ul style="list-style-type: none"> - Post-rainfall and routine in-stream monitoring undertaken in accordance with WQMP.
	Roma Street	Yes	Yes	Yes	<ul style="list-style-type: none"> - Active surface water discharge met water quality investigation criteria. - Post-rainfall monitoring undertaken in late January and reported in February in accordance with WQMP. - Routine in-stream monitoring undertaken in accordance with WQMP.
	Woolloongabba	No	Yes	Yes	<ul style="list-style-type: none"> - Post-rainfall and routine in-stream monitoring undertaken in accordance with WQMP.
	Southern Portal	No	Yes	Yes	<ul style="list-style-type: none"> - Post-rainfall and routine in-stream monitoring undertaken in accordance with WQMP.
Southern Area	Clapham Yard	Yes	Yes	No	<ul style="list-style-type: none"> - Post-rainfall monitoring was triggered. In-situ water quality monitoring was undertaken

Surface Water Quality Monitoring					
Area	Worksite	Discharge	Post-Rain Monitoring	Routine Monitoring	Comments
					<p>when passive discharge occurred.</p> <ul style="list-style-type: none"> - 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 and organic nitrogen, however, these results are consistent with the receiving environment baseline monitoring pre-construction data except for Albert Street, Woolloongabba and Roma Street which both recorded total nitrogen levels well above the baseline monitoring pre-construction data. It is not uncommon for high levels of water quality parameters to be identified in groundwater monitoring. Given the sites are located in highly urbanised inner-city settings, there are many influences on groundwater external to the project. 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	- Discharge of groundwater did not meet Project WQO's but was generally consistent with pre-construction conditions except for nitrogen parameters. Given the sites are located in highly urbanised inner-city settings, non-project related infrastructure issues (i.e., sewer leaks) can influence the groundwater quality. The contractor confirmed no changes have occurred onsite to the construction methodologies that would have affected the groundwater results.
	Boggo Road / Southern Portal	Yes	<ul style="list-style-type: none"> - Groundwater discharge (dewatering). - Discharge of groundwater did not meet Project WQO's but was generally consistent with pre-construction conditions.
	Roma Street	Yes	<ul style="list-style-type: none"> - Groundwater discharge (dewatering). - Discharge of groundwater did not meet Project WQO's but was generally consistent with pre-construction conditions except for nitrogen parameters. Given the

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
			sites are located in highly urbanised inner-city settings, non-project related infrastructure issues (i.e., sewer leaks) can influence the groundwater quality. The contractor confirmed no changes have occurred onsite to the construction methodologies that would have affected the groundwater results.
	Woolloongabba	Yes	<ul style="list-style-type: none"> - Groundwater discharge (dewatering). - Discharge of groundwater did not meet Project WQO's but was generally consistent with pre-construction conditions except for nitrogen parameters. Given the sites are located in highly urbanised inner-city settings, non-project related infrastructure issues (i.e., sewer leaks) can influence the groundwater quality. The contractor confirmed no changes have occurred onsite to construction methodology that would have affected the groundwater results.
Southern Area	Clapham Yard	No	- No groundwater discharges.

2.2.5. Erosion and Sediment Control

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

2.3. Complaints Management

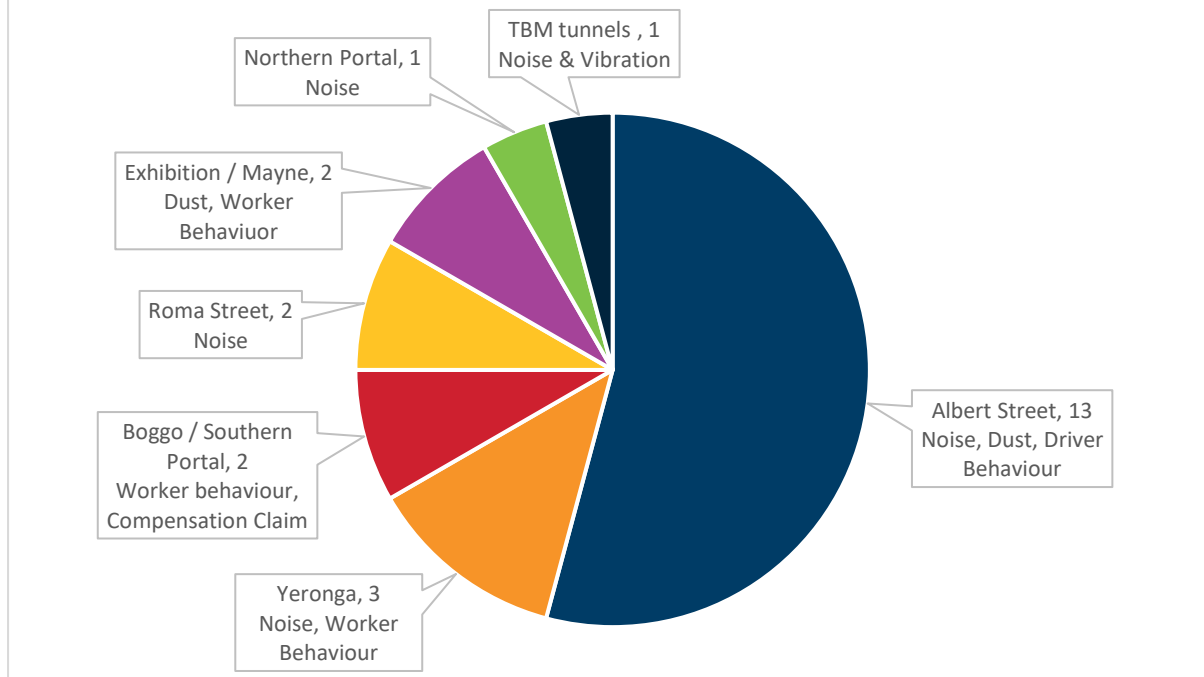
A total of 24 complaints were received during the month.

RIS works received 5 complaints this month related to Project Works at Yeronga and Northern Corridor worksites. For further details refer to **Appendix A** (Table 3).

TSD activities received 19 complaints related to Project Works at Northern Portal, Roma Street, Albert Street, Southern Portal worksites and along the tunnel alignment. Of these, 13 complaints were related to noise from works occurring from the Albert Street site, mostly during non-standard hours. For further details refer to **Appendix B** (Table 11).

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

Project Works Complaints Summary February 2022

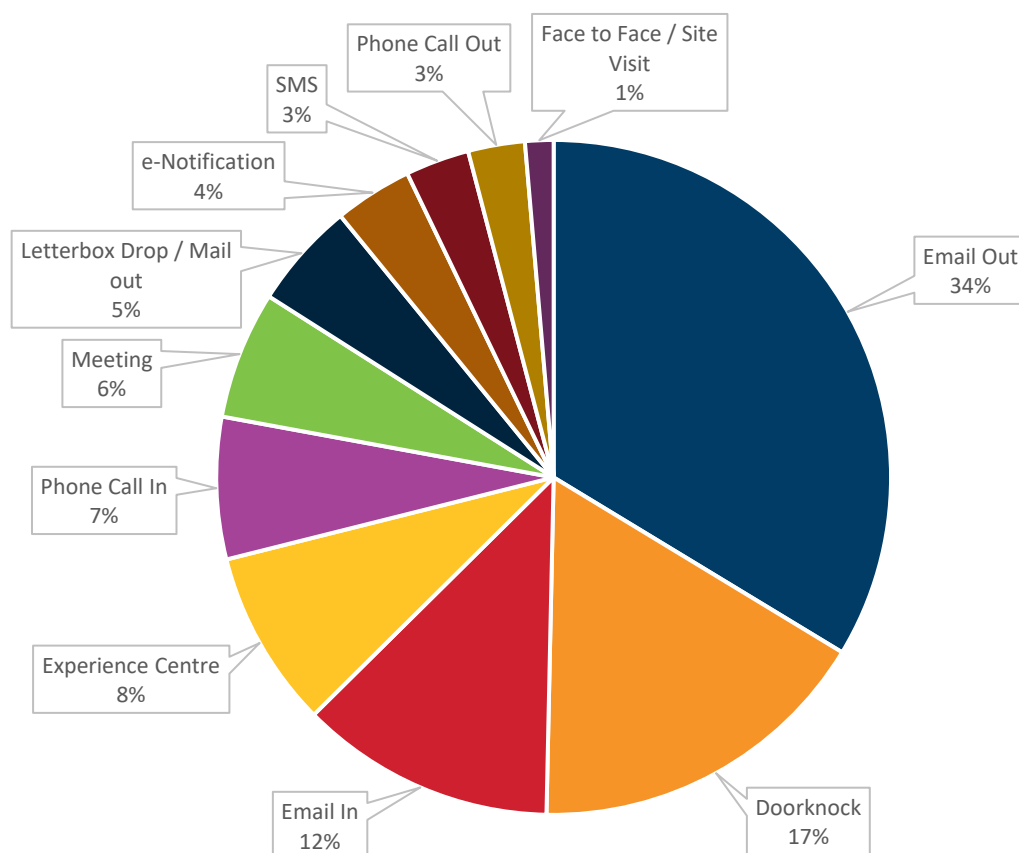


Where attended noise monitoring was undertaken in response to a complaint, the contractor confirmed on all occasions that works undertaken at the time of the complaint adhered to project requirements. In some instances, previous attended noise monitoring data, representative of the relevant construction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

Stakeholder Engagement February 2022



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 – <ul style="list-style-type: none"> Breakfast Creek Bridge – piling works; and RSS and retaining walls for Tripod Bridge (BR11/13) and blade walls completion; Sewer connection and chamber lift within Abbotsford Road; and Earthing and bonding scope to commence.
Northern Area	RNA/ Northern Corridor – <ul style="list-style-type: none"> O’Connell Terrace pedestrian bridge (BR29) western abutment construction including rock anchors under bridge; RNA Substation works; Combined services route scope through RNA and western viaduct. FRP grated drains throughout corridor Victoria Park Feeder Station early works and inground services; Water main and sewer relocations under Bowen Bridge Rd; OHLE foundation installation; and Sewer underbore at Land Bridge. Northern Portal –

Area	New planned works in the coming months
	<ul style="list-style-type: none"> All TBM components planned to be removed by early-April; Gantry crane removal and installation of remaining deck units in late-April; Rail deliveries in May.
Central Area	<p>Roma Street –</p> <ul style="list-style-type: none"> Station cavern permanent lining early-April; and Passenger adit waterproofing, steel fixing and concrete pouring Station building base slab concrete pours Services building pre-cast panel installation and concrete pours <p>Albert Street –</p> <ul style="list-style-type: none"> Lot 1 – Excavation completion in early April then station build phase; Lot 2 – micro-blasting of services adits and completion of excavation and retention works in April; and Lot 3 – Completion of excavation and ground retention in May followed by station build. <p>Woolloongabba –</p> <ul style="list-style-type: none"> Back of house lift 14 pour in April; Services building piling to commence on late-March; Northern cavern headwall pours; and Rail delivery and installation to commence in March; <p>Boggo Road –</p> <ul style="list-style-type: none"> Station box sump concrete pours in March; Concrete wall pours ongoing; Back of House B4 suspended slab FRP works commence in late-March; and Boggo Road Bridge early works to commence in late-March. <p>Southern Portal –</p> <ul style="list-style-type: none"> Portal dive structure base slab installation to occur in April; Pile breakback to commence in March and slab-on-ground scheduled for April; Shaft 1 diversion works; Freight flyover underpinning load transfer during Easter SCAS; and Reinstatement of the Dual Gauge track and overhead lines during Easter SCAS.
Southern Area	<p>Yeronga Station –</p> <ul style="list-style-type: none"> Screw pile installation on Platforms 1,2 and 3; Platform 2 and 3 civil and FRP works; and Platform 3 precast retaining wall installation. <p>Fairfield Station –</p> <ul style="list-style-type: none"> Nil. <p>Dutton Park –</p> <ul style="list-style-type: none"> Geotechnical and services investigations; OHLE mast installation; and Fenton Street site establishment works for upcoming Easter SCAS. <p>Clapham Yard –</p> <ul style="list-style-type: none"> Complete retaining walls (RW620 and 635) FRP scope; Continue drainage and earthworks; Install temporary works creek crossing at Moolabin Creek.

2.5 Non-Compliance Events

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

Status	Date of event	Category	Area as on the Report	Conditions affected	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Open									
Closed									
CRRDA-001-RIS-001	11/09/19	Noise	Yeronga Station	4, 10, 11	11/10/19	14/11/19	26/11/19	18/12/19	01/10/20
CRRDA-002-TSD-001	27/03/20	ESC	Woolloongabba	4, 15, 18	30/03/20	31/03/20	22/04/20	06/11/20	31/05/20
CRRDA-003-TSD-002	27/03/20	ESC	Boggo Rd	4, 15, 18	30/03/20	31/03/20	22/04/20	06/11/20	31/05/20
CRRDA-005-TSD-004	27/03/20	Reporting	Albert St, Boggo Rd, Roma St, Woolloongabba	4, 6, 11, 13	30/03/20	31/03/20	22/04/20	06/11/20	31/05/20
CRRDA-006-TSD-005	27/03/20	Air Quality	Albert St, Boggo Rd, Roma St, Woolloongabba	13	30/03/20	31/03/20	22/04/20	06/11/20	31/05/20
CRRDA-004-TSD-003	28/03/20	Traffic	Boggo Rd	4, 10, 14	30/03/20	31/03/20	22/04/20	06/11/20	31/05/20
Withdrawn									
CRRDA-007-RIS-002	04/01/20	Air Quality	Mayne Yard, Victoria Park, Yeronga, Fairfield	13	28/04/20	30/04/20	Withdrawn		
CRRDA-008-TSD-006	04/08/20	Working Hours	Roma Street	4, 10	28/04/20	30/04/20	Withdrawn		
Gate 1 - EM notification to contractor, NCE confirmed Gate 2 - 48 hour NCE notification submitted to CG Gate 3 - 14 day report submitted Gate 4 - 14 day report uploaded to CRR website Gate 5 - Records of mitigation / preventative measures submitted to the CG					Complete				

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

Appendix A RIS Monthly Report

Monthly CGCR Report February 2022

**Cross River Rail – Rail, Integration and Systems
Alliance**

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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	<ul style="list-style-type: none"> Mayne Yard North <p>Graffiti Removal Facility - structural steel installation completed, and cladding commenced Crew Change Building external works nearing completion with car park construction commenced Breakfast Ck Bridge (BR08) - temp works rock platforms completed for temp jetty piling to commence CRR Lines - embankment construction including Stage 1 preload commenced Yard: Ballast, Sleeper & Rail Placement Road 5 - 1 Completed, OHLE Structure Installation ongoing, Queensland Rail Tamper has completed roads 5 - 1.</p>
Northern Area	<ul style="list-style-type: none"> RNA / Northern Corridor <p>RC21 O'Connell Pier Protection completed EXT-SCAS scope delivered as planned Victoria Park Feeder Station inground scope commenced BR43 (Ekka Station Western viaduct) all deck pours completed RW210 Retaining wall (western alignment) completed Drainage Stage 1 (western side) 50% completed.</p>
Southern Area	<ul style="list-style-type: none"> Yeronga Station <p>Ongoing works for re-opening in March 2022.</p> <ul style="list-style-type: none"> Fairfield Station <p>Nil.</p> <ul style="list-style-type: none"> Clapham Yard <p>Piling for perimeter retaining walls (RW635 and RW620) completed FRP of RW635 nearing completion 11kV relocation nearing completion Drainage scope ongoing and CSR scope commenced.</p>

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	<ul style="list-style-type: none"> • Mayne Yard North RSS walls RW110 / 120 / 125 for Tripod Bridge BR11/13 and blade walls completion BR08 (Breakfast Ck Bridge) piling Sewer connection and sewer chamber lift within Abbotsford Road Yard: Earthing and Bonding to commence once Tamping is completed on Roads 1 – 5, OHLE Contact wire installation.
Northern Area	<ul style="list-style-type: none"> • RNA / Northern Corridor Commence rock anchors under pedestrian BR29 (O'Connell Tce pedestrian bridge) BR29 (O'Connell Tce pedestrian bridge) western abutment construction RNA Substation works Sewer underbore at Landbridge S-200-06 to commence Victoria Park Feeder Station early works and inground services Water main and sewer (QUU) relocation works under Bowen Bridge Road RW260 completion of backfill and edge protection FRP grated drains throughout corridor Commence OHLE foundations through corridor BR43 Structural Steel bridge spans on schedule for EXT-SCAS #10 in mid-March 22 CSR scope through RNA section and Western viaduct.
Southern Area	<ul style="list-style-type: none"> • Yeronga Station Yeronga Platform 1, 2 and 3 Civil & FRP Works Station screw pile installation on Platforms 1, 2 and 3 Platform 3 Precast Retaining Wall installation. <ul style="list-style-type: none"> • Fairfield Station Nil. <ul style="list-style-type: none"> • Dutton Park Station Geotechnical and services investigations OHLE mast installation Fenton Street site establishment works for the upcoming Easter SCAS. <ul style="list-style-type: none"> • Clapham Yard Continue drainage and earthworks Complete Retaining Walls FRP scope (RW620 and RW635) Install temporary works creek crossing at Moolabin Ck.

2 Complaints

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

Table 3: Summary of Complaints

Date Received	Location	Issue	Activity source of the concern	Period	Unity Response	Status
08/02/22	Yeronga	Worker Behaviour	Extended Hours Works	February	The stakeholder contacted the project to advise that he had experienced an interaction with contractors working on night-shift that they deemed inappropriate. UNITY Alliance called and emailed the stakeholder to advise them a corrective action had been implemented, including adding expected behaviours into the Yeronga Station team's pre-start.	Closed
10/02/22	Yeronga	Emissions	Unspecified construction activities	February	Resident complained to request the works at the Yeronga site cease immediately as they believed they were causing EMF (electro-magnetic field) which was disturbing the residents. Team contacted the resident and advised of the works being undertaken and that they were not a source of EMF.	Closed
11/02/22	Yeronga	Noise	Extended Hours Works	February	The stakeholder complained about noise emissions (particularly the use of grinders) during night works at Yeronga station. The team called the stakeholder regarding the noise experienced at Yeronga station and left a detailed message with number to call back. The team followed up the complaint with a visit to the stakeholder and offered some mitigation, which the stakeholder accepted. The environmental team reviewed the source of the complaint. More details on the outcomes of the investigation in the complaint are presented in Section 3.1.5.1.	Closed
16/02/22	Northern Corridor	Air Quality	Surface works – standard hours Rock breaking	February	The stakeholder contacted the project team to advise they could observe dust being generated from the rock breaking activities near O'Connell Terrace and it was affecting their washing. The project team contacted the site supervisor to advise them of the complaint and coordinated additional dust mitigation as necessary. The environmental team reviewed the source of the complaint. More details on the outcomes of the investigation in the complaint are presented in Section 3.2.3	Closed
19/02/22	Northern Corridor	Parking of workers	Surface works – standard hours	February	Clem 7 control centre called to complain about workers parking in their car park and emergency access ramp into the Clem 7 tunnel UNITY emailed RNA and Mayne Yard North Teams to advise of complaint and not to park in these areas.	Closed

3 Environmental Monitoring Results

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

3.1 Acoustics

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

- The use of a concrete scabbler at Yeronga Station during extended hours of works under an approved rail possession.

Complaint-based noise monitoring because of Project Works was not carried out at Yeronga, for the complaint received on 11 February 2022. Further explanation is provided in Section 3.1.5.1.

3.1.2 Noise monitoring Results

Table 4: Summary of Noise Monitoring Data

Location	Receiver Type Details	Type of Monitoring	Work Hours	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 3.1.5.1
Killarney Street, Yeronga	Residential	Attended - Outdoors	Extended & Standard Hours Monitoring Saturday 12/02/22 11:25	Intermittent	Buffer Distance Test - Model Verification	77	Extended Hours Work 52 (Outdoors) (42dBA + 10dBA façade reduction) ² Standard Hours 65 (Outdoors) (45dBA (AS2107) + 10dBA + 10dBA façade reduction) ²	Extended Hours Work 72 (Outdoors) (52 + 20dBA) Standard Hours 85 (Outdoors) (65 + 20dBA) ²	76	72	Yes Case by Case	Yes Extended (Goal 1 & 2) & Standard Hours (Goal 1 only)	Concrete scabbler noise model verification Monitoring carried out ca. 30m away from scabbler

- 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 Queensland¹.
 - 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.

3.1.3 Vibration Monitoring

There were no vibration intensive activities during the reporting period that triggered the need to undertake noise monitoring.

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	Maximum predicted vibration Level (mm/s)	Maximum recorded vibration Level (mm/s)	Vibration goal for receiver (mm/s)	Exceedance of vibration limit?	Comments
NIL FOR THE REPORTING PERIOD										

3.1.5 Interpretation

3.1.5.1 Noise Monitoring²

3.1.5.1.1 Yeronga - Model Verification

The monitoring of the noise emissions associated with the use of the scabbler validated the predictive noise model.

The measured LA₁₀ readings did not exceed the noise goal + 20dBA for works during Standard Work Hours.

The measured LA₁₀ readings exceeded the noise goal + 20dBA for works during Extended Hours Work.

The works were authorised to proceed under Imposed Condition 10 as they were carried out during Surface works Standard Hours and Extended Hours Work (approved rail possession).

It is however noted that due to the noise intensive nature of the scabbler, restrictions had been placed by the Environment Team on the use of the scabbler as part of the Out of Hours Permit. Scabbling was not authorised to be carried out between 6.30pm and 6.30am.

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.

3.1.5.1.2 Yeronga – Complaint's Response

The noise complaint received on 11 February pertaining to the use of grinders during night shift was investigated following receipt of the complaint on 12 February.

Since the complaint was received after the completion of the works, complaint's response monitoring was not carried out. It is also noted that the Project team followed up the complaint with a visit to the stakeholder and offered some mitigation, which the stakeholder accepted.

Further follow up with the stakeholder confirmed that the mitigation measure had alleviated the concern from the stakeholder.

The investigation of the complaint identified the following:

- The type of plant and equipment, inclusive of the extent of their usage, was consistent with the predictive assessment carried out as part of the Out of Hours Permit process.
- The equipment which was listed as the source of the noise complaint (handheld grinder – up to 5 inch) was not the most noise intensive equipment used that night, with tracked earthworks equipment being the dominant noise source.
- Notwithstanding the above, a desktop noise model was run for the use of a grinder in isolation of any other plant or equipment. The model predicted that the grinder would require to be used within 10 metres from the resident (with their windows partially opened) to create noise emissions in exceedance of the extended hours noise goal + 20dBA.
- The grinder was used approximately 35 m away from the resident, resulting in a predicted internal noise level of 51dBA (LA₁₀) and up to 56dBA (LA₁₀) assuming the resident had their windows wide open.
- Since the commencement of the works, 35 rounds of attended noise monitoring have been carried out, with the average of the monitoring results demonstrating that the predictive noise model is typically conservative by 3dBA.
- Finally:

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

- The works the subject of the complaint were authorised to proceed under Imposed Condition 10 as they were carried out during Surface works Standard Hours and Extended Hours Work (approved rail/road possessions),
- Case by case DAP engagement had also occurred as per the requirements of Imposed Condition 11 (c).

It is also noted that the Project team followed up the complaint with a visit to the stakeholder and offered some mitigation, which the stakeholder accepted.

Further follow up with the stakeholder confirmed that the mitigation measure had alleviated the concern from the stakeholder.

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

3.1.5.2 Vibration Monitoring

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

3.2 Air Quality

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

Visual monitoring was undertaken during routine environmental inspections. A total of 25 inspections were undertaken by the Environment Team across Mayne Yard, RNA Showgrounds, Yeronga Station, Clapham Yard, and the Northern Corridor.

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

Table 6: Summary of Air Quality monitoring devices

Monitoring Device Installed by UNITY	Area	Name	Date Installed	Status for the Reporting Period
Dust Deposition Gauge	RNA Showgrounds	AQ-01	13 December 2019	Active
Dust Deposition Gauge	Mayne Yard (Eastern Air Shed)	AQ-04	13 February 2020	Active
Dust Deposition Gauge	Clapham Yard (Eastern Air Shed)	AQ-06	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
TSP / PM ₁₀ Monitor	Mayne Yard (Eastern Air Shed)	Mayne Yard	23 April 2020	Active
TSP / PM ₁₀ Monitor	Clapham Yard (Eastern Air Shed)	Clapham Yard	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 12 January 2022 to 11 February 2022. This is excluding Clapham Yard, which spans from 18 January 2022 to 11 February 2022.

The Clapham DDG is located on private property and was inaccessible over the Christmas holiday period which disrupted the monthly regime in January with a flow on effect for this reporting period.

The DDG was therefore in place for 25 days for the reporting period. As per AS/NZS 3580.10.1, Section 7.3, *for routine monitoring programs, the period of exposure is 30±2 days*.

Although the Clapham Yard results are not considered a representative sample according to the Australian Standard, per the advice of the Project Certified Air Quality Professional (CAQP), the sample can still be recorded as indicative, as the data gap is only a three-day gap.

Of note, over the reporting period and the three-day gap in particular:

- There were no dust complaints, and
- There were no exceedances of the TSP and PM₁₀ goals and
- The average daily production rates for the earthworks were lesser than the rates assessed as part of the predictive dispersion model, and
- There was evidence of active dust suppression as part of the routine inspections, and
- The DDG and therefore the associate sensitive places were typically upwind (60% of the time) from the bulk earthworks; and,
- The DDG was upwind of the predominant winds, meaning that the sensitive places for which the DDG has been installed would also have been upwind of earthworks being carried out in the Yard and,
- The predominant winds (>90%) were classified as light air to light breeze under the Beaufort Scale which are not conducive to large scale wind erosion.

On this basis, whilst the Clapham Yard results should be considered indicative, the review of other factors influencing dust emissions confirmed that it is unlikely that an exceedance would have occurred over a 30±2 days period.

The results for RNA and Mayne Yard are detailed below and complied with Imposed Condition 13(b) of the CGCR.

Table 7 Dust deposition gauge results for the reporting period

CGCR Goal (mg/m ² /day)	AQ-01 - RNA Showgrounds (mg/m ² /day)	AQ-04 Abbotsford Rd (E Mayne) (mg/m ² /day)	AQ-06– Clapham Yard (mg/m ² /day)
120	20	27	30*
Total Rainfall during Period (mm)	67	78	94

* Results are indicative only

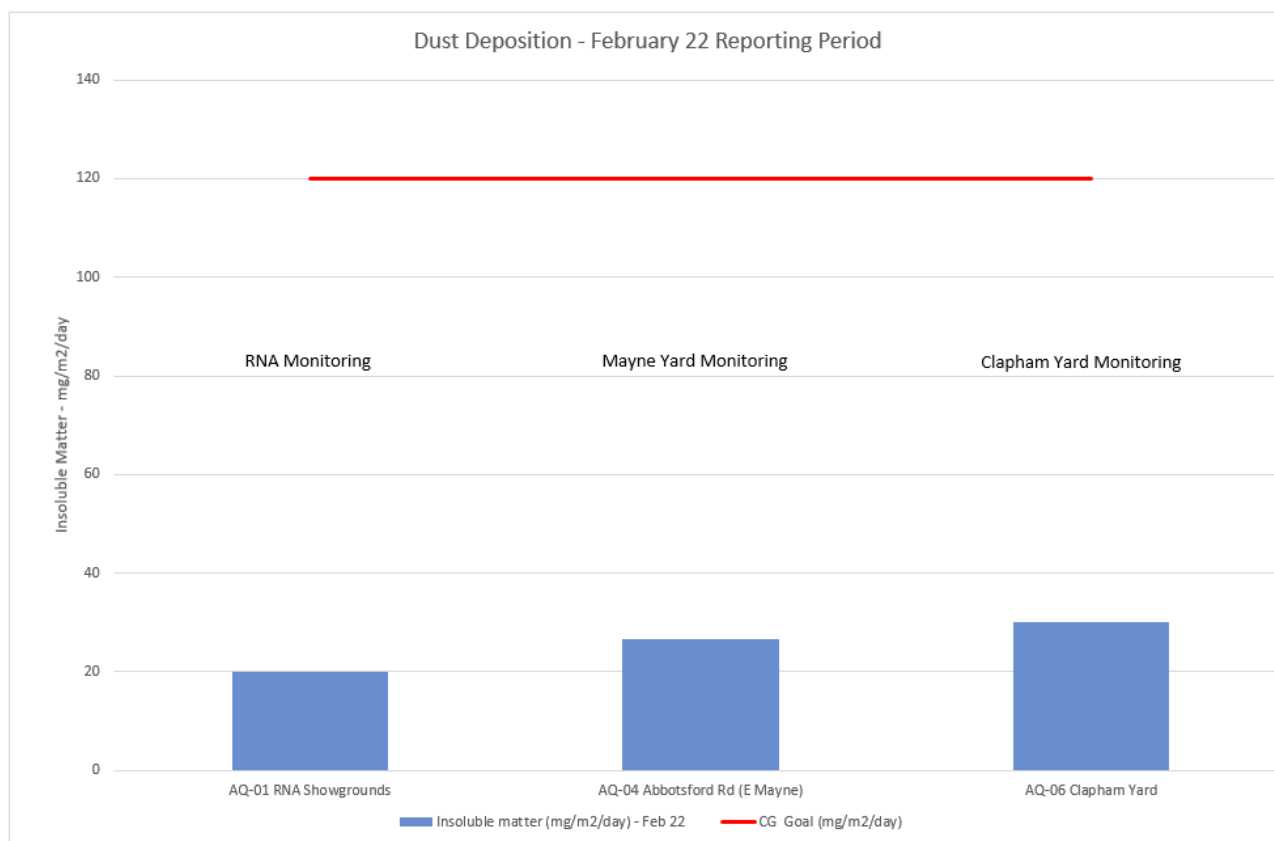


Figure 1 Air Quality Monitoring (Deposited Dust) Results

3.2.2 Particulates results

3.2.2.1 Air Quality Monitoring Stations

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

A 10-day data gap exists for the RNA monitoring station between 03 and 13 February 2022. This data gap was caused by damaged wiring which required the manufacturers' support to resolve.

A 1-day data gap exists for all three monitoring stations on 26 February 2022 associated with the significant wet weather event and associated power loss due to lack of sun exposure of the solar panels.

3.2.2.2 Monitoring results – Reporting Period

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

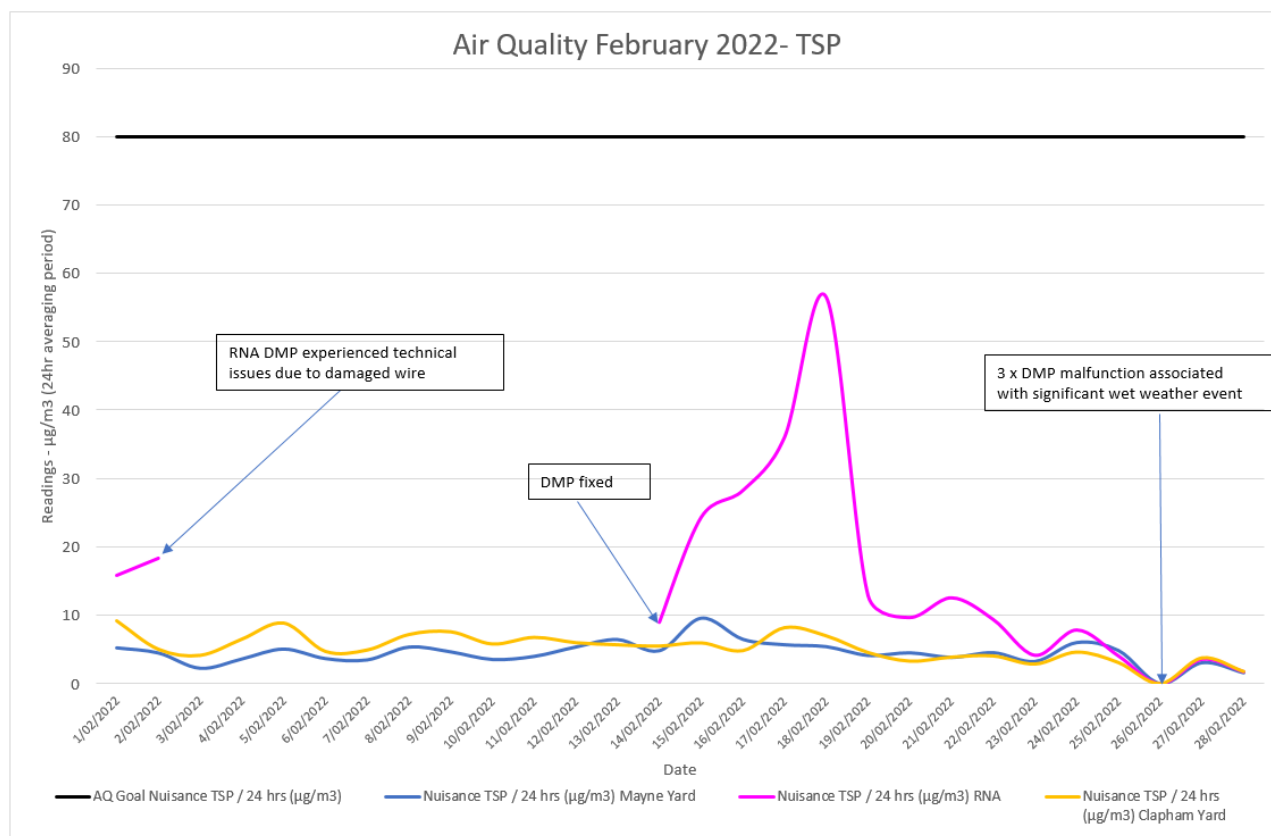


Figure 2 Air Quality Monitoring (TSP) Results

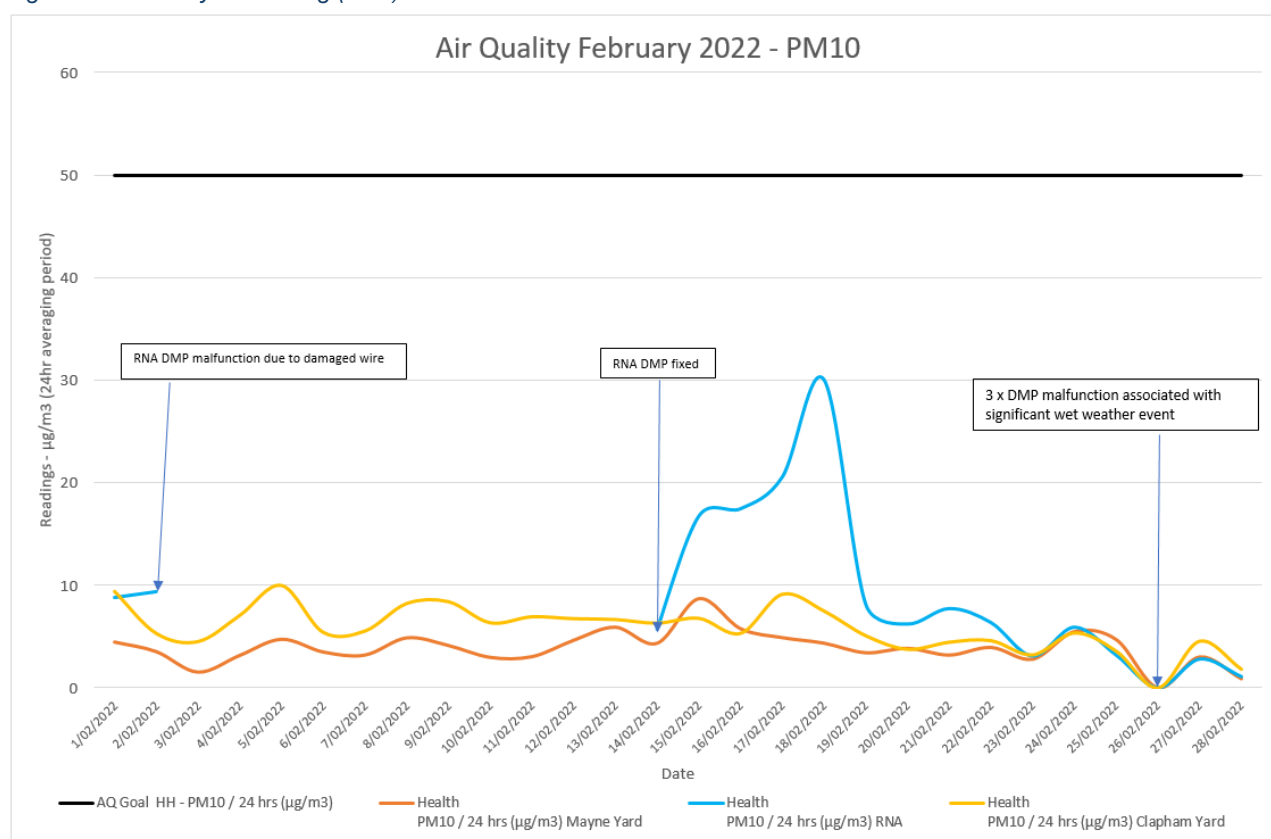


Figure 3 Air Quality Monitoring (PM₁₀) Results

3.2.2.3 Monitoring results – Annual averaging

Imposed Condition 13 (a) sets annual average air quality goals for TSP (Human health) and PM₁₀ (Human health).

The below table summarises where TSP and PM₁₀ 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 PM₁₀ monitoring to be 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	<i>Indicative only</i> Data capture did not meet the minimum data capture requirements
TSP / PM ₁₀ Monitor	Mayne Yard (Eastern Air Shed)	23 April 2020	Not yet decommissioned	Period 1 (to 23 April 2021) 358 over 365 days Period 2 (starting 24 April 2021) 310 over 311 days	Period 1 98% over 365 days Period 2 99% Over 311 days	Applicable for Period 1 Data capture met minimum data capture requirements Applicable for Period 2 Data capture has 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	RNA (Western Air Shed)	11 June 2020	Not yet decommissioned	Period 1 (to 11 June 2021) 314 over 365 days Period 2 (starting 12 June 2021) 251 over 262 days	Period 1 86% over 365 days Period 2 96% Over 262 days	Applicable for Period 1 Data capture met minimum data capture requirements Not Applicable for Period 2 Data capture has not yet met the minimum data capture requirements
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 (starting 01 February 2022) 27 over 28 days	Period 1 90% over 364 days Period 2 96% Over 28 days	Applicable for Period 1 Data capture met minimum data capture requirements Not Applicable for Period 2 Data capture has not yet met the minimum data capture requirements

The below table summarises the applicable and indicative annual data results for TSP and PM₁₀ 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	RNA	Clapham Yard
TSP	90 µg/m ³	Period 1	<i>8 µg/m³</i>	11 µg/m ³	18 µg/m ³	8 µg/m ³
		Period 2	-	10 µg/m ³	Not applicable	-
PM ₁₀	25 µg/m ³	Period 1	<i>5 µg/m³</i>	7 µg/m ³	11 µg/m ³	5 µg/m ³
		Period 2	-	7 µg/m ³	Not applicable	-

3.2.3 Interpretation

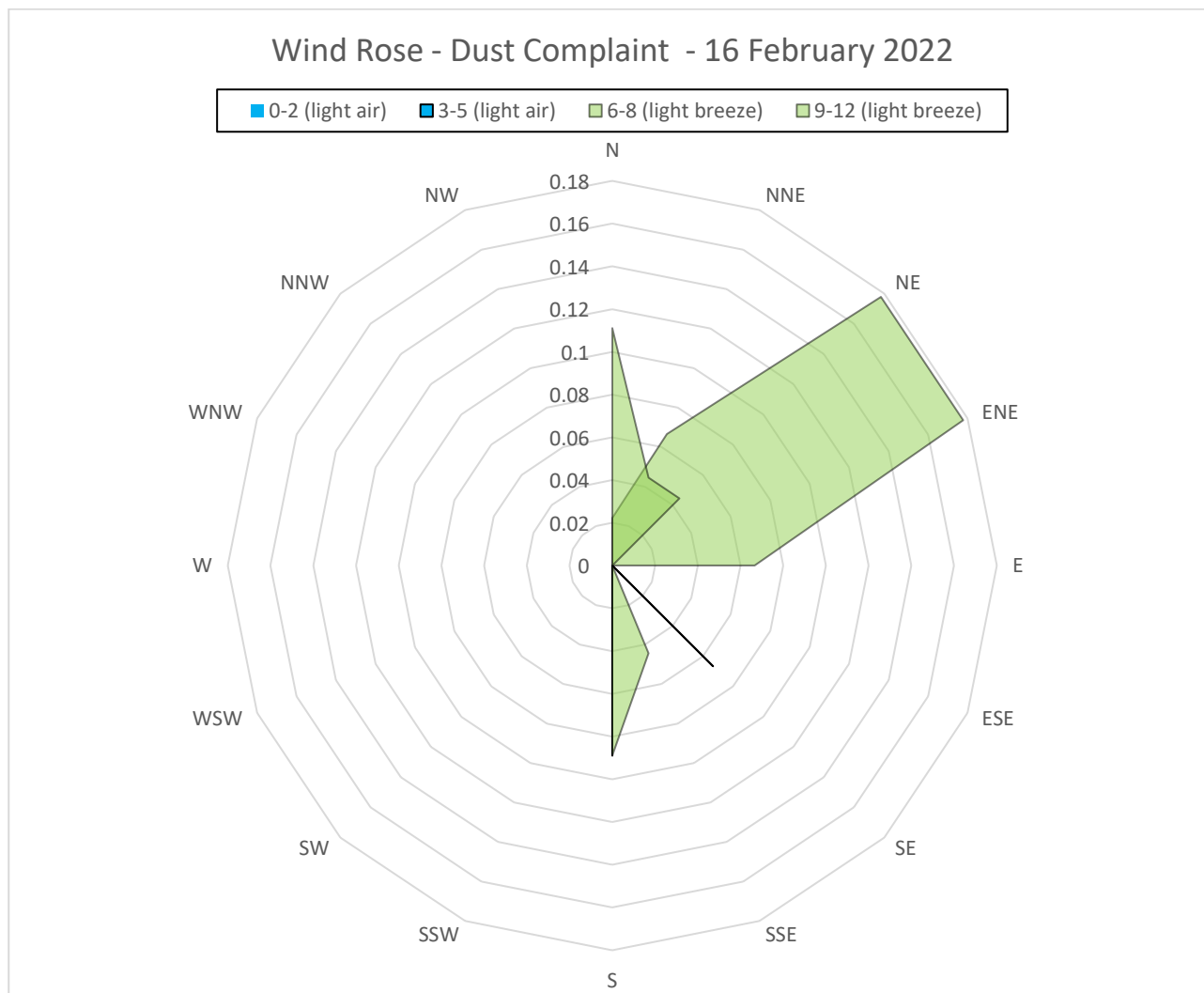
During the reporting period:

- None of the particulate results exceeded their relevant goals for PM₁₀ and TSP
- There was no evidence of dust being generated and leaving the site boundaries
- There was one complaint received associated with air quality concerns from rock breaking activities near O'Connell Terrace on 16 February 2022.

Upon receipt of the complaint the Environment Team reviewed the air quality and weather data for the RNA Area.

The weather data confirmed that for the period of rock breaking works:

- 70% of the winds were easterly winds therefore the stakeholder was located upwind of the works with the air quality station located downwind of the works,
- The PM₁₀ and TSP results did not exceed their respective 24hr-goals
 - measured PM₁₀: 17µg/m³ (goal = 50µg/m³)
 - measured TSP: 28µg/m³ (goal = 80µg/m³)



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

3.3 Water Quality

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

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

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

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

Water quality monitoring to demonstrate compliance with Condition 15(b) and Condition 18 was triggered during the reporting period for

- Mayne Yard
 - Wednesday 02 February
 - 15-minute storm (11.4mm with peak intensity of 111 mm/hr)
 - Post rainfall monitoring was carried out within 24 hours of the event.
 - Project Works discharges were identified
 - Wednesday 23 February:
 - 15-minute storm (6.2mm with peak intensity of 124 mm/hr)
 - Post rainfall monitoring was carried out within 24 hours of the event
 - No Project Works related discharges were identified
 - Thursday 24 February:
 - Series of showers during the day (total of 17.4mm with peak intensity of 54 mm/hr)
 - Post rainfall monitoring was carried out within 24 hours of the event
 - No Project Works related discharges were identified
- Clapham Yard
 - Wednesday 02 February
 - 30-minute storm (14.8 mm with peak intensity of 76 mm/hr)
 - Post rainfall monitoring was carried out within 24 hours of the event
 - Project Works discharges were identified at Moolabin Creek only
 - Thursday 03 February:
 - series of showers later afternoon / early evening (total of 27mm with peak intensity of 32mm/hr)
 - Post rainfall monitoring was carried out within 24 hours of the event
 - Project Works discharges were identified at Moolabin Creek and Rocky Water Holes Creek
 - Friday 18 February:
 - 15-minute storm late afternoon (15.2 mm with peak intensity of 274 mm/hr)
 - Post rainfall monitoring was not carried out within 24 hours of the event at either Creeks
 - Project Works discharges were assumed as having occurred at Moolabin Creek only based on a site inspection on Monday 21 February 2022.
 - Wednesday 23 February:
 - series of showers during the day (total of 34mm with peak intensity of 44 mm/hr)
 - Post rainfall monitoring was carried out within 24 hours of the event
 - Project Works discharges were identified at Moolabin Creek only
 - Thursday 24 February:
 - series of showers during the day intensifying in the evening (total of 53mm with peak intensity of 78 mm/hr)
 - Post rainfall monitoring was carried out within 24 hours of the event
 - Project Works discharges were identified at Moolabin Creek only
- Site wide following a 3-day continuous rainfall event between 25 and 27 February 2022.

- Rainfall records from the Project and BoM's weather stations confirmed that this rain event exceeded the design criteria of the erosion and sediment controls measures.
 - Mayne Yard Area: 755 to 831 mm recorded over 72-hour period
 - Northern Area: 677 to 700 mm recorded over 72-hour period
 - Southern Area including Clapham Yard: 608 to 709 mm recorded over 72-hour period
- Limited safe access was available on 28 February 2022 to carry out monitoring due to ongoing flooded conditions of creeks and local roads.
- Visual monitoring of Breakfast Creek was carried out at SW2 which confirmed that releases had occurred from Mayne and that Breakfast Creek was widely affected by the regional rain and associated flood events.
- Further information on the post-flood response will be provided in the March report.

There were no active surface water discharges (e.g., dewatering through pumping, sediment basin release) to receiving waters during the reporting period.

3.3.1 Rainfall Records

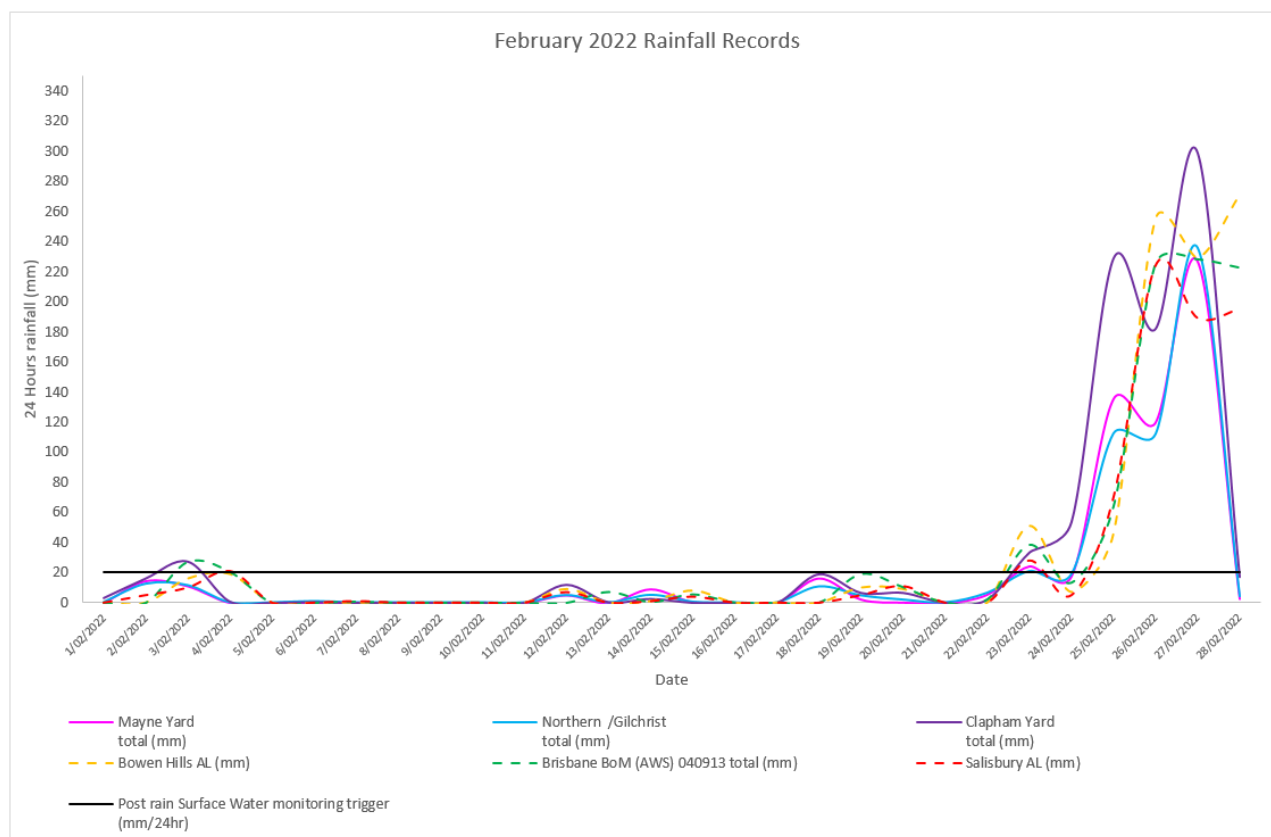


Figure 4 Rainfall Records

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 initially consists of visual monitoring to determine if in-situ water quality monitoring is necessary. If contaminants are observed (e.g. hydrocarbon sheen) or if there is a visible difference in water quality when comparing upstream and downstream monitoring points, water quality sampling will then be

undertaken. The visual assessment will assess gross increases in turbidity, litter, hydrocarbons or the movement of any coarse sediment into the waterway. The assessment will also note any potential offsite impacts that may be adversely affecting water quality within the construction area.

For the reporting period, post rainfall monitoring consisted of a mixture of visual monitoring and in-situ monitoring.

3.3.2.1 Qualitative Monitoring

3.3.2.1.1 Mayne Yard North

On 2 February visual monitoring of Breakfast Creek was carried out at SW02 immediately after the 15-minute storm event. The visual monitoring identified that passive discharges from the Project Works had occurred. These discharges resulted in localised increases in turbidity at the immediate work front, however there was no observed visible discoloration associated with the Project Works discharge within 50m of the work front. No in-situ water quality monitoring was undertaken at the time. Further analysis is presented in Section 3.3.5.

On 23 February visual monitoring of Breakfast Creek was carried out at SW02 after another 15-minute storm event. The visual monitoring did not identify that passive discharges from the Project Works had occurred. It was however noted that Breakfast Creek was visibly more turbid than previously as part of previous post rainfall monitoring, with the extent of the turbidity being widespread through the channel beyond the Project Works. Therefore in-situ sampling was carried out at SW01 and SW03, the results of which are presented in Table 10. Further analysis is presented in Section 3.3.5.

On 24 February visual monitoring of Breakfast Creek was carried out at SW02 after another after the 15-minute storm event. The visual monitoring did not identify that passive discharges from the Project Works had occurred. It was however noted that Breakfast Creek continued to be visibly more turbid than ambient conditions. Since in situ monitoring had been carried out the day prior, no further in situ sampling was carried out. Further analysis is presented in Section 3.3.5.

3.3.2.1.2 Clapham Yard

3.3.2.1.2.1 Moolabin Creek

In situ monitoring had been carried out following 2,3 and 23 February rainfall events, the results of which are presented in Table 10. Therefore, the Project Team carried visual monitoring only on 24 February. The visual monitoring confirmed findings from previous events, that is passive discharges from the Project Works had occurred. Further analysis is presented in Section 3.3.5.

Monitoring, visual or otherwise could not get carried out following the 18 February rainfall event. It is however presumed, that based on the knowledge of the site and findings from the previous monitoring on 2 and 3 February, that passive discharges from the Project Works had occurred. Further analysis is presented in Section 3.3.5.

3.3.2.1.2.2 Rocky Water Holes Creek

In situ monitoring had been carried out following the 2 February rainfall events, despite no evidence of Project related discharges or impact, the results of which are presented in Table 10.

Visual monitoring immediately following the 3 February event confirmed that passive discharges from the Project Works had occurred through Type 2 controls along Fairfield Road, prior to entering gully pits reporting to Rocky Water Holes Creek. Visual monitoring of the creek confirmed that upstream water quality was highly turbid and the discrete discharges from the Project Works were not discernible. It was not safe to carry out in situ monitoring following the event as the water levels in Rocky Water Holes Creek were rising. The Brisbane City Council issued five flood alerts for the Creek between 4.46pm and 6.11pm. Discrete discharges stopped that evening.

Visual monitoring following 23 and 24 February rainfall events confirmed there was no evidence of passive discharges from the Project Works having occurred through Type 2 controls along Fairfield Road. Rocky Water Holes creek was also inspected on 23 February and it was noted that the creek was consistently

visually turbid throughout. Olfactory evidence of hydrocarbons impact were also noted upstream and downstream of the Project Works continuing to confirm that upstream sources affecting the water quality exist.

3.3.2.2 Quantitative Monitoring

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

In some instances, TSS results at the downstream monitoring locations were more than 10% greater than the upstream results.

In some instances, the TSS results difference between the upstream and downstream results were also greater than 5mg/L.

Table 10: Surface Water Discharge Monitoring Results

Date	Location	Waterway	Tide	Discharge Criteria ³				TSS Delta
				Turbidity (NTU) Nil until Turbidity / TSS correlation achieved ⁴	TSS (mg/L) <50	DO (%) Nil	pH (pH Unit) Stable pH reading; and General sites: 6.5 – 8.5, or Wallum/Acidic Ecosystems: 5.0 – 7.0	change of 5mg/L or 10% increase (whichever is the greatest)
23/02/22	Breakfast Creek	SW01 (downstream based on tide status)	incoming	In Field: 63 Lab: N/A	N/A	96	7.7	N/A However downstream turbidity 41% lower than upstream turbidity therefore change of 5mg/L or 10% increase unlikely
23/02/22	Breakfast Creek	SW03 (upstream based on tide status)	incoming	In Field: 106 Lab: N/A	N/A	94	7.2	
03/02/22	Clapham Yard	Moolabin Creek (SW-05 - upstream)	N/A	Field: 159 Lab: 43	75	108	6.8	Yes Downstream results representative of external influence See results for 04/02/22 for additional monitoring
03/02/22	Clapham Yard	Moolabin Creek (SW-06 – downstream)	N/A	Field: 1163 Lab: 648	674	112	7.1	
04/02/22	Clapham Yard	Moolabin Creek (SW-05 – upstream)	N/A	In Field: 28 Lab: N/A	N/A	97	7.2	N/A However downstream turbidity without external influence within 10% of upstream data
04/02/22	Clapham Yard	Moolabin Creek (SW-06a – downstream – no external influence)	N/A	In Field: 30 Lab: N/A	N/A	110	7.3	

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

⁴ Correlations are typically run on the source water (i.e., basins) not the receiving system where there is a dilution component of potentially diffuse sources of sediments from non-Project related areas. Due to the very limited amount of 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.

Date	Location	Waterway	Tide	Discharge Criteria ³				TSS Delta
				Turbidity (NTU) Nil until Turbidity / TSS correlation achieved ⁴	TSS (mg/L) <50	DO (%) Nil	pH (pH Unit) Stable pH reading; and General sites: 6.5 – 8.5, or Wallum/Acidic Ecosystems: 5.0 – 7.0	change of 5mg/L or 10% increase (whichever is the greatest)
04/02/22	Clapham Yard	Moolabin Creek (SW-06b – downstream – furthestmost downstream location – with external influence)	N/A	In Field: 43-62 Lab: N/A	N/A	80-110	7.2-7.4	
23/02/22	Clapham Yard	Moolabin Creek (SW-05 - upstream)	N/A	In Field: 22 Lab: N/A	N/A	90	7.15	N/A
23/02/22	Clapham Yard	Moolabin Creek (SW-06 – downstream)	N/A	In Field: 25 Lab: N/A	N/A	92	7.2	However downstream turbidity without external influence within 10% of upstream data
03/02/22	Clapham Yard	Rocky Water Holes Creek (SW-07 - upstream)	N/A	Field: 64 Lab: 22	27	103	6.6	Yes Downstream results representative of external influence
03/02/22	Clapham Yard	Rocky Water Holes Creek (SW-08 – downstream)	N/A	Field: 75 Lab: 32	55	89	6.7	

3.3.3 Groundwater Discharge Monitoring Results

Groundwater discharge monitoring was not triggered during the reporting period.

3.3.4 Routine Surface Water Monitoring Results

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

3.3.5 Post Rainfall Monitoring Results Interpretation

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

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

This was typically when external influences were confirmed to be present.

Consistent with Table 2 of the Waterways and Water Quality Management subplan when TSS results downstream of the Project Works exhibit a change of 5mg/L or 10% increase (whichever is the greatest) further investigation is required to ascertain whether this change in water quality is related to released water from the Project Works.

Therefore, a detailed review of the data was required to ascertain whether

- the source of the increased turbidity could be reasonably accredited solely to the Project Works; and
- if so, had the Project implemented all reasonable and practicable measures to minimise environmental impacts.

The assessment included the review of the following factors:

- rainfall size (below or above the design criteria for the erosion and sediment control measures)
- existence of an ESC-P designed and regularly maintained by suitably qualified person consistent with the Guidelines for Best Practice Erosion and Sediment Control (IECA 2008) as per Imposed Condition 18
- status of the erosion and sediment controls measures, that is
 - ESC measures were installed and maintained as per the ESC-P or the relevant action plan from routine surveillance, and
 - If the rain event was below the design criteria, the ESC measures had not been damaged by the rain event.
- presence of external sources of sedimentation in the immediate vicinity of the Project Works, and
- evidence that, where site run-off had been generated by the rainfall, site run off had entered the surface water bodies without going through an ESC measures, and
previous rainfall resulting in increased run-off potential, and
- flow conditions of the creek (e.g. were flood warnings issued).

The below table details the assessment for each individual monitoring event that identified or presumed impacts to water quality.

Table 11: Review of Relevant Factors – Surface Water Quality

Date	Location	Event size	Event above Design Criteria	ESC-P designed and regularly maintained by Suitably Qualified Person	ESC measures were installed and maintained to the appropriate standard	ESC measures damaged by the rain event	Evidence of site run off had entered the surface water bodies	Site run off had entered the surface water bodies without going through ESC measures	Presence of external sources of sedimentation	Previous rainfall resulting in increased run-off potential	Flood alert issued	Discernible downstream impact solely attributable to Project Works releases
02-Feb-22	Mayne Yard	Rainfall Depth: >4EY ⁵ Intensity: up to 0.2EY (5 Year ARI ⁶)	Yes	Yes	Yes	No	Yes	No	Yes Construction site on McDonald Street contributing to discharge via existing stormwater drainage.	No	No	No
23-Feb-22	Mayne Yard	Rainfall Depth: 12EY Intensity: up to 0.2EY (5 Year ARI)	Yes	Yes	Yes	No	No	Not Applicable	Yes Construction site on McDonald Street contributing to discharge via existing stormwater drainage Other external sources likely considering the widespread nature of the turbidity changes from ambient conditions.	Unlikely	No	Not Applicable
24-Feb-22	Mayne Yard	Rainfall Depth: 12EY Intensity: up to 0.2EY (5 Year ARI)	Yes	Yes	Yes	No	No	Not Applicable	Yes As above	Yes	No	Not Applicable
02 Feb 22	Clapham Yard	Rainfall Depth: 6EY to 4EY Intensity: up to 1EY	Yes	Yes	Yes	No	Yes Moolabin Creek only	No	Yes Industrial and Commercial properties upstream with discrete discharge points. Road drainage (including Fairfield Road) with discrete discharge points. Unconsolidated in stream sediment that is remobilised when flows are greater than low flows.	No	Yes	No
03 Feb 22	Clapham Yard	Rainfall Depth: 12EY to 6EY Intensity: up to 4EY	No	Yes	Yes	No	Yes Moolabin Creek and Rocky Water Holes Creek	No	Yes As above for Moolabin Creek For Rocky Water Holes Creek Typically, unconsolidated in stream sediment and debris (upstream and mid-stream) that is remobilised when flows are greater than low flows.	Yes	Yes	No
18 Feb 22	Clapham Yard	Rainfall Depth: 3EY to 2EY Intensity: >0.5 ARI	Yes	Yes	Yes	No	Yes Moolabin Creek only	No	Yes Industrial and Commercial properties upstream with discrete discharge points Road drainage (including Fairfield Road) with discrete discharge points. Unconsolidated in stream sediment that is remobilised when flows are greater than low flows.	No	No	No
23-Feb-22	Clapham Yard	Rainfall Depth: 4EY to 3EY Intensity: up to 4EY	Yes	Yes	Yes	No	Yes Moolabin Creek only	No	As above	Unlikely	Yes	No
24-Feb-22	Clapham Yard	Rainfall Depth: 2EY to 1EY Intensity: up to 1EY	Yes	Yes	Yes	No	Yes Moolabin Creek only	No	As above	Yes	Yes	No

⁵ Exceedances per year (EY): the number of times an event is likely to occur or be exceeded within any given year.

⁶ average recurrence interval (ARI): The average or expected value of the periods between exceedances of a given rainfall total accumulated over a given duration

In summary, the water quality impacts identified as part of the post rainfall monitoring program implemented by Unity cannot be reasonably accredited solely to the Project Works.

Where impacts were discernible between upstream and downstream locations these were typically attributable to external sources of sediment or consistent with above design events or both.

ESC-Ps for the relevant areas were regularly reviewed and updated by a suitably qualified person in ESC management.

Project Works related discharges did not enter the receiving water bodies without passing through ESC measures.

Actions pertaining to the maintenance of the ESC measures prior to predicted rain events and following rainfall had been promptly addressed to a suitable degree of execution.

The ESC measures did not fail even at above design rain events.

Compliance with Imposed Conditions 15 and 18 was met.

4 Compliance Review

4.1 Non-Compliance Events

The below section summarises the events to be reported in accordance with Condition 5 and Condition 6(b)(ii) of the CGCR. A non-compliance event (NCE) is defined as Project Works that do not comply with the Imposed Conditions.

4.1.1 Non - Compliance Events Summary

Table 12 Summary of Non-Compliance Events

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

4.2 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 13 C-EMP and relevant Subplans monitoring requirements – Compliance Status for the reporting period

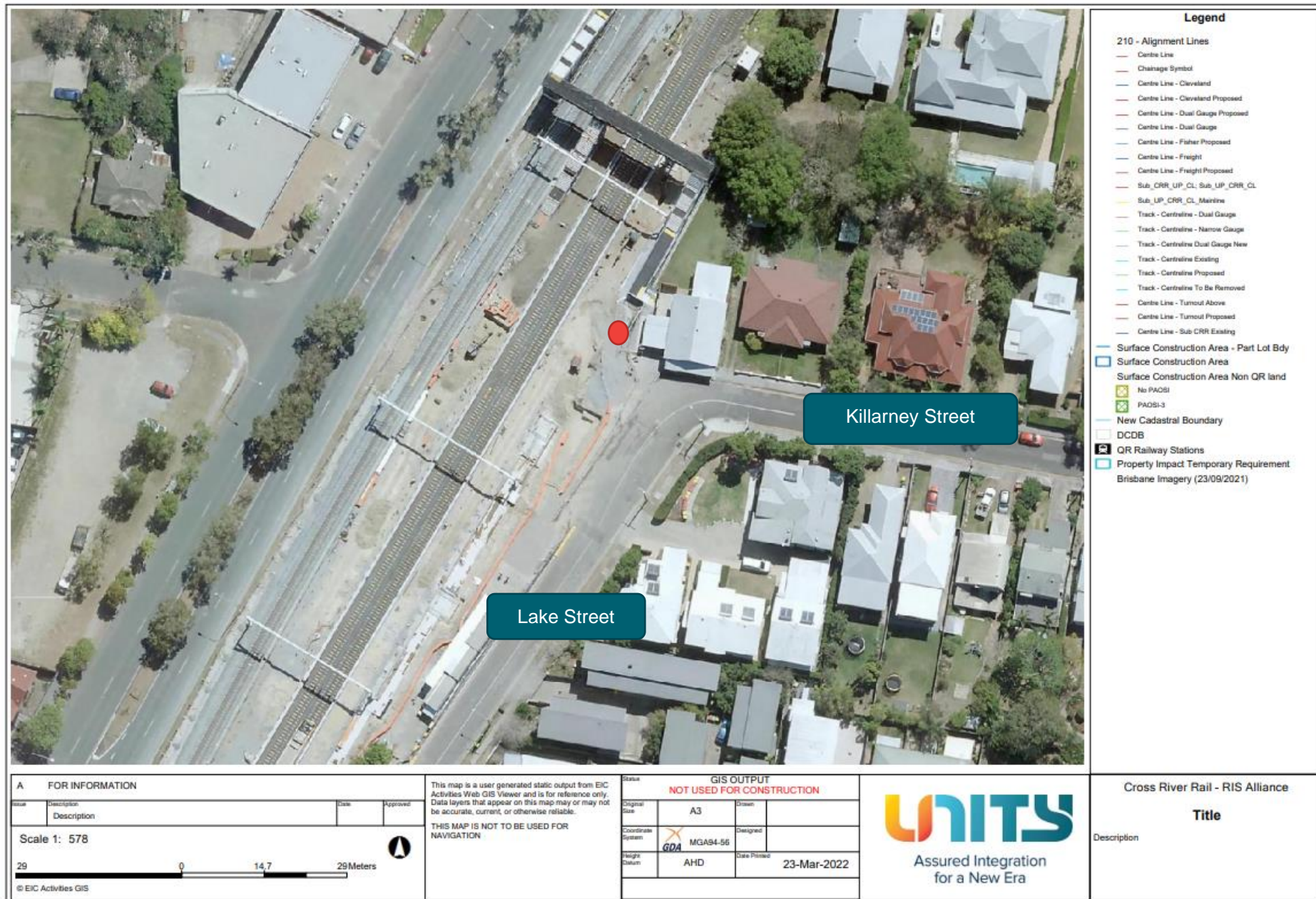
Aspect	Monitoring requirement	Activities risk profile	Monitoring undertaken	Compliance status with C-EMP / Subplan	Effect of the non-compliance
Air Quality	Visual monitoring program + Additional particulate monitoring as required based on the outcomes of the predictive assessment/risk profile	Moderate to High	Yes – visual monitoring is undertaken as part of routine inspections. Monitoring for TSP, PM ₁₀ , and deposited dust was also undertaken	Compliant	Not Applicable
Air Quality	Complaint's response	Moderate to High	Triggered 1 complaint	Compliant	Not Applicable
Noise	Buffer distance tests based on the outcomes of the predictive assessment based / risk profile of activities	Moderate to High	No	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	No 1 complaint received at Yeronga	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	No	Compliant	Not Applicable
Vibration	Complaint's response	Moderate to High	Not triggered no complaints	Compliant	Not Applicable
Water Quality	Bi-Annual monitoring	N/A	Wet season monitoring completed in January 2022	Compliant	Not Applicable
Water Quality	Post Rainfall	Moderate to High	Triggered	Compliant	Not Applicable

Aspect	Monitoring requirement	Activities risk profile	Monitoring undertaken	Compliance status with C-EMP / Subplan	Effect of the non-compliance
Water Quality	Dewatering	Moderate to High	Not Triggered	N/A	Not Applicable

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

None for this reporting period.

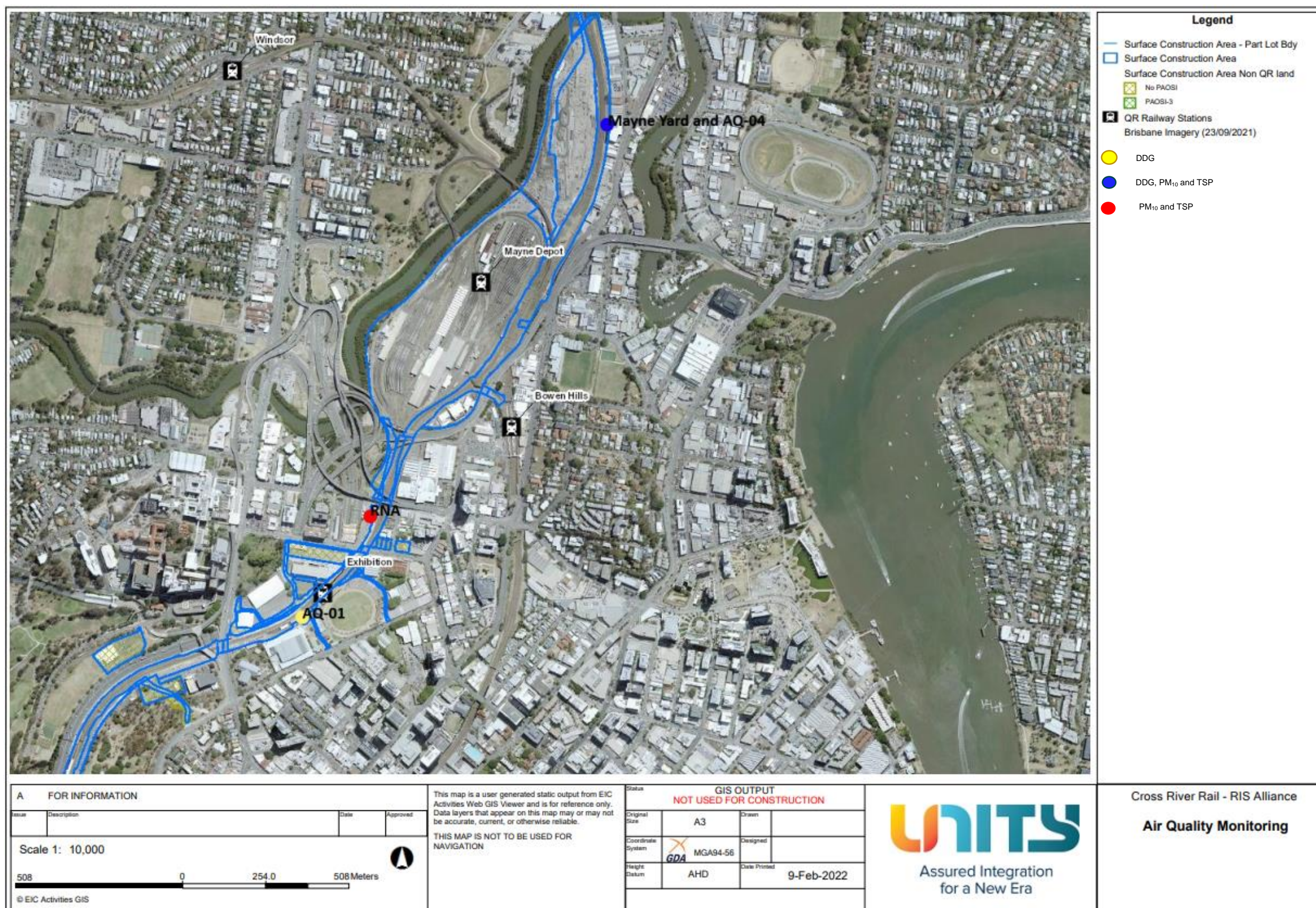
Attachment 2 Monitoring Locations – Noise

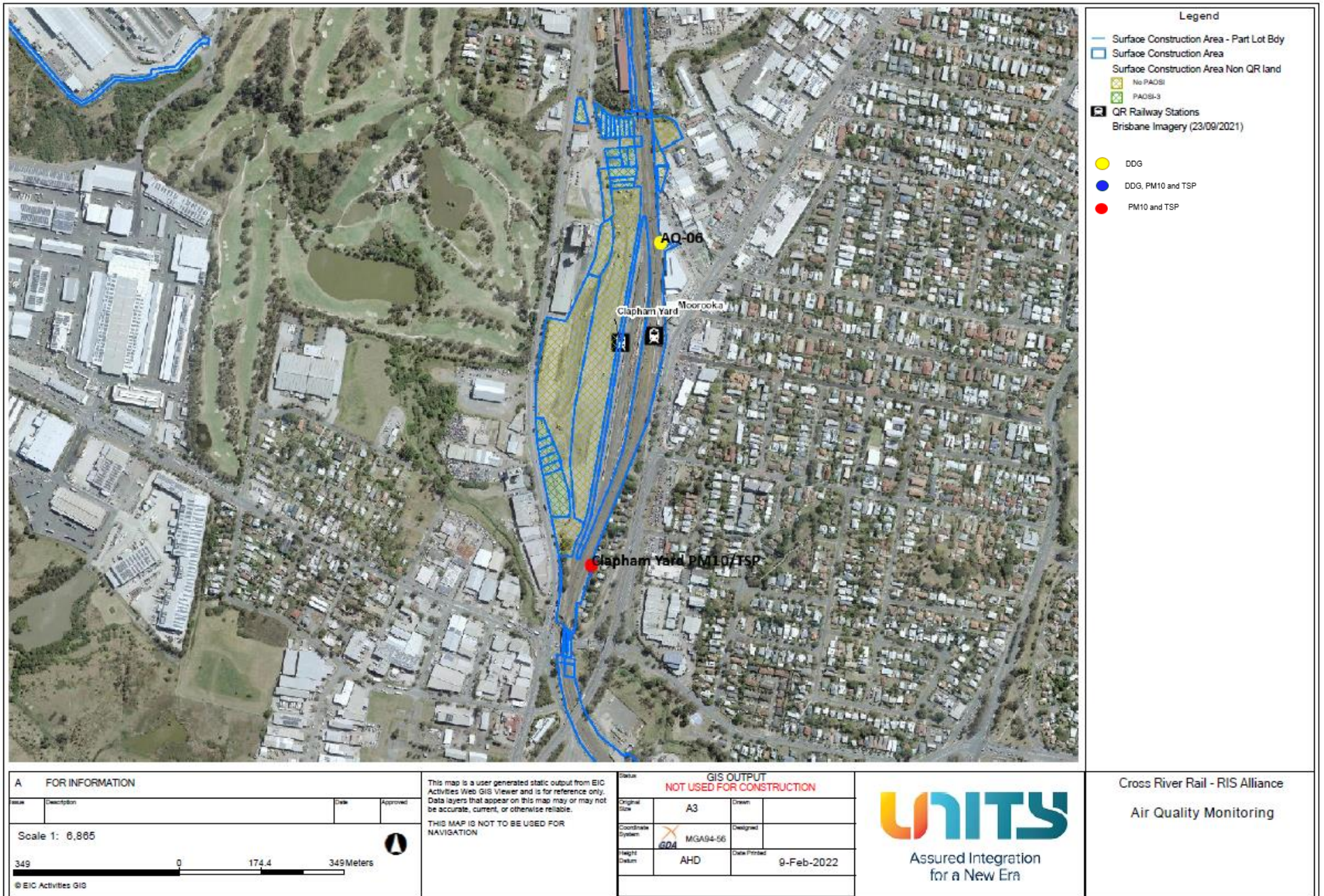


Attachment 3 Monitoring Locations – Vibration

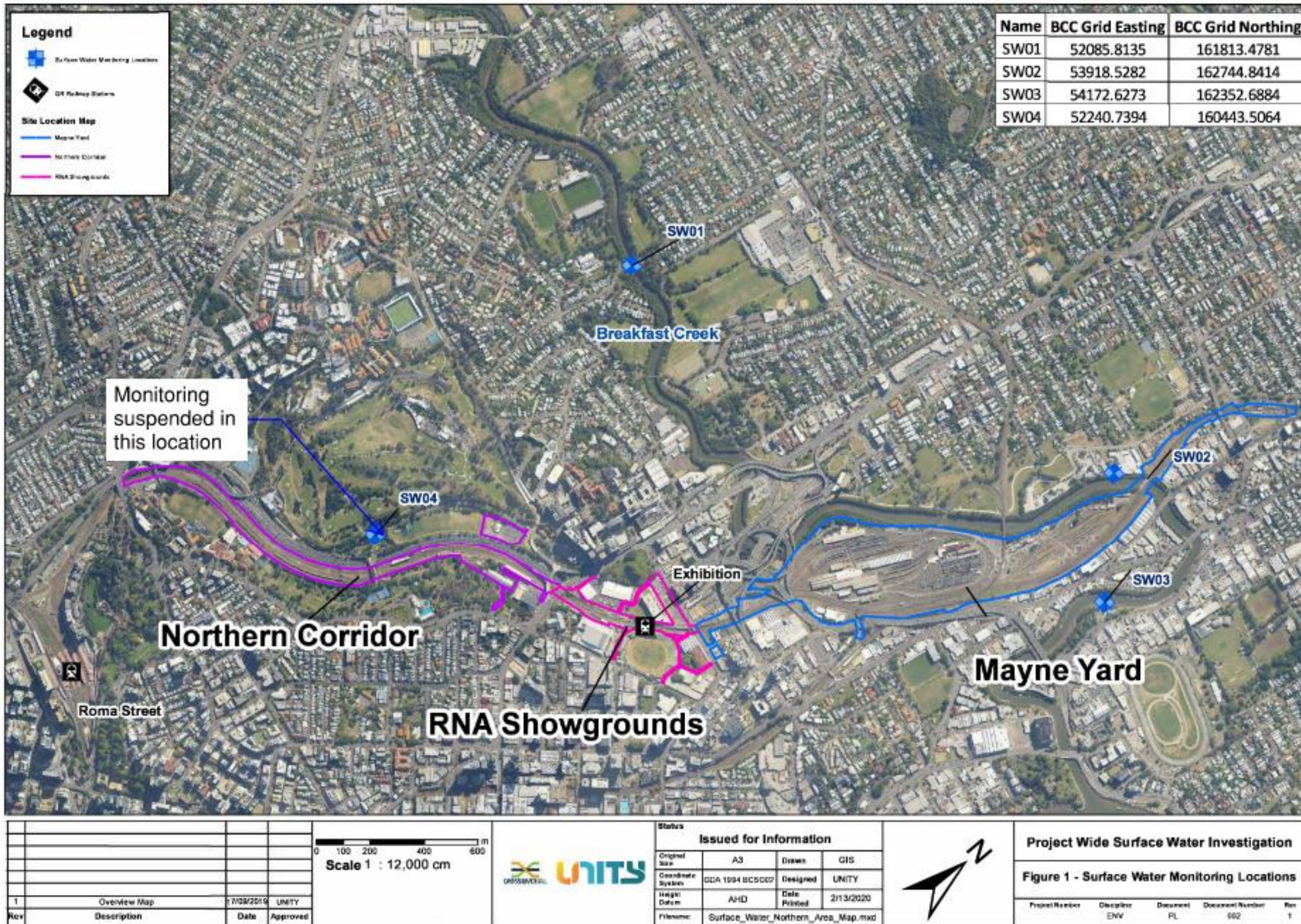
None for this reporting period

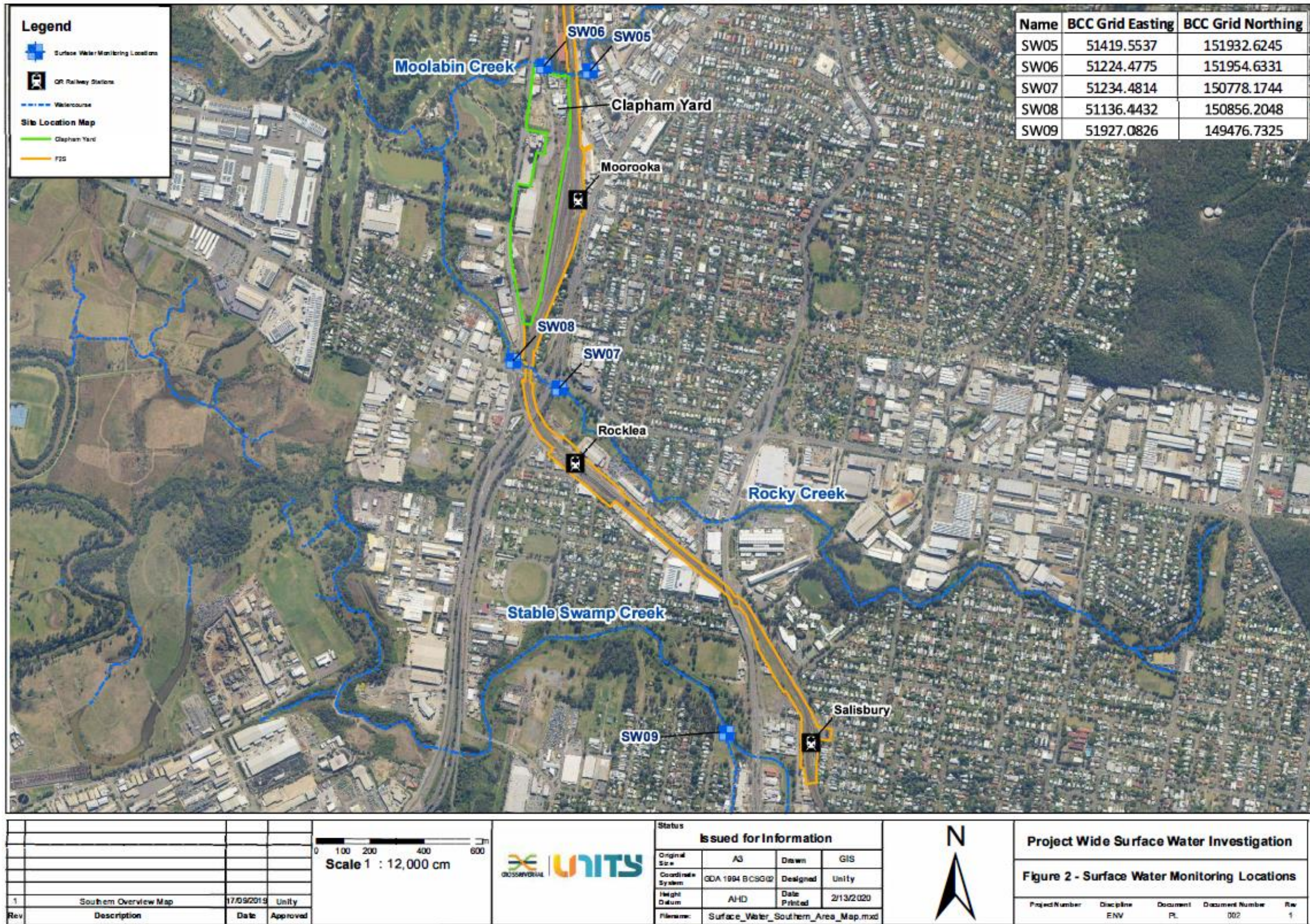
Attachment 4 Monitoring Locations – Air Quality





Attachment 5 Monitoring Locations – Surface Water





Appendix B TSD Monthly Report

COORDINATOR-GENERAL'S MONTHLY REPORT: February 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.

Vibration monitoring was conducted on five (5) occasions, and noise monitoring was conducted on thirteen (13) occasions during February 2022. Also, three (3) additional vibration monitoring sessions from January 2022 have been included as they were not captured in last month's report. Each vibration and noise monitoring event confirmed works adhered to project requirements.

Ambient air quality monitoring was conducted at Roma Street, Albert Street, Woolloongabba, Boggo Road, Southern Portal and Northern Portal precinct sites during February 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-one (31) occasions. Each monitoring event confirmed project requirements were adhered to. One (1) round of surface water quality monitoring was 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 8).
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.
19.	Acid Sulfate Soils managed as per the <i>Queensland Acid Sulfate Soil Technical Manual</i> .	Yes	CBGU has prepared and manages processes to ensure acid sulphate soils are managed in accordance with Imposed Condition 19.

CG 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	CBGU project works are designed and implemented in accordance with Condition 20.
21.	Worksite rehabilitation – worksites rehabilitated as soon as practicable upon completion of works or commissioning, and in consultation with Brisbane City Council.	Yes	CBGU project works are designed and implemented in accordance with Condition 21.

3. Environmental Monitoring Results

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

3.1 Vibration

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

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

Five (5) vibration monitoring sessions were conducted during February 2022. Three (3) vibration monitoring sessions from January 2022 have been included as they were not captured in last month's report.

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

Table 2: Vibration Monitoring Data

No.	Start Date	Time (AM/PM)	Finish Date	Location	Average Vibration level (mm/s)	Max Vibration Level (mm/s)	Vibration Goal (mm/s)	Receiver / Goal Type	Adhered to Project Requirements (Yes / No)
1.	28/01/2022	10:17:00 AM	31/01/2022	Gregory Terrace (Northern Portal)	0.13	0.64	50	Structure	Yes
2.	28/01/2022	4:01:00 PM	28/01/2022	Albert Street (Albert Street Precinct)	-	9.2	50	Residential (Controlled Blast)	Yes
3.	31/01/2022	10:07:00 AM	4/02/2022	Gregory Terrace (Northern Portal)	0.12	0.71	50	Structure	Yes
4.	01/02/2022	4:00:00 PM	1/02/2022	Albert Street (Albert Street Precinct)	-	9.00	50	Residential (Controlled Blast)	Yes
5.	09/02/2022	4:00:00 PM	09/02/2022	Petrie Terrace (Northern Portal)	-	7.90	15	Structure (Controlled Blast)	Yes

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)
6.	15/02/2022	4:01:00 PM	15/02/2022	Roma Street (Roma Street Precinct)	-	0.05	10	Heritage Structure (Controlled Blast)	Yes
7.	22/02/2022	4:00:00 PM	22/02/2022	Albert Street (Albert Street Precinct)	-	10.5	50	Residential (Controlled Blast)	Yes
8.	26/02/2022	11:03:00 AM	26/02/2022	Mary Street (Albert Street Precinct)	-	25.8	50	Residential (Controlled Blast)	Yes

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 twelve (12) occasions during February 2022. One (1) noise monitoring session from January 2022 has been included as it was not captured in last month's report. 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.	28/01/2022	4:01:00 PM	Albert Street (Albert Street Precinct)	Construction Monitoring	External	Controlled Blast	Construction	-	-	130 ^[3]	115.6 ^[3]	Yes
2.	1/02/2022	4:00:00 PM	Albert Street (Albert Street Precinct)	Construction Monitoring	External	Controlled Blast	Construction	-	-	130 ^[3]	110.3 ^[3]	Yes
3.	3/02/2022	7:35:00 PM	Mary Street (Albert Street Precinct)	Construction Monitoring	External	Spoil Haulage	Construction	67	71.8	57	70.4	Yes
4.	7/02/2022	9:04:00 AM	Gregory Terrace (Northern Portal)	Construction Monitoring	External	TBM Extraction	Construction & Road Traffic	62	67.1	52	65.3	Yes
5.	7/02/2022	9:30:00 AM	Gregory Terrace (Northern Portal)	Construction Monitoring	External	TBM Extraction	Construction	62	70.9	52	70.0	Yes
6.	7/02/2022	9:48:00 AM	Gregory Terrace (Northern Portal)	Construction Monitoring	External	TBM Extraction	Construction	62	69.2	52	67.2	Yes

No.	Date	Time (AM / PM)	Location (Street Name) (Construction Precinct)	Purpose of Monitoring	Internal or External ^[3] Monitoring	Activity	Dominant Noise Source	Noise Goal LA10 ^[1]	Noise level LA10	Noise Goal LAeq ^[2]	Noise level LAeq	Adhered to Project Requirements (Yes / No)
7.	7/02/2022	10:07:00 AM	Gregory Terrace (Northern Portal)	Construction Monitoring	External	TBM Extraction	Construction	62	69.1	52	67.5	Yes
8.	9/02/2022	4:00:00 PM	Gregory Terrace (Northern Portal)	Controlled blast	External	Controlled Blast	Construction	-	-	130 ^[3]	101.2 ^[3]	Yes
9.	15/02/2022	4:01:00 PM	Roma Street Roma Street Precinct	Controlled blast	External	Controlled Blast	Construction	-	-	130 ^[3]	127.3 ^[3]	Yes
10.	16/02/2022	9:35:00 AM	Vulture Street (Woolloongabba Precinct)	Model verification	External	Conveyor Tower Removal	Construction	62	75.8	52	75.5	Yes
11.	16/02/2022	10:10:00 AM	Reid Street (Woolloongabba Precinct)	Model verification	External	Conveyor Tower Removal and Concrete Works	Construction	62	57.9	52	56.2	Yes
12.	22/02/2022	4:00:00 PM	Albert Street (Albert Street Precinct)	Controlled Blast	External	Controlled Blast	Construction	-	-	130 ^[3]	127.4 ^[3]	Yes
13.	26/02/2022	11:03:00 AM	Albert Street (Albert Street Precinct)	Controlled blast	External	Controlled Blast	Construction	-	-	130 ^[3]	129 ^[3]	Yes

- [1] Intermittent noise goal (LA10)

- [2] Continuous noise goal (LAeq)

- [3] Blasting is measured in dB Linear Peak.

- 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 during February 2022. Boggo Roads and Southern Portals January Deposited Dust results have been included in this month's report as the results had not been received from the laboratory at the completion of last month's report. The dust deposition gauges result for the reporting period are detailed below, and all monitoring data adhered to project requirements.

Table 4.1: January Air Quality Monitoring – Deposited Dust Data

Location	Project Wide Air Quality Goals ^[1]			Monitoring results (mg/m ² /day)	Comments
	Criterion	Air Quality Indicator	Goal (mg/m ² /day)		
Boggo Road Precinct (North)	Nuisance	Deposited dust	120	13.89	Air quality monitoring was performed during the reporting period. All results adhered to project requirements.
Boggo Road Precinct (South)				8.33	
Southern Portal (South)				2.78	
Southern Portal (East)				5.56	

- [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.

- Table 5.2: February Air Quality Monitoring – Deposited Dust Data

Location	Project Wide Air Quality Goals ^[1]			Monitoring results (mg/m ² /day)	Comments
	Criterion	Air Quality Indicator	Goal (mg/m ² /day)		
Northern Portal	Nuisance	Deposited dust	120	31.03	Air quality monitoring was performed during the reporting period. All results adhered to project requirements.
Roma Street Precinct				13.79	
Albert Street Precinct (North)				74.19	
Albert Street Precinct (South)				45.16	
Woolloongabba Precinct (North)				25.00	
Woolloongabba Precinct (South)				46.43	
Boggo Road Precinct (North)				31.03	
Boggo Road Precinct (South)				44.83	
Southern Portal (South)				13.79	
Southern Portal (East)				20.69	

3.3.2 Particulates and Ambient Air Quality Results

Total Suspended Particulates (TSP) and particulate matter less than 10µm (PM10) monitoring was conducted during February 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 February 2022. Three (3) Government air quality stations near the Construction Precincts are also utilised.

Table 6: Targeted Air Quality Monitoring – Total Suspended Particles and PM10 Data

Date	TSP Project Goal ^[1]	PM10 Project Goal	Woolloongabba		Albert		Boggo Road ^[2]		Northern Portal	
			TSP	PM 10	TSP	PM 10	TSP	PM 10	TSP	PM 10
			(µg/m3/24 hr)							
01-Feb-22	80	50	_[2]	_[2]	16.69	16.53	6.99	6.97	11.58	11.52
02-Feb-22	80	50	_[2]	_[2]	19.06	18.87	12.53	12.39	13.05	12.96
03-Feb-22	80	50	_[2]	_[2]	11.63	11.52	5.18	5.16	8.62	8.57
04-Feb-22	80	50	9.10	9.00	12.65	12.48	4.30	4.26	8.36	8.29
05-Feb-22	80	50	9.95	9.85	18.73	18.61	5.09	5.06	10.85	10.81
06-Feb-22	80	50	6.87	6.80	12.27	12.21	3.92	3.91	7.20	7.18
07-Feb-22	80	50	6.75	6.69	12.86	12.77	4.20	4.18	8.08	8.03
08-Feb-22	80	50	9.75	9.69	16.68	16.54	6.17	6.14	12.38	12.35
09-Feb-22	80	50	9.85	9.79	19.85	19.71	6.13	6.10	11.07	11.01
10-Feb-22	80	50	9.42	9.34	23.46	23.29	6.62	6.59	9.99	9.93
11-Feb-22	80	50	8.25	8.12	18.73	18.57	5.95	5.92	8.58	8.46
12-Feb-22	80	50	9.33	9.27	20.81	20.69	5.38	5.35	9.74	9.67
13-Feb-22	80	50	10.06	10.02	15.54	15.48	6.05	6.01	11.00	10.97
14-Feb-22	80	50	9.73	9.69	16.25	16.17	6.47	6.47	9.62	9.57
15-Feb-22	80	50	15.42	15.37	22.92	22.79	9.12	9.10	14.59	14.53
16-Feb-22	80	50	9.34	9.29	21.29	21.17	6.07	6.06	8.86	8.81
17-Feb-22	80	50	10.50	10.42	18.21	18.09	6.00	5.99	11.44	11.35
18-Feb-22	80	50	11.19	11.10	16.88	16.76	7.04	7.04	10.73	10.62

Date	TSP Project Goal ^[1]	PM10 Project Goal	Woolloongabba		Albert		Boggo Road ^[2]		Northern Portal	
			TSP	PM 10	TSP	PM 10	TSP	PM 10	TSP	PM 10
			(µg/m ³ /24 hr)							
19-Feb-22	80	50	12.54	12.45	21.88	21.75	8.59	8.59	14.38	14.29
20-Feb-22	80	50	7.84	7.80	11.63	11.59	4.91	4.90	9.35	9.31
21-Feb-22	80	50	8.63	8.57	14.50	14.39	5.60	5.59	8.63	8.54
22-Feb-22	80	50	9.27	9.22	17.14	17.03	6.95	6.94	8.74	8.70
23-Feb-22	80	50	4.81	4.76	14.72	14.64	4.18	4.18	5.73	5.66
24-Feb-22	80	50	11.20	11.17	22.63	22.51	6.39	6.39	10.92	10.89
25-Feb-22	80	50	13.56	13.55	20.87	20.80	7.36	7.35	12.01	12.00
26-Feb-22	80	50	11.27	11.26	16.24	16.21	5.29	5.29	8.92	8.92
27-Feb-22	80	50	2.07	2.06	3.71	3.71	0.81	0.81	2.91	2.90
28-Feb-22	80	50	_[2]	_[2]	7.66	7.61	_[3]	_[3]	2.66	2.62

- [1] Project works must aim to achieve construction air quality goals. The Coordinator-General Change Report – Whole of Project Refinements 2019 acknowledges instances exist that these goals may not be achieved.
- [2] The Woolloongabba air quality unit experienced technical difficulties between the 1st-3rd and 28th February 2022. As soon as practicable the mobile air quality unit was reinstated. A nearby (Southern Brisbane) DES Air Quality Stations demonstrated compliant air quality during this outage period, these results are provided below. Low levels were also consistently monitored throughout the month when the unit was operating.
- [3] The Boggo Road air quality unit experienced technical difficulties on the 28th February 2022. As soon as practicable the unit was inspected, and the problem was resolved. A nearby (Woolloongabba) DES Air Quality Stations demonstrated compliant air quality during this outage period, these results are provided below. Low levels were also consistently monitored throughout the month when the unit was operating.

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: **27.7 µg/m3/24 hr** (<https://apps.des.qld.gov.au/air-quality/chart/?station=cbd¶meter=18&date=1/02/2022&timeframe=month>)
- South Brisbane: PM10 daily Maximum average: **23.9 µg/m3/24 hr** (<https://apps.des.qld.gov.au/air-quality/chart/?station=sbr¶meter=18&date=1/02/2022&timeframe=month>)
- Woolloongabba: PM10 daily Maximum average: **30.1 µg/m3/24 hr** (<https://apps.des.qld.gov.au/air-quality/chart/?station=woo¶meter=18&date=1/02/2022&timeframe=month>)

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

Particle PM₁₀ at Brisbane CBD, 1–28 February 2022 [about Particle PM₁₀](#)

[Brisbane CBD station overview](#)

The guideline for Particle PM₁₀ is 100µg/m³ (1hr avg) and 50µg/m³ (24hr avg).

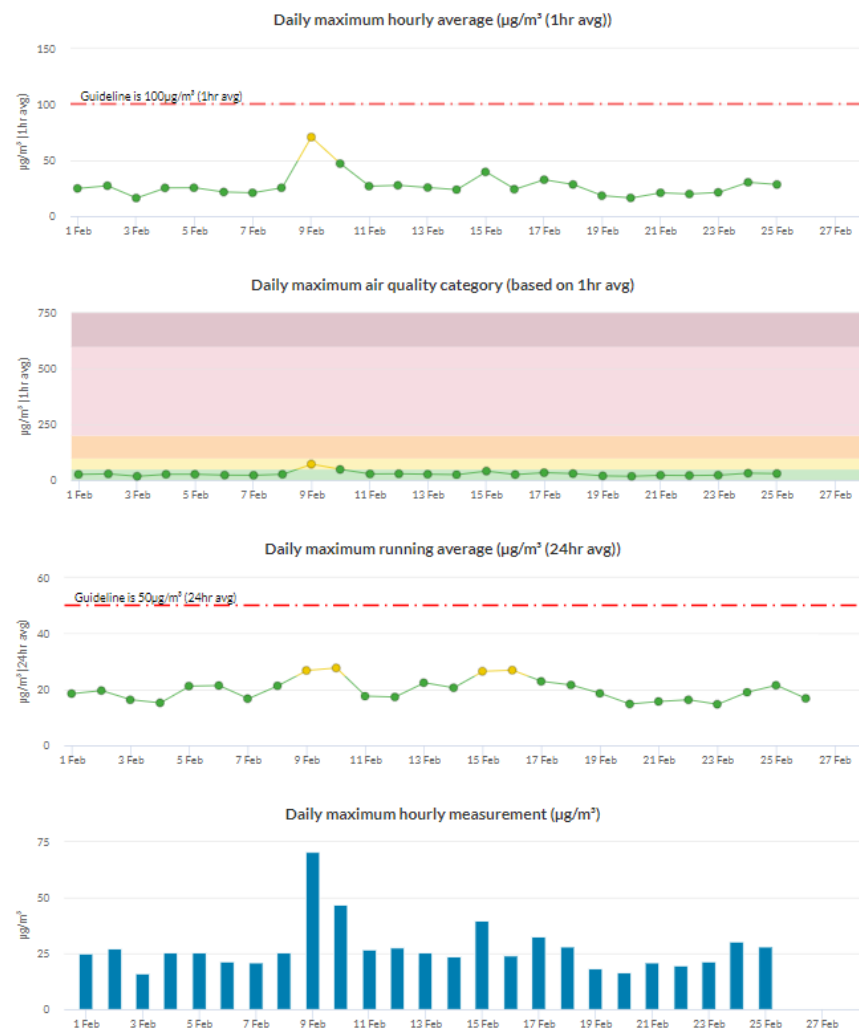


Figure 1: Brisbane CBD – DES Station - PM10 graph for February 2022 (reproduction from the DES website).

Particle PM₁₀ at South Brisbane, 1–28 February 2022 [about Particle PM₁₀](#)

[South Brisbane station overview](#)

The guideline for Particle PM₁₀ is 100µg/m³ (1hr avg) and 50µg/m³ (24hr avg).

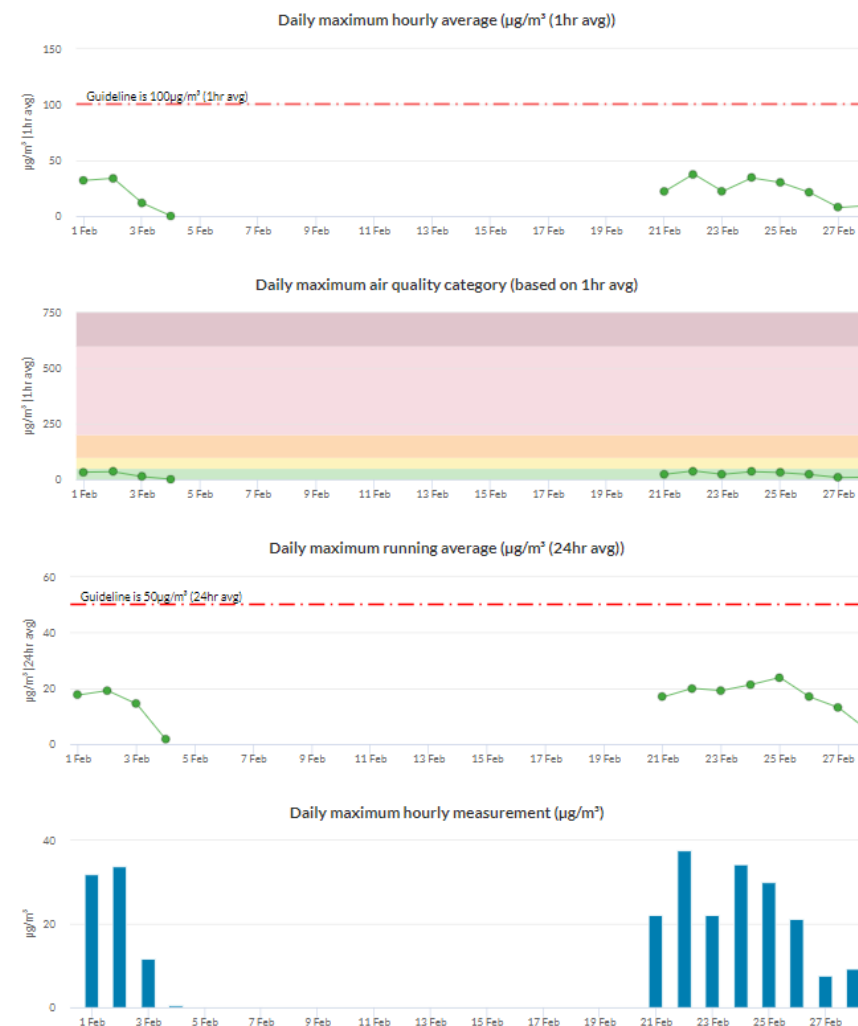


Figure 2: South Brisbane – DES Station - PM10 graph for February 2022 (reproduction from the DES website).

Particle PM₁₀ at Woolloongabba, 1–28 February 2022 [about Particle PM₁₀](#)

[Woolloongabba station overview](#)

The guideline for Particle PM₁₀ is 100µg/m³ (1hr avg) and 50µg/m³ (24hr avg).

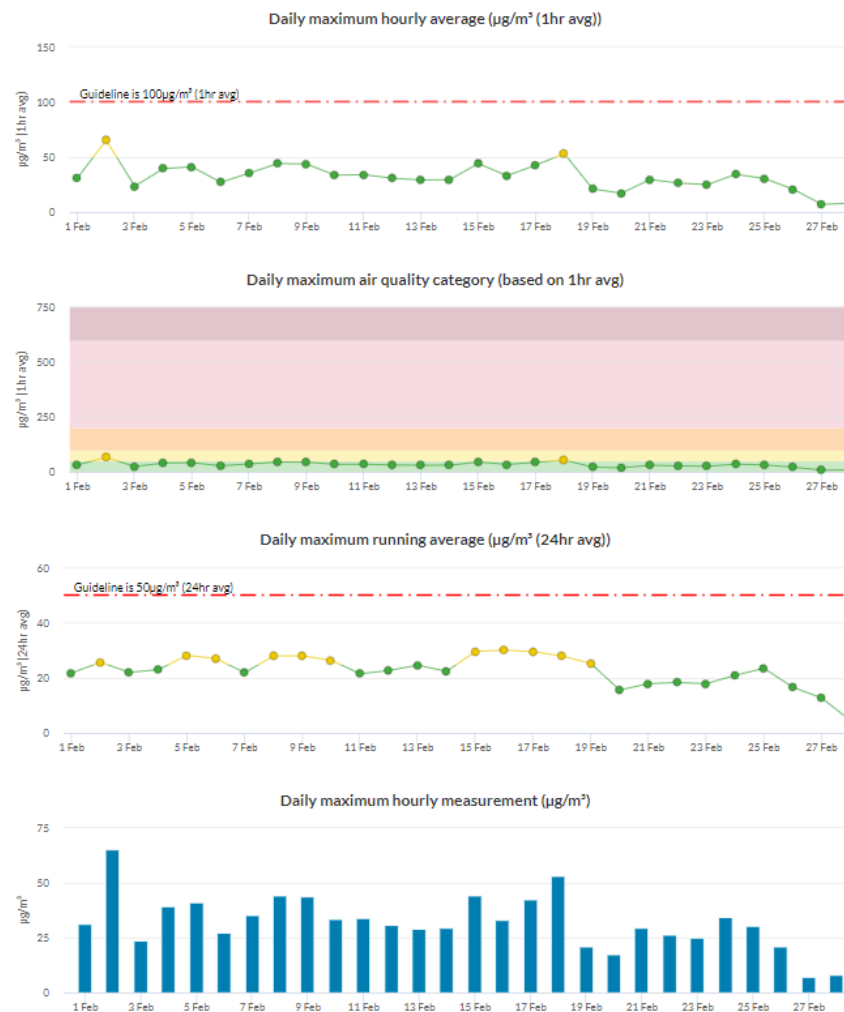


Figure 3: Woolloongabba – DES Station - PM10 graph for February 2022 (reproduction from the DES website).

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 7: Groundwater Discharge – Water Quality Monitoring Data

Location	Date	Testing of Water Quality Objectives ^[1]											Adhered to Project Requirements (Yes / No)
		pH	Suspended solids (mg/L)	Turbidity (NTU)	Ammonia N (µg/L) ^[3]	Oxidised N (µg/L) ^[3]	Organic N (µg/L) ^[3]	Total nitrogen (µg/L) ^[3]	Total phosphorus (µg/L)	Filterable Reactive phosphorus (FRP) (µg/L)	Chlorophyll a (µg/L)	Dissolved oxygen (%) ^[2]	
Albert Street	31/01/2022	7.11	<5	0.20	2550.00	4530.00	2600.00	9700.00	<50	<10	<1	89.99	Yes
Roma Street	01/02/2022	7.8	<5	0.70	6610.00	10200.00	<1000	17600.00	<10	<10	<0	83.51	Yes
Boggo Road	16/02/2022	8.40	<5	1.82	80.00	80.00	500.00	500.00	30.00	<10	15.00	102.88	Yes
Woolloongabba	15/02/2022	7.76	<5	0.74	18000.00	43300.00	<2000	61800.00 ^[4]	<10	<10	<1	85.93	Yes

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

3.4.2 Ponded/Surface Water Discharge

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

Table 8: 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	1/02/2022	8.33	41.90	Yes
2.	Northern Portal	2/02/2022	8.27	42.70	Yes
3.	Northern Portal	3/02/2022	8.22	28.70	Yes
4.	Northern Portal	4/02/2022	8.26	31.10	Yes
5.	Northern Portal	4/02/2022	8.10	40.20	Yes
6.	Northern Portal	5/02/2022	8.22	20.90	Yes
7.	Northern Portal	7/02/2022	7.12	38.20	Yes
8.	Northern Portal	7/02/2022	8.37	30.80	Yes
9.	Northern Portal	8/02/2022	8.11	23.50	Yes
10.	Northern Portal	9/02/2022	8.18	35.80	Yes
11.	Northern Portal	10/02/2022	8.16	10.93	Yes
12.	Northern Portal	11/02/2022	8.21	32.60	Yes
13.	Northern Portal	12/02/2022	8.22	28.40	Yes
14.	Northern Portal	14/02/2022	8.15	15.58	Yes
15.	Northern Portal	15/02/2022	8.22	27.60	Yes

16.	Northern Portal	16/02/2022	8.27	1.23	Yes
17.	Northern Portal	17/02/2022	8.22	1.94	Yes
18.	Northern Portal	18/02/2022	8.32	27.10	Yes
19.	Northern Portal	19/02/2022	8.27	23.10	Yes
20.	Northern Portal	21/02/2022	8.37	31.60	Yes
21.	Northern Portal	22/02/2022	8.25	32.30	Yes
22.	Northern Portal	23/02/2022	8.28	36.80	Yes
23.	Northern Portal	23/02/2022	8.32	40.50	Yes
24.	Northern Portal	24/02/2022	8.17	33.40	Yes
25.	Northern Portal	25/02/2022	8.12	33.30	Yes
26.	Roma Street	28/02/2022	8.50	15.45	Yes
27.	Roma Street	28/02/2022	8.47	7.30	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 February 2022, CBGU JV undertook one (1) round of surface water sampling at five (5) site locations (upstream and downstream). The January 2022 results have been included in this month's report as the results had not been received at the completion of last month's report.

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 9: Offsite Upstream & Downstream Water Quality Data

Location	Upstream / Downstream	Date	Purpose of Monitoring	Turbidity (NTU)	EC (μS/cm)	Dissolved oxygen (%)	pH
Roma Street	Upstream	27/01/2022	Post Rainfall	16.45	27900	72.62	7.95
Roma Street	Downstream	27/01/2022	Post Rainfall	17.89	28200	75.04	7.95
Northern Portal	Upstream	27/01/2022	Post Rainfall	19.00	528	70.2	7.88
Northern Portal	Downstream	27/01/2022	Post Rainfall	14.6	529	84.72	7.92
Woolloongabba	Upstream	4/02/2022	Monthly/Post rain	98.5	33400	81.36	7.7
Woolloongabba	Downstream	4/02/2022	Monthly/Post Rain	36.1	23400	81.36	7.75
Boggo Road ^[1]	Downstream	4/02/2022	Monthly/Post rain	26.3	1120	61.64	7.00
Albert Street	Upstream	4/02/2022	Monthly/Post Rainfall	96.4	31200	76.25	7.54
Albert Street	Downstream	4/02/2022	Monthly/Post Rainfall	98.3	31500	79.88	7.68
Roma Street	Upstream	15/02/2022	Monthly	70.2	25200	76.25	7.84
Roma Street	Downstream	15/02/2022	Monthly	61.2	25600	78.67	7.87
Northern Portal	Upstream	15/02/2022	Monthly	5.10	368	50.83	7.8

Location	Upstream / Downstream	Date	Purpose of Monitoring	Turbidity (NTU)	EC (μS/cm)	Dissolved oxygen (%)	pH
Northern Portal	Downstream	15/02/2022	Monthly	3.13	357	107.72	8.07
Boggo Road ^[1]	Downstream	16/02/2022	Monthly	22.3	5500	104.88	7.79

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

4 Non-Compliances

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

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

Table 10: 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 February 2022, nineteen (19) complaints relating to the Project were received, as detailed in Table 11 below.

Table 11: Summary of Complaints

No.	Date	Location	Description of Issue	Responses	Status of Event
1.	1 Feb 22	Rawnsley Street (Southern Area)	Noise and Vehicle Movements	<p>A stakeholder contacted the Project regarding noise from the Southern Area and vehicle movements. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Southern Area. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance.</p> <p>CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements, and the works undertaken were consistent with the community notification.</p> <p>CBGU informed the workforce of vehicle requirements.</p>	Closed
2.	2 Feb 22	Albert Street (Albert Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Albert Street precinct.	Closed

No.	Date	Location	Description of Issue	Responses	Status of Event
				<p>CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance.</p> <p>CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements, and the works undertaken were consistent with the community notification.</p>	
3.	3 Feb 22	Mary Street (Albert Street Precinct)	Noise	<p>A stakeholder contacted the Project regarding noise from the Albert Street precinct.</p> <p>CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance.</p> <p>CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements, and the works undertaken were consistent with the community notification.</p>	Closed
4.	4 Feb 22	Albert Street (Albert Street Precinct)	Noise	<p>A stakeholder contacted the Project regarding noise from the Albert Street precinct.</p> <p>CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance.</p> <p>CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements, and the works undertaken were consistent with the community notification.</p>	Closed
5.	4 Feb 22	Albert Street (Albert Street Precinct)	Noise	<p>A stakeholder contacted the Project regarding noise from the Albert Street precinct.</p> <p>CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance.</p> <p>CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements, and the works undertaken were consistent with the community notification.</p>	Closed
6.	7 Feb 22	Alice Street (Albert Street Precinct)	Vehicle Movements	<p>A stakeholder contacted the Project regarding vehicle movements on Alice Street.</p> <p>CBGU attempted to contact the stakeholder multiple times. No response has been received from the stakeholder.</p> <p>CBGU investigated the event and informed the workforce, via toolbox talk, about vehicle expectations.</p>	Closed

No.	Date	Location	Description of Issue	Responses	Status of Event
7.	8 Feb 22	Albert Street (Albert Street Precinct)	Noise	<p>A stakeholder contacted the Project regarding noise from the Albert Street precinct.</p> <p>CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance.</p> <p>CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements, and the works undertaken were consistent with the community notification.</p>	Closed
8.	8 Feb 22	Alice Street (Albert Street Precinct)	Vehicle Movements	<p>A stakeholder contacted the Project regarding vehicle movements on Alice Street.</p> <p>CBGU investigated the event and informed the workforce, via toolbox talk, about vehicle expectations.</p>	Closed
9.	11 Feb 22	Albert Street (Albert Street Precinct)	Noise	<p>A stakeholder contacted the Project regarding noise from the Albert Street precinct.</p> <p>CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance.</p> <p>CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements, and the works undertaken were consistent with the community notification.</p>	Closed
10.	11 Feb 22	Mary Street (Albert Street Precinct)	Air Quality	<p>A stakeholder contacted the Project regarding air quality from the Albert Street precinct.</p> <p>CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance.</p> <p>CBGU also reviewed the circumstances and monitoring confirmed works adhered to project air quality requirements, and the works undertaken were consistent with the community notification. Also, CBGU installed additional mitigation measures to minimise dust from the Albert Street precinct.</p>	Closed
11.	11 Feb 22	Mary Street (Albert Street Precinct)	Air Quality	<p>A stakeholder contacted the Project regarding air quality from the Albert Street precinct.</p> <p>CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance.</p> <p>CBGU also reviewed the circumstances and monitoring confirmed works adhered to project air quality requirements, and the works undertaken were consistent with the community notification. Also, CBGU installed additional mitigation measures to minimise dust from the Albert Street precinct.</p>	Closed

No.	Date	Location	Description of Issue	Responses	Status of Event
12.	11 Feb 22	Railway Terrace (Southern Area)	Property Access	A stakeholder contacted the Project regarding property access. CBGU investigated the event and informed the workforce of public access requirements.	Closed
13.	12 Feb 22	Albert Street (Albert Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Albert Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements, and the works undertaken were consistent with the community notification.	Closed
14.	12 Feb 22	Roma Street (Roma Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Roma Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Roma Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements, and the works undertaken were consistent with the community notification.	Closed
15.	15 Feb 22	(Tunnel Alignment)	Noise and Vibrations	A stakeholder contacted the Project regarding noise from the Tunnel Alignment. CBGU attempted to contact the stakeholder multiple times. No response has been received from the stakeholder.	Closed
16.	16 Feb 22	Roma Street (Roma Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Roma Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Roma Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements, and the works undertaken were consistent with the community notification.	Closed
17.	23 Feb 22	Gregory Terrace (Northern Portal)	Noise	A stakeholder contacted the Project regarding noise from the Northern Portal. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Northern Portal. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance.	Closed

No.	Date	Location	Description of Issue	Responses	Status of Event
				CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements, and the works undertaken were consistent with the community notification.	
18.	26 Feb 22	Albert Street (Albert Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Albert Street precinct. CBGU attempted to contact the stakeholder multiple times. No response has been received from the stakeholder.	Closed
19.	26 Feb 22	Albert Street (Albert Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Albert Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements, and the works undertaken were consistent with the community notification.	Closed