

Cross River Rail Project

Monthly Environmental Report

September 2020



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Appendix A – RIS Monthly Report

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Executive Summary

This Monthly Environmental Report (MER) has been produced for Project Works undertaken on site for September 2020 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 – design refinements and condition changes 2020 (July 2020)* 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** (Rail, Integration and Systems) and **Appendix B** (Tunnel, Stations and Development).

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

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

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

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	The CEMP and site plans are in accordance with the Project Changes.
2.	Outline Environmental Management Plan – timely submission to the Coordinator-General including required sub plans	Yes	The OEMP has been updated to incorporate changes associated with RfPC-7 and submitted to the Coordinator-General on 8 July.
3.	Design – achievement of the Environmental Design Requirements	NA	<p>RIS – Detailed flood modelling is in progress to ensure design will not cause property damage from flood impacts to third parties for events up to and including the 1 in 100 Annual Exceedance Probability flood event.</p> <p>Documents continue to be reviewed related to compliance with the environmental design standards.</p> <p>TSD – ongoing progress with design packages relating to tunnel and station work.</p>

CG Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
4.	Construction Environmental Management Plan – all relating to Relevant Project Works.	Yes	RIS – CEMP Rev 1 for Northern Portal (Stage 1), RNA Showgrounds (Stage 1) and Mayne Yard North (Stage 1 and 2) has been implemented on site. TSD – CEMP Rev 7 for tunnelling and ongoing activities in the Central area was endorsed by the Environment Monitor, submitted to the Coordinator-General in June and became effective on 5 July 2020.
5.	Compliance and Incident management – Non-compliance events, notifications and reporting.	Yes	There were no non-compliance events (NCEs) recorded in September 2020. Refer to Section 2.5 of this report.
6.	Reporting – Monthly and Annual reporting.	Yes	Reports have been submitted in accordance with the conditioned requirements. RIS – Refer to Appendix A (RIS Monthly Report) . TSD – Refer to Appendix B (TSD Monthly Report) .
7.	Environmental Monitor – engaged and functions resumed.	Yes	Ongoing
8.	Community Relations Monitor – engaged and functions resumed	Yes	Ongoing
9.	Community Engagement Plan – developed and endorsed by Environmental Monitor.	Yes	CEMP's endorsed with Community Engagement Plan.
10.	Hours of work – works undertaken during approved hours.	Yes	This has been achieved through standard working hours, Extended work hours and Managed Work.
11.	Noise – Work must aim to achieve internal noise goals for human health and well-being.	Yes	RIS – Refer to Appendix A (Table 2) TSD – Refer to Appendix B (Table 3)
	Vibration – Works must aim to achieve vibration goals for cosmetic damage, human comfort and sensitive building contents.	Yes	RIS – Refer to Appendix A (Table 3) TSD – Refer to Appendix B (Table 2)
12.	Property damage – relating to ground movement.	Yes	RIS – Property Damage Sub-plan has been implemented for heritage and residential buildings where predictive

CG Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
			modelling has identified a potential exceedance of nominated vibration goals. TSD – Vibration modelling has been prepared and is ongoing and where required, building condition survey reports (for heritage and residential buildings) and Property Damage Sub-plans completed.
13.	Air quality – Works must aim to achieve air quality goals for human health and nuisance.	Yes	RIS – Refer to Appendix A (Section 4.1.2, Table 5 and Figures 1, 2, 3, 8, 9 and 10) TSD – Refer to Appendix B (Table 4) .
14.	Traffic and transport – Works must minimise adverse impacts on road safety and traffic flow.	Yes	Traffic Management Plans covered in the CEMP and Sub-plans for all active worksites were reviewed by the EM.
15.	Water quality – Works must not discharge groundwater from the construction site above the relevant environmental values and water quality objectives. Monitor and report on water quality in accordance with CEMP and Sub-plans.	Yes	RIS – No groundwater discharges occurred for the month. Refer to Appendix A (Tables 6 - 10) for surface water monitoring results. Monitoring and reporting on surface water quality was undertaken in accordance with RIS and TSD Water Quality Management Plans.
16.	Water resources – Evaluate potential impact, plan works, implement controls and monitor inflow of groundwater associated with drawdown.	Yes	RIS – There will be no sustained groundwater extraction involved in the RIS scope of works so predictive modelling of groundwater drawdown is not required. Collection of hydrological data to model potential inflow rates into excavations during construction has been undertaken.
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)	Yes	Site specific ESC plans for all active work sites have been certified and reviewed by the EM and implemented on site. Surface water discharge from project worksites met project discharge criteria requirements.

CG Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
	and the Department of Transport and Main Roads' Technical Standard MRTS52.		
19.	Acid sulfate soils – managed as per the Queensland Acid Sulfate Soil Technical Manual.	Yes	Acid Sulfate Soil Management Plans for all active worksites are in place.
20.	Landscape and open space – general requirement to minimise impacts on landscapes and open space values and specific requirements around Victoria Park.	Yes	Stormwater bund works in Victoria Park have commenced under the Site Environmental Plan and Heritage Exemption Certificate approved by the Department of Environment and Science (DES).
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 Non-Compliance Events (NCE's) raised in September 2020.

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
CG	Coordinator-General
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
QR	Queensland Rail
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, seven Requests for Project Change (RfPCs) have been evaluated by the Coordinator-General, at the time of writing this report.

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.

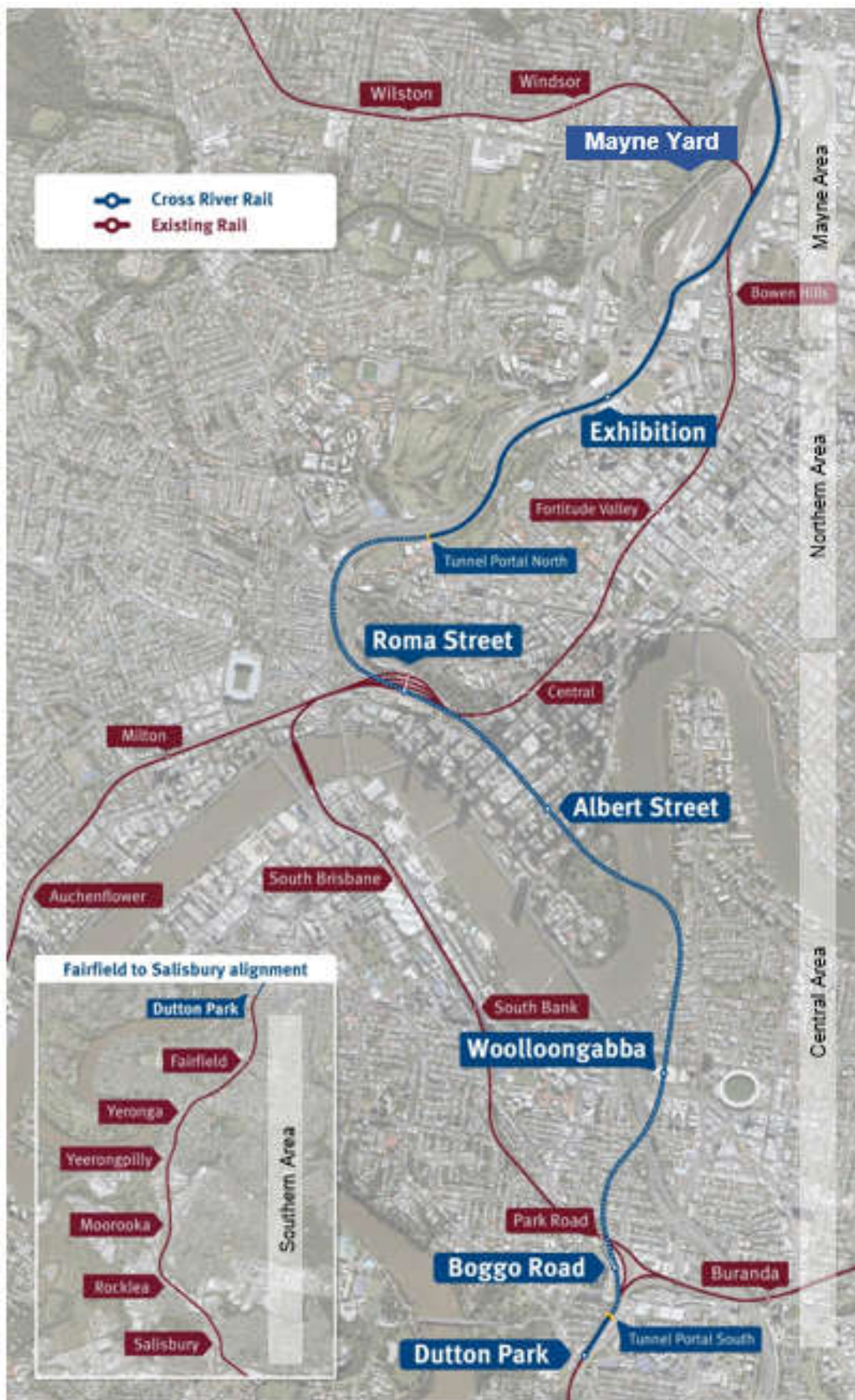
The two main delivery packages which require reporting under the Coordinator-General's imposed conditions are:

- 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 figures below.



1.3 Reporting Framework

This MER has been prepared to comply with 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 Monthly Report has been reviewed and endorsed by the EM as per Condition 7 of the CGCR.

2.1 Relevant Project Works

The following Project Works were undertaken in September 2020:

Area	Project Works
Mayne Area	<ul style="list-style-type: none">• Stormwater drainage works;• Re-decking of existing Breakfast Creek Bridge; and• Grafton Street access works.
Northern Area	<ul style="list-style-type: none">• Line drilling and rock excavation to widen the rail corridor adjacent to O'Connell Terrace;• Micro-tunnelling for drainage for under track crossing under Exhibition roads and holding road;• Overhead Line Equipment (OHLE) foundations for new holding road;• Stone pitching works;• Combined services route installation;• Traffic signalisation works on Gregory Terrace;• Form Reo Pour (FRP) for Land Bridge pier protection; and• Capping placement.
Central Area	<ul style="list-style-type: none">• Roma Street – continued demolition of the Brisbane Transit Centre; adit excavation; and main cavern excavation; Services Building stage 1 piling complete, new piling pad under construction for stage 2 piling works; and Inner Northern Busway platforms and stage 2 access complete.• Albert Street – station box excavation and second row of anchors along Albert Street and Mary Street continues on Lot 1; tunnel and adit excavation on Lot 2; and HAZMAT removal of the buildings internals complete and partial hard demolition commenced at the rear of the site on Lot 3.• Woolloongabba – excavation and retention within the station box, decline ramp, northern and southern caverns, acoustic shed conveyor installation in and around the shed; ongoing decline and shaft excavation and haulage of excavated material; and bench blast completed in northern cavern bench and northern box area.

Area	Project Works
	<ul style="list-style-type: none"> Boggo Road – Continued site establishment activities (e.g. water treatment plant); excavation and retention works in the station box; demolition of the busway retaining wall complete; and service and ground condition investigations. Dutton Park – Access to site for the demolition of Cope Street residential properties has been approved.
Southern Area	<ul style="list-style-type: none"> Service location investigations.

2.2 Key Environmental Elements

2.2.1 Noise

The Coordinator-Generals conditions supply a noise goal, rather than a threshold. Project compliance will require implementation and adherence to the CEMP, Noise and Vibration Management Plan, other relevant permits and approvals used internally to manage noise, and the requirements to inform the community of upcoming works and potential impacts. Therefore, the noise goal is to be aimed at, as much as is reasonable and practicable but does not have to be achieved. If the CEMP, Noise and Vibration Management Plan and all reasonable and practicable specific mitigation measures have been applied and the noise is not over the goal plus 20dB, the work will be deemed to be in accordance with Condition 11. Noise levels modelled over 20dB above the goal do require specific communication with the Directly Affect Persons.

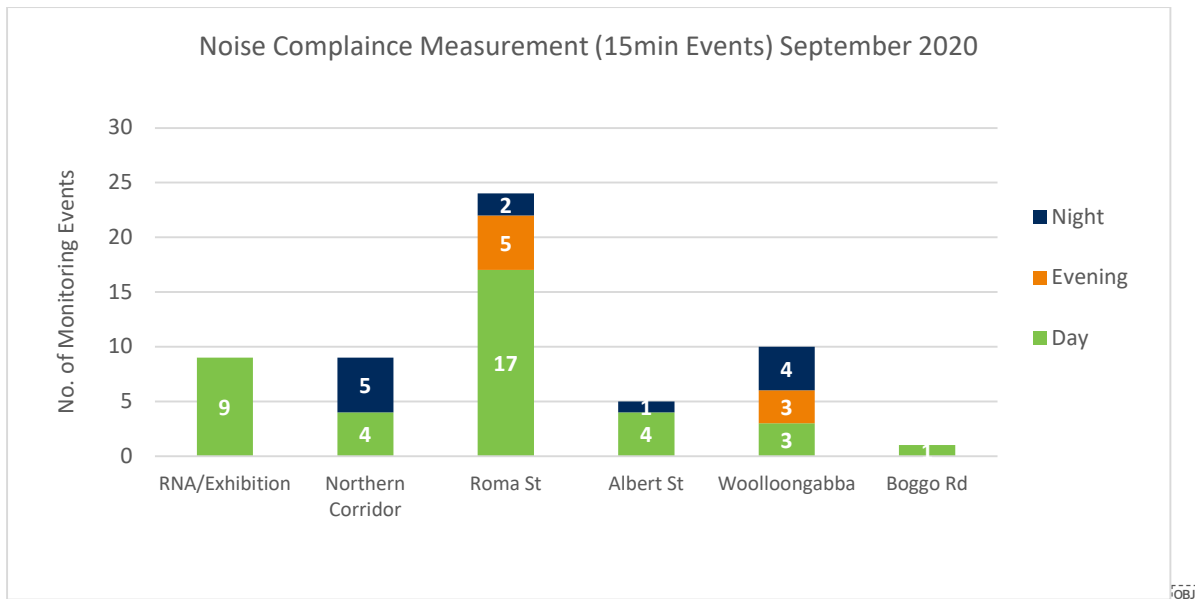
Noise monitoring was undertaken to validate predictive modelling during line drilling and rock breaking works at Lanham Street during standard hours and for combined services route installation at the Energex building on Bowen Bridge Road that was undertaken out of hours. Noise levels complied with project requirements and are detailed in Table 2, **Appendix A**.

Gregory Terrace traffic signalisation works were undertaken outside of standard construction hours in accordance with written approval from the Department of Transport and Main Roads (DTMR). Attended noise monitoring was undertaken during construction in accordance with the Noise and Vibration Sub-Plan. The monitoring results were consistent with the predicted noise levels. There were no noise complaints reported during the works.

Noise monitoring in response to complaints during micro-tunnelling works was undertaken at Gregory Terrace, and at residential properties on Tufton Street during line drilling and rock breaking works in standard hours. Noise levels met project requirements.

In the Central area, noise monitoring was undertaken for model verification, complaint response and for sensitive places that surround the project worksites. This is detailed in Table 1, **Appendix B**. Where internal monitoring was not possible, contractors have undertaken external monitoring at nominated locations. The contractors used recommended façade attenuation corrections, considering receiver property type, to determine compliance with the project's noise requirements and to provide calibration of the completed modelled predictions. The TSD contractors reported that the project noise requirements have been met during this reporting month.

The graph below shows that the majority of the noise monitoring events were taken at and around the Roma Street worksite where major demolition works were occurring throughout the day and evening.



2.2.2 Vibration

Vibration monitoring was undertaken to validate predictive modelling during line drilling and rock breaking works at Lanham Street and during Gregory Terrace traffic signalisation works. Vibration levels were compliant with human comfort and cosmetic damage construction vibration goals for heritage structures as outlined in the CG conditions and Property Damage Sub-Plan. Measured vibration readings are detailed in Table 3, **Appendix A**.

Vibration monitoring took place at Roma Street, Albert Street and Woolloongabba sites (and nearby receivers) where major construction and demolition activities were being undertaken. The contractor reported the results were within the project's nominated goals for all receiver types.

2.2.3 Air Quality

2.2.3.1 Dust Deposition

Dust deposition monitoring was conducted at Mayne Yard, Northern Corridor, RNA Showgrounds, Albert Street, Boggo Road, Roma Street and Woolloongabba sites during the month. The dust deposition monitoring in the Central area is mid-month to mid-month. The dust deposition gauge in the Northern Corridor near Brisbane Girls Grammar exceeded the air quality goal of 120mg/m²/day, measuring 150mg/m²/day for the 30-day averaging period from 13 August to 14 September. Unity engaged a Certified Air Quality Professional (CAQP) to assess the exceedance of the dust goal and concluded that it is very likely other dust sources contributed to cause the exceedance including the regional air quality events from 20 to 23 August. Based on the independent information provided by the CAQP, that noted it is unlikely Unity works caused the exceedance alone, a non-compliance event was not recorded.

A summary of air quality monitoring undertaken is shown in the table below. It should be noted that the Central Area dust deposition monitoring does not always occur from the first of the month and can often be mid-month to mid-month.

Air Quality – Dust Deposition Monitoring			
Area	Active Site*	Monitoring Location	Comments
Mayne Yard	Mayne Yard	Mayne Yard North - Eastern Air Shed	Results met air quality goal.
Northern Area	Northern Corridor	Near Brisbane Girls Grammar School	Results did not meet air quality goal. Investigation identified contribution of other sources external to Project Works.
		Near Centenary Pool	Results met air quality goal.
	RNA / Exhibition	RNA Showgrounds	Results met air quality goal.
Central Area	Albert Street	Mary Street	Results met air quality goal.
	Boggo Road / Southern Portal	Leukemia Foundation Peter Doherty Street	Results met air quality goal.
	Roma Street	Roma Street Station	Results met air quality goal.
	Woolloongabba	Russian Orthodox Cathedral	Results met air quality goal.
		Woolloongabba Busway	Deposited dust gauge reported stolen and no data was captured

* Southern Area (Fairfield to Salisbury) had no active high-risk worksites

2.2.3.2 Particulate Matter and Total Suspended Particulates (PM10 / TSP)

PM10 and TSP were monitored at Mayne Yard, the Northern Corridor, RNA Showgrounds, Roma Street, Woolloongabba, Boggo Road and Albert Street during the reporting period. The monitoring unit at RNA Showgrounds was out of order between 25 to 27 September 2020 due to a re-patch of software. Construction activities undertaken on these days were consistent with works undertaken prior to and after this period with no increase in intensity of activity.

A summary of particulate matter monitoring is shown below.

Air Quality – PM10/ TSP Monitoring			
Area	Active Site*	Monitoring Location	Comments
Mayne Yard	Mayne Yard	Mayne Yard North - Eastern Air Shed (Burrows St, Bowen Hills)	Results for PM10 and TSP met air quality goals.
Northern Area	Northern Corridor	Brisbane Girls Grammar School	Results for PM10 and TSP met air quality goals.
	RNA / Exhibition	RNA - Western Air Shed (Lanham Street, Bowen Hills)	Results for PM10 and TSP met air quality goals for the period monitored. Monitoring unit was out of order between 25 to 27 September due to a re-patch of software.
Central Area	Albert St	ISay River City, Mary Street	Results for PM10 and TSP met air quality goals for the period monitored (3 to 30 September).
	Boggo Rd / Southern Portal	North-east of Boggo Road worksite	Results for PM10 and TSP met air quality goals.
	Roma St	Roma Street Station	Results for PM10 and TSP met air quality goals.
	Woolloongabba	Place Park, Woolloongabba	Results for PM10 and TSP met air quality goals.

*Southern Area (Fairfield to Salisbury) had no active high-risk worksites

2.2.4 Water Quality

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

For the RIS scope of works a maximum of 7mm over a 24-hour period was recorded at the Salisbury weather station which does not exceed the default trigger for post rainfall monitoring (20mm over 24-hours). There were no active or passive surface water or groundwater discharges.

For the TSD scope of works the Brisbane weather station (40913) located in Kangaroo Point, recorded a maximum rainfall of 5.8mm over a 24-hour period which does not exceed the trigger for post rainfall monitoring (44mm over 24-hours). Active dewatering was undertaken at the Albert Street, Boggo Road, Roma Street and Woolloongabba worksites. The Water Quality Objectives require the following values to be achieved:

Post Rainfall / Monthly Routine Monitoring for an Aquatic Ecosystem - Moderately Disturbed

Site	Turbidity	TSS	pH	DO	EC	Chlorophyll	Total Nitrogen	Oxidised N	Ammonia N	Organic N	Total Phosphorus	Filterable reactive phosphorus (FRP)
1	<50NTU	<6 mg/L	6.5-8.0	85-110%	380	<5 µg/L	<500 µg/L	<60 µg/L	<20 µg/L	<420 µg/L	<50 µg/L	>20 µg/L
2	<8 NTU	<20 mg/L	7-8.4	85-105%	NA	<4 µg/L	<300 µg/L	<10 µg/L	<10 µg/L	<280 µg/L	<25 µg/L	>6 µg/L

1 - Lowland Freshwater. Oxley Creek EVs & WQOs Basin no 143 (part) - Yorks Hollow, Rocky Water Holes Creek, Moolabin Creek, Stable Swamp Creek

2 - Mid Estuary. Brisbane River Estuary EVs & WQOs Basin no 143 (part) - Brisbane River, Breakfast Creek, Norman Creek

The project active dewatering is summarised in the table below:

Water Quality Monitoring				
Area	Active Site*	Discharge	Post-Rain	Comments
Mayne Yard	Mayne Yard North	No	No	No discharges from site. Post-rain monitoring was not triggered.
Northern Area	Northern Corridor	No	No	No discharges from site. Post-rain monitoring was not triggered.
Central Area	Albert Street	Yes	No	Three active discharges from site. Results met water quality discharge criteria.
	Boggo Road / Southern Portal	Yes	No	Three active discharges from site. Results met water quality discharge criteria.
	Roma Street	Yes	No	Five active discharges from site. Results met water quality discharge criteria. We note that Dissolved Oxygen (DO) results were not provided.
	Woolloongabba	Yes	No	Four active discharges from site. Results met water quality discharge criteria.

*Southern Area (Fairfield to Salisbury) had no active high-risk worksites

2.2.5 Erosion and Sediment Control

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

A third-party ESC audit was undertaken at Mayne Yard and in the Northern Area in September 2020. All audit actions raised have now been closed out.

2.3 Complaints Management

The project received eighteen complaints during the month. There were four complaints in relation to works occurring at the Northern Corridor and RNA / Exhibition worksites. Eighteen complaints were in relation to works at the Woolloongabba, Roma Street and Boggo Road worksites.

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.

For dust related complaints, the TSD contractor advised stakeholders that air quality monitoring is ongoing and dust mitigation measures were effectively implemented on site with works adhering to project requirements. All complaints were responded to within the required timeframes.

To close out a complaint the project reviews the monitoring data (where applicable), compliance with the CEMP, site environmental management plans and permits, and that required community notification has taken place and any actions taken to reduce/mitigate the impact – this will then demonstrate that project requirements have been met.

For scheduled out of hours works, community notification was provided, as well as regular project updates.

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	<ul style="list-style-type: none"> • Temporary cable route diversions to facilitate Ferny Grove flyover pier protection work; and • Directional drilling of an underbore to the north of Breakfast Creek Bridge.
Northern Area	<ul style="list-style-type: none"> • Sewer, services, and water relocation at RNA. • Demountable toilet block relocations. • Construction of RNA Sector 3 access track. • Complete the signalisation of Gregory Terrace intersection. • Sewer relocation in Victoria Park. • Northern Corridor holding road works. • Northern Corridor concrete lined drain installation; and • Boundary fence installation.
Central Area	<ul style="list-style-type: none"> • Roma Street – Enabling works for Services Building, installing and opening Stage 3B station access pathway, and controlled blasting. • Albert Street – Excavation of station box on Lot 1 to continue to mid-2021, 24 hour tunnelling will continue within the acoustic enclosure on Lot 2, Blasting occurrences on Lot 2 in the tunnel shaft, and hard demolition to commence on Lot 3. • Woolloongabba – Controlled blasting in station box to continue, cavern excavation and spoil shed construction continue and 24-hour work for shaft excavation, earthworks and utility investigations and relocation is underway. • Boggo Road – Temporary car park construction, ongoing excavation with an increase in spoil removal from site; and the commencement of the northern canopy tubes installation; and • Southern Portal – Site establishment works, utility relocation and Scheduled Corridor Access System (SCAS) works.

Area	New planned works in the coming months
Southern Area	<ul style="list-style-type: none"> • Site establishment works at Yeronga Station. • Fairfield shed demolition. • Track lowering preparation works at Fairfield and Yeronga; and • Water main relocation works at Yeronga.

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 conditions and that there are management plans in place and required management measures implemented.

Appendix A – RIS Monthly Report

Monthly CGCR Report – September 2020

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

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1 Progress Summary

1.1 Summary of Project Works

The following *Project Works* continued in September 2020

- Mayne Yard North
 - Stormwater drainage works
- Northern Corridor
 - Stone Pitching works
 - Micro tunnelling for Drainage UTX crossings
 - OHLE foundations for new Holding Road
- RNA
 - Line drilling and rock excavations to widen the Northern corridor adjacent O'Connell Terrace
- F2S
 - Service location investigations

The following *Project Works* started in September 2020

- Mayne Yard North
 - Grafton Street access works
 - Re-decking of existing Breakfast Creek siding bridge to facilitate alternative construction access across Breakfast Creek.
- Northern Corridor
 - Combined Services Route installation
 - Traffic Signal Installation on Gregory Terrace
 - Form Reo Pour (FRP) for Land Bridge pier protection
 - Capping placement
- RNA
 - Soil Nail installation adjacent O'Connell Terrace
 - Access Track Installation
- F2S
 - No new works commenced

The following *Project Works* are proposed in October 2020

- Mayne Yard North
 - ReefNet route works with directional drilling of an underbore to the north of Breakfast Creek bridge
 - Temporary cable route diversions to facilitate Ferny Grove Flyover Pier protection work
- Northern Corridor
 - Holding Road Works
 - Sewer Relocation
 - Concrete Lined Drain Installation
 - Boundary Fence Installation
- RNA

- Sewer and Water PUP relocation
- Demountable toilet block relocations
- F2S
 - Yeronga site establishment

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 1: Summary of Complaints

Date	Location	Issue	Activity source of the concern	Unity Response	Status
03/09/20	Tufton Street	Noise	Rock breaking	No access to the property itself was allowed by the property owner. Monitoring was undertaken from neighbouring properties which confirmed compliance with the Project's noise goals (Imposed Condition 11a).	Closed
08/09/20	Educational Facility	Noise	Under bore / Pipe Jacking	Complainant facilitated internal attended monitoring by arranging the access to a music classroom. Monitoring was undertaken which confirmed compliance with the Project's noise goals (Imposed Condition 11a).	Closed
15/09/20	Tufton Street	Noise	Rock breaking	Residents facilitated internal attended monitoring by arranging access to two units (number 4 and 14) within the complex. Monitoring was undertaken on 15 and 17 September which confirmed compliance with the Project's noise goals (Imposed Condition 11a).	Closed
16/09/2020 (date the Project Team was made aware of the Complaint)	Tufton Street	Noise	Rock breaking	Whilst the complaint was not made directly through the project hotline, the Project Team investigated it once made aware of it. . Since this complaint was raised within 24 hours of a similar complaint at the same Apartment Complex, the monitoring results from 15 and 17 September confirm compliance with the Project's noise goals (Imposed Condition 11a).	Closed
29/09/20 (date the Project Team was made aware of the Complaint)	Tufton Street	Noise	Rock breaking	Whilst the complaint was not made directly through the project hotline, the Project Team is currently working with the resident to facilitate access to their unit (number 15) at a time suitable to the resident to undertake attended monitoring. On the basis of the attended indoors monitoring undertaken to date at this residential complex as a response to a previous complaint, and the attended outdoors monitoring to validate the model for the rock breaking activity, monitoring confirmed compliance with the Project's noise goals (Imposed Condition 11a).	Open

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 occurs.

3.1.1 Noise Monitoring

Attended Noise Monitoring was triggered based on the predictive noise assessments for

- Lanham Street Rock breaking activities (RNA – standard hours)
- Combined Services Route installation (Northern – standard hours)

In accordance with the C-EMP, attended outdoors monitoring was undertaken to validate the predictive assessment.

Monitoring was undertaken at the start of the activities in order to validate and to confirm that works could proceed as planned.

Attended Noise Monitoring was triggered based on the commitments in the construction noise assessment for:

- Stage 4 Gregory Terrace Intersection works (Northern – non-standard hours)

The predictive noise assessment identified that the proposed works were likely to result in exceedances with the noise goals as imposed under Condition 11(c). As elements of the works could not be undertaken during the extended work hours (road within a road reserve that required to be undertaken on Sunday and after 10:00 pm Monday to Friday), consistent with Imposed Condition 11(e) UNITY obtained, written confirmation from the entity with jurisdiction (DTMR) prior to the commencement of these works. Attended noise monitoring was identified within the approval package as a requirement for these works to proceed.

The results from the monitoring are presented in the following section.

Attended Noise Monitoring was triggered based on the complaints presented in section 2 for:

- micro-tunnelling operations
- rock Breaking activities

3.1.2 Noise monitoring Results

The below table summarises the Noise Monitoring results for reporting period.

Table 2: Summary of Noise Monitoring Data

Location and Receiver Type Details	Type of Monitoring	Working Hours	Noise Type	Purpose of Monitoring	Predictive model LA10 (dBA)	Performance Goal (dBA) (Condition 11(a), Table 2, LA10 noise goals)	Performance Goal (dBA) – (Condition 11(c), Table 2 LA10 noise goal + 20dBA))	Measured LA10 (dBA)	Measured LAeq (dBA)	Is performance Goal exceeded?	Comments
50 Campbell Street - Commercial	Attended - External	Standard Hours Wednesday 02/09/20 14:47	Intermittent	Construction Monitoring at Sensitive Places - Model Verification	80-85 (Outdoors)	65 (outdoors) (AS2107 maximum design level [45dBA] + 10dBA + 10dBA façade reduction)	85 (Outdoors) (65+20dBA)	77 (outdoors)	78 (outdoors)	No exceedance	Rock Breaking Works
50 Campbell Street - Commercial	Attended - External	Standard Hours Wednesday 02/09/20 15:09	Intermittent	Construction Monitoring at Sensitive Places - Model Verification	80-85 (Outdoors)	65 (outdoors) (AS2107 maximum design level [45dBA] + 10dBA + 10dBA façade reduction)	85 (Outdoors) (65+20dBA)	78 (outdoors)	66 (outdoors)	No exceedance	Rock Breaking Works
Tufton Street - Residential	Attended - External	Standard Hours Thursday 03/09/20 08:53	Intermittent	Complaint response	80-85 (Outdoors)	65 (outdoors) (AS2107 maximum design level [45dBA] + 10dBA + 10dBA façade reduction)	85 (Outdoors) (65+20dBA)	75 (outdoors)	71 (outdoors)	No exceedance	Rock Breaking Works Monitoring undertaken at 50 Campbell Street
Tufton Street - Residential	Attended - External	Standard Hours Friday 04/09/20 10:11	Intermittent	Complaint response	80-85 (Outdoors)	65 (outdoors) (AS2107 maximum design level [45dBA] + 10dBA + 10dBA façade reduction)	85 (Outdoors) (65+20dBA)	72 (outdoors)	68 (outdoors)	No exceedance	Rock Breaking Works Monitoring undertaken at 50 Campbell Street
Energex Building - Industrial	Attended - External	Standard Hours Saturday 05/09/20 16:45	Intermittent	Construction Monitoring at Sensitive Places - Model Verification	67 (outdoors)	52 (outdoors) (42dBA default goal + 10dBA façade reduction)	72 (Outdoors) (52+ 20dBA)	64 (outdoors)	62 (outdoors)	No exceedance	Combined Services Route Works Monitoring undertaken during standard hours Works also took place during non-standard hours For the purposed of compliance assessment, the measurements have been compared against the more conservative noise goals. Further interpretation is provided in section 3.1.5.1
Tufton Street - Residential	Attended - External	Standard Hours Tuesday 08/09/20 12:01	Intermittent	Complaint response	80-85 (Outdoors)	65 (outdoors) (AS2107 maximum design level [45dBA] + 10dBA + 10dBA façade reduction)	85 (Outdoors) (65+20dBA)	80 (outdoors)	75 (outdoors)	No exceedance	Rock Breaking Works Monitoring undertaken at 50 Campbell Street Further interpretation is provided in section 3.1.5.1t.
Tufton Street - Residential	Attended - External	Standard Hours Tuesday 08/09/20 12:26	Intermittent	Complaint response	80-85 (Outdoors)	65 (outdoors) (AS2107 maximum design level [45dBA] + 10dBA + 10dBA façade reduction)	85 (Outdoors) (65+20dBA)	72 (outdoors)	69 (Outdoors)	No exceedance	Rock Breaking Works Monitoring undertaken at 6 Tufton Street Further interpretation is provided in section 3.1.5.1
Educational Facility	Attended - Internal	Standard Hours Tuesday 08/09/20 15:14	Intermittent	Complaint response	67 (Indoors)	55 (Indoors) AS2107 maximum design level [45dBA] + 10dBA	75 (Indoors) (55+20dBA)	66 (Indoors)	60 (Indoors)	No exceedance	Micro-tunnelling Works Monitoring undertaken within music classroom at BGGS. Further interpretation is provided in section 3.1.5.1
Educational Facility	Attended - External	Standard Hours Wednesday 09/09/20 12:24	Intermittent	Plant Audit	NA	N/A	N/A	91	91	N/A	Micro-tunnelling Works Sound power level taken at source (10m offset) to validate whether the noise source (Vacuum Truck) was continuous or intermittent. Noise source confirmed as intermittent.
Educational Facility	Attended - Internal	Standard Hours Tuesday 15/09/20 15:44	Intermittent	Complaint response – follow up	70 (Indoors)	55 (Indoors) AS2107 maximum design level [45dBA] + 10dBA	75 (Indoors) (55+20dBA)	59(Indoors)	55 (Indoors)	No exceedance	Micro-tunnelling Works Monitoring undertaken inside the music classroom at BGGS
449 Gregory Terrace - Residential	Attended - External	Out of Standard Hours Sunday 13/09/20 19:56	Intermittent	Construction Monitoring at Sensitive Places - Model Verification	88 (outdoors)	52 (42dBA default goal + 10dBA façade reduction)	72 (Outdoors) (52+ 20dBA)	83 (Outdoors)	79 (Outdoors)	Exceedance	Stage 4 Intersection Works – concrete saw Further interpretation is provided in section 3.1.5.1
449 Gregory Terrace - Residential	Attended - External	Out of Standard Hours Sunday 13/09/20 20:15	Intermittent	Construction Monitoring at Sensitive Places - Model Verification	88 (outdoors)	52 (42dBA default goal + 10dBA façade reduction)	72 (Outdoors) (52+ 20dBA)	84 (Outdoors)	80 (outdoors)	Exceedance	Stage 4 Intersection Works – concrete saw Further interpretation is provided in section 3.1.5.1
451 Gregory Terrace - Residential	Attended - External	Out of Standard Hours Sunday 13/09/20 20:37	Intermittent	Construction Monitoring at Sensitive Places - Model Verification	75-80 (Outdoors)	52 (Outdoors) (42dBA default goal + 10dBA façade reduction)	72 (Outdoors) (52+ 20dBA)	77 (Outdoors)	76 (Outdoors)	Exceedance	Stage 4 Intersection Works – concrete saw Further interpretation is provided in section 3.1.5.1

Location and Receiver Type Details	Type of Monitoring	Working Hours	Noise Type	Purpose of Monitoring	Predictive model LA10 (dBA)	Performance Goal (dBA) (Condition 11(a), Table 2, LA10 noise goals)	Performance Goal (dBA) – (Condition 11(c), Table 2 LA10 noise goal + 20dBA))	Measured LA10 (dBA) -	Measured LAeq (dBA)	Is performance Goal exceeded?	Comments
451 Gregory Terrace - Residential	Attended - External	Out of Standard Hours Sunday 13/09/20 21:47	Intermittent	Construction Monitoring at Sensitive Places - Model Verification	75-80 (Outdoors)	52 (Outdoors) (42dBA default goal + 10dBA façade reduction)	72 (Outdoors) (52+ 20dBA)	76 (Outdoors)	73 (Outdoors)	Exceedance	Stage 4 Intersection Works – vacuum truck and excavator Further interpretation is provided in section 3.1.5.1
451 Gregory Terrace - Residential	Attended - External	Out of Standard Hours Sunday 13/09/20 22:20	Intermittent	Construction Monitoring at Sensitive Places - Model Verification	70-75 (Outdoors)	52 (Outdoors) (42dBA default goal + 10dBA façade reduction)	72 (Outdoors) (52+ 20dBA)	71 (Outdoors)	68 (Outdoors)	No exceedance	Stage 4 Intersection Works – excavator
TuftonStreet - Residential	Attended - Internal	Standard Hours Tuesday 15/09/20 12:02	Intermittent	Complaint response	70-75 (Indoors) (Windows Partially Closed)	55 (Indoors) AS2107 maximum design level [45dBA] + 10dBA55	75 (Indoors) (55+20dBA)	64(Indoors)	60 (Indoors)	No exceedance	Rock Breaking Works Monitoring occurred with door partially closed– as per the resident's normal set up
TuftonStreet - Residential	Attended - Internal	Standard Hours Thursday 17/09/20 12:52	Intermittent	Complaint response –	60-65 (Indoors) (Windows closed)	55 (Indoors) AS2107 maximum design level [45dBA] + 10dBA	75 (Indoors) (55+20dBA)	59(Indoors)	55 (Indoors)	No exceedance	Rock Breaking Works Monitoring occurred with all windows and doors closed
TuftonStreet - Residential	Attended - Internal	Standard Hours Thursday 17/09/20 13:10	Intermittent	Complaint response –	75-80 (Indoors) (Windows wide open)	55 (Indoors) AS2107 maximum design level [45dBA] + 10dBA55 (Internal)	75 (Indoors) (55+20dBA)	69(Indoors)	66 (Indoors)	No exceedance	Rock Breaking Works Monitoring occurred with all windows and doors opened

- Note (1) - Monitoring Method
 - Note 2 of Imposed Condition 11 Table 2 states *Where internal noise levels are unable to be measured or monitored, the typical noise reductions presented in Guideline Planning for Noise Control, Ecoaccess, DEHP, January 2017 (PFNC) apply.*
 - Internal noise measurements were not undertaken as the majority of receivers at this location (outdoor pool) would be external.
 - The monitoring was undertaken to validate the model therefore external noise measurements are appropriate to determine the impact of construction noise.
- Note (2) – Façade Attenuation
 - Note 2 of Imposed Condition 11 Table 2 states *Where internal noise levels are unable to be measured or monitored, the typical noise reductions presented in Guideline Planning for Noise Control, Ecoaccess, DEHP, January 2017 (PFNC) apply.*
 - The PFNC guideline can no longer be accessed. The Department of Environment and Science (DES) website still states this guideline is under review and is yet to release an alternative guideline
 - Former revisions of the PFNC, in particular Table 7 stated the following regarding typical noise reductions through the building façade:
 - 5 dB – Window wide open
 - 10 dB – Partially closed
 - 20 dB – single glazed, closed
 - 25 dB – Thermal double glazing, closed
 - The RfPC-4 Technical Report considered that all receptors had closed external single glazing for the assessment of construction noise impacts.
 - The Queensland Ombudsman assessed this assumption for the Airport Link Project and recommended that 10dB be adopted for major infrastructure projects in Queensland¹.
 - Additionally, a number of acoustic studies have shown that 10 dB is a suitable assumption for open windows. Most importantly this requirement only applies to temporary rail works within the project footprint and does not apply to long term operational rail noise exposure.
 - Accordingly, it is considered appropriate to consider a 10 dB reduction on this basis. This assumption can be used for predictive modelling and for noise measurements, where indoor noise measurements are not practicable.

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

3.1.3 Vibration Monitoring

Vibration Monitoring was triggered during the reporting period based on the predictive vibration assessments for:

- Rock Breaking Activities at Lanham Street (RNA Stage 1 – standard hours)
- Stage 4 Gregory Terrace intersection Works (Northern – non-standard hours)

Vibration monitoring because of complaints was not triggered. No complaints related to vibration occurred during the reporting period.

3.1.4 Vibration Monitoring Results

Table 3: Summary of Vibration Monitoring Data

Location	Date (Start and Finish)	Time of day ²	Closest DAP / Sensitive Place	Receiver Type (table 3 – Imposed Condition 11(e))	Purpose of Monitoring	Maximum vibration Level (mm/s)	Vibration goal for receiver (mm/s) ¹	Exceedance of vibration limit?	Comments
4 Tufton Street	02/09/20 to 04/09/20	Day Time	6 Tufton Street and 8 Tufton Street (Human Comfort)	Residential	Construction Monitoring at Sensitive Places - Model Verification	Vibration meter lost data – the data from this monitoring session (48 hours) was lost due to power failure on unit. The relevant vibration exceedance alarms were active during this monitoring period with no exceedances or warning levels of vibration triggered. This equipment was repaired, and further monitoring undertaken at the same location once this was rectified (below).	10 – (Respite Limit as per Imposed Condition 11(f))	No exceedance	Rock Breaker and Line Drilling
4 Tufton Street	02/09/20 to 04/09/20	N/A	8 Tufton Street (Cosmetic Damage)	Heritage Structure (DIN4150-3 Group 2)	Construction Monitoring at Sensitive Places – Model Verification		5 – (source: Property Damage Sub-Plan)	No exceedance	Rock Breaker and Line Drilling
4 Tufton Street	15/09/20	Day Time	6 & 8 Tufton Street (Human Comfort)	Residential	Construction Monitoring at Sensitive Places – Model Verification	1.2	10 – (Respite Limit as per Imposed Condition 11(f))	No exceedance	Rock Breaker and Line Drilling
4 Tufton Street	15/09/20	N/A	8 Tufton Street (Cosmetic Damage)	Heritage Structure (DIN4150-3 Group 2)	Construction Monitoring at Sensitive Places – Model Verification	1.2	5 – (source: Property Damage Sub-Plan)	No exceedance	Rock Breaker and Line Drilling
449 Gregory Terrace	18/09/20	Night Time	449 Gregory Terrace (Human Comfort)	Residential	Construction Monitoring at Sensitive Places – Model Verification	0.3	0.5 – As per Table 3 Imposed Condition 11(e)	No exceedance	Vibratory roller
449 Gregory Terrace	18/09/20	N/A	449 Gregory Terrace (Cosmetic Damage)	Heritage Structure	Construction Monitoring at Sensitive Places – Model Verification	0.3	2 – Heritage Structures (Imposed Condition 11(e) Table 3)	No exceedance	Vibratory roller
4 Tufton Street	22/09/20	Day Time	6 Tufton Street and 8 Tufton Street (Human Comfort)	Residential	Construction Monitoring at Sensitive Places – Model Verification	1.2	10 – (Respite Limit as per Imposed Condition 11(f)) ¹	No exceedance	Rock Breaker

Location	Date (Start and Finish)	Time of day ²	Closest DAP / Sensitive Place	Receiver Type (table 3 – Imposed Condition 11(e))	Purpose of Monitoring	Maximum vibration Level (mm/s)	Vibration goal for receiver (mm/s) ¹	Exceedance of vibration limit?	Comments
4 Tufton Street	22/09/20	N/A	8 Tufton Street (Cosmetic Damage)	Heritage Structure (DIN4150-3 Group 2)	Construction Monitoring at Sensitive Places – Model Verification	1.2	5 – (source: Property Damage Sub-Plan)	No exceedance	Rock Breaker
6 Tufton Street	30/09/20	Day Time	6 Tufton Street and 8 Tufton Street (Human Comfort)	Residential	Construction Monitoring at Sensitive Places – Model Verification	2.1	10 – (Respite Limit as per Imposed Condition 11(f)) ¹	No exceedance	Rock Breaker
6 Tufton Street	30/09/20	N/A	8 Tufton Street (Cosmetic Damage)	Heritage Structure (DIN4150-3 Group 2)	Construction Monitoring at Sensitive Places - Model Verification	2.1	5 – (source: Property Damage Sub-Plan)	No exceedance	Rock Breaker

- Note (1)
 - Human Comfort vibration goals are as per AS2670 (Imposed Condition 11(e) and transient vibration respite limits as per Imposed condition 11(g) of the CGCR.
 - Imposed Condition 12 (Property Damage Mitigation subplan) for Cosmetic Damage, inclusive of Heritage Structures
- Note (2) – Time of day
 - Relevant to Human Comfort vibration goals as per Imposed condition 11(e) of the CGCR.

3.1.5 Interpretation

3.1.5.1 Noise Monitoring²

3.1.5.1.1 Combined Service Route – Northern Corridor

Monitoring of combined service route works near Bowen Bridge Road was undertaken as close as possible to the nearest DAP (Energex Building, multi-story concrete industrial building), approximately 15m from the façade of the building. Monitoring was undertaken during standard construction hours with the dominant activity captured deemed representative of the proposed out of standard hours works. The measured LA₁₀ readings were compliant with the Imposed Conditions for works during and outside of standard working hours. No additional monitoring was therefore undertaken during non-standard working hours.

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

3.1.5.1.2 Micro tunnelling Works – Northern Corridor

Monitoring of the micro tunnelling works near an Educational Facility was undertaken at the closest affected classroom, approximately 1.5m from the nearest window/door. The monitoring was undertaken as a response to a complaint. The measured LA₁₀ readings were compliant with the Imposed Conditions for works during standard working hours. Follow up monitoring which consisted of an audit of the sound power level of the vacuum truck and additional attended indoors monitoring was also undertaken following the initial round of monitoring.

The measured LA₁₀ readings of the noise levels within the classroom were compliant with the Imposed Conditions for works during standard working hours.

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

3.1.5.1.3 Lanham Street Rock Breaking

Monitoring of line drilling and rock breaking works was undertaken as close as possible to the nearest DAP (50 Campbell Street, 2-storey brick warehouse). to verify the predictions of the noise model. Further monitoring for this activity was also undertaken outdoors at 6 Tufton Street (Multi-storey residential building), and indoors when access was granted by the relevant occupiers of some of the apartments following complaints.

A property owner of Tufton Street (Single-Storey House) complained about the Lanham Street Works. The Property owner however did not grant access to the property for UNITY to undertake noise monitoring in response to their complaint. As such the monitoring data collected at 50 Campbell Street and 6 Tufton Street were used to ascertain compliance with the Imposed Conditions at Tufton Street. Indeed 50 Campbell Street and 6 Tufton we located at a similar distance or closer to the Project Works. Monitoring data collected at these sensitive places are therefore deemed representative of the noise levels likely to have been experienced at Tufton Street.

The measured LA₁₀ readings were compliant with the imposed conditions for works during standard working hours.

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

3.1.5.1.4 Stage 4 Gregory Terrace – Northern Corridor

Written confirmation was obtained prior to the commencement of these works through the entity with jurisdiction (DTMR). This approval was required to undertake works outside of the authorised construction hours as set out by imposed Condition 10. An approvals package was submitted to DTMR to provide the required information to assess the proposed works. As part of the approval package, a construction Noise

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

and Vibration assessment was prepared which identified modelled exceedances of the noise goal as Imposed under Condition 11(c).

Monitoring of Stage 4 Gregory Terrace intersection works was undertaken at two locations

- 3m from the boundary of the property of 449 Gregory terrace (2-storey residential stone heritage building).
- 24m from the works. This location was representative of the distance between the works and the façade of 451 Gregory Terrace (multi-unit apartment block). Representative monitoring was selected as it was impractical to monitor at multiple units due to the timing of the works and number of units that are within 451 Gregory Terrace.

The measured LA₁₀ readings were consistent with the prediction of the construction Noise and Vibration assessment. There were no noise complaints during the execution of the works.

Therefore, the RIS scope of works was executed consistent with the DTMR approval and achieved the outcomes set out by the CGCR and OEMP.

3.1.5.2 Vibration Monitoring

3.1.5.2.1 Lanham Street Rock Breaking

Vibration monitoring of line drilling and rock breaking works was undertaken between the nearest DAPs and the works. The vibration meter was set up at either 4 Tufton Street or 6 Tufton Street. The measured vibration readings were compliant with Imposed Condition 11(e) for human comfort (day works).

The measured vibration readings were compliant with Imposed Condition 12 and the revised heritage protection requirement for cosmetic damage (refer to Property Damage Mitigation Sub-Plan for revised heritage vibration limits).

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

3.1.5.2.2 Stage 4 Gregory Terrace – Northern Corridor

Vibration monitoring of the Stage 4 Gregory Terrace intersection Works was undertaken between the nearest DAP, 449 Gregory Terrace (2-storey residential stone building), and the works.

The measured vibration readings were compliant with Imposed condition 11(e) for human comfort (night works) and cosmetic damage – heritage structures. The works were consistent with Imposed Condition 12.

The RIS scope of works is achieving 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 Construction Environmental Management Plan occurs.

Visual Monitoring was undertaken during routine environmental inspections. A total of fifteen (15) inspections were undertaken by the environment team across Mayne Yard, RNA showgrounds 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 4: Summary of Air Quality devices

Monitoring Device Installed by UNITY	Area	Name	Date Installed	Status for the Month of September
Dust Deposition Gauge	RNA Showgrounds	AQ-01	13 December 2019	Active
Dust Deposition Gauge	Northern Corridor (near BGS)	AQ-02	13 December 2019	Active
Dust Deposition Gauge	Northern Corridor (near Centenary Pool)	AQ-03	13 January 2020	Active
Dust Deposition Gauge	Mayne Yard (Eastern Air Shed)	AQ-04	13 February 2020	Active
TSP / PM ₁₀ Monitor	Mayne Yard (Eastern Air Shed)	UNI324	23 April 2020	Active
TSP / PM ₁₀ Monitor	Northern Corridor (Eastern Air Shed)	UNI327	23 April 2020	Active
TSP / PM ₁₀ Monitor	RNA (Western Air Shed)	UNI319	25 August 2020	Active (out of order between the 25 and 27 September, refer section 3.2.3.1 for details)

3.2.1 Dust results

Since passive dust deposition gauges are analysed on a monthly basis, results span from 13 August 2020 to 14 September 2020 and from 14 September to 13 October 2020

The dust deposition gauges result for the reporting period are detailed below and complied with Imposed Condition 13(b) of the CGCR.

Table 5: Dust deposition gauge results for period 13 August 2020 to 13 October 2020.

CGCR Goal (mg/m ² /day)	Period	AQ-01 Results - RNA Showgrounds (mg/m ² /day)	AQ-02 Results - BGS (mg/m ² /day)	AQ-03 Centenary Pool (mg/m ² /day)	AQ-04 Abbotsford Rd (E Mayne) (mg/m ² /day)
120	13 August 2020 to 14 September 2020	37	150	103	33
Total Rainfall during Period		2.8mm	2.8mm	2.8mm	5.2mm
120	14 September to 13 October 2020	7	13	20	23
Total Rainfall during Period		0.0mm	0.0mm	0.0m	0.8 mm

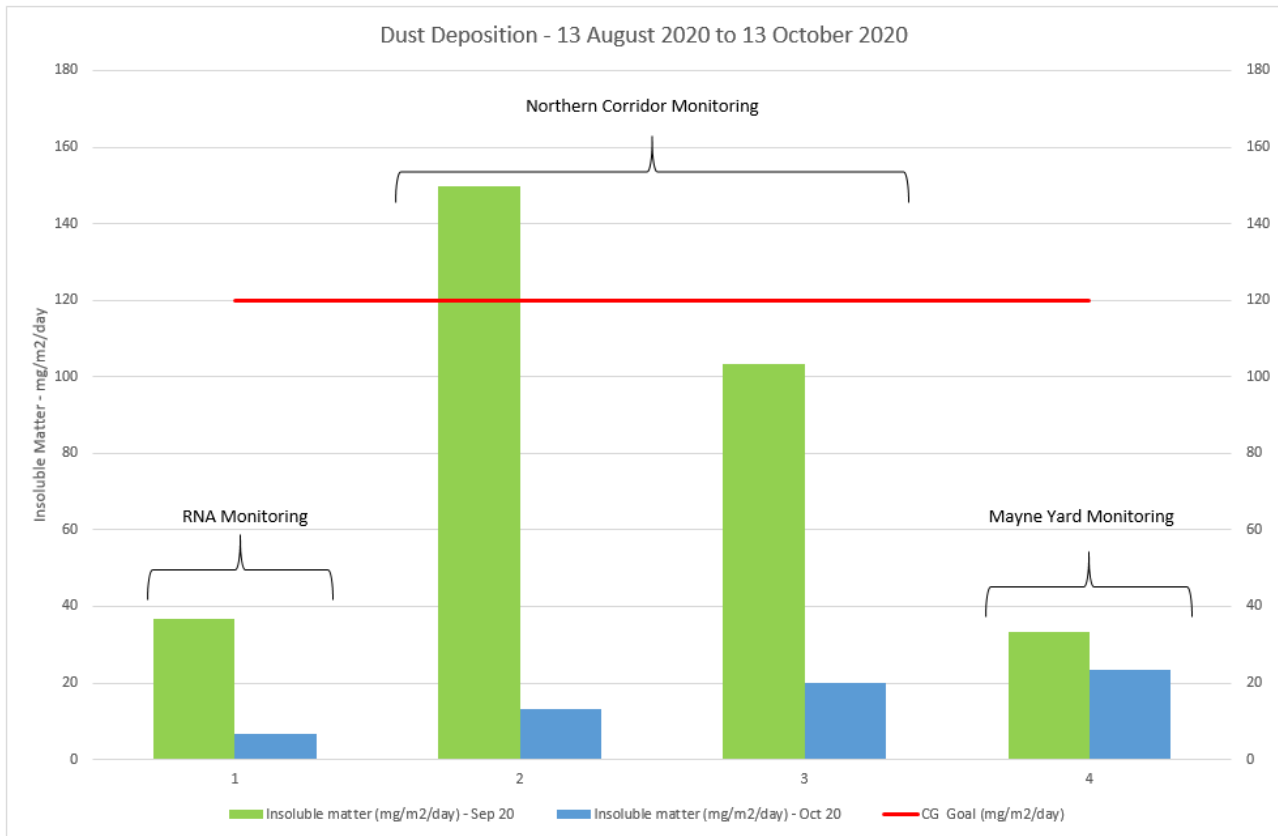


Figure 1: Air Quality Monitoring (Deposited Dust) 13 August – 13 October 2020 Results

3.2.2 Interpretation

Please refer to section 4.1.2 for a detailed discussion on the exceedance of the deposited dust air quality goal at AQ-02.

3.2.3 Particulates results

3.2.3.1 UNITY Air Quality Monitoring Stations

Unity had three operational Air Quality monitoring stations set up for the reporting period. Unit 319 (RNA Rock-breaking works) was out of order between 25 and 27 September due to a re-patch of the software. Two days of data were therefore not captured during high risk works (25 and 26 September). The construction activities undertaken on these days were consistent with works undertaken prior to and after this period with no increase in intensity of activity. No complaints were received during this time. Therefore the 48 hours data gap does not affect the ability to ascertain compliance of the Project Works with the Air Quality Goals.

3.2.3.2 Monitoring results

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 $\mu\text{g}/\text{m}^3$ (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 $\mu\text{g}/\text{m}^3$ (over an averaging period of 24 hours) the project must aim to achieve under Imposed Condition 13(a).

These stations have been set up on site as per AS/NZS 3850 1.1 following consultation with UNITY Air Quality Professionals.

The results are represented in the below figures.

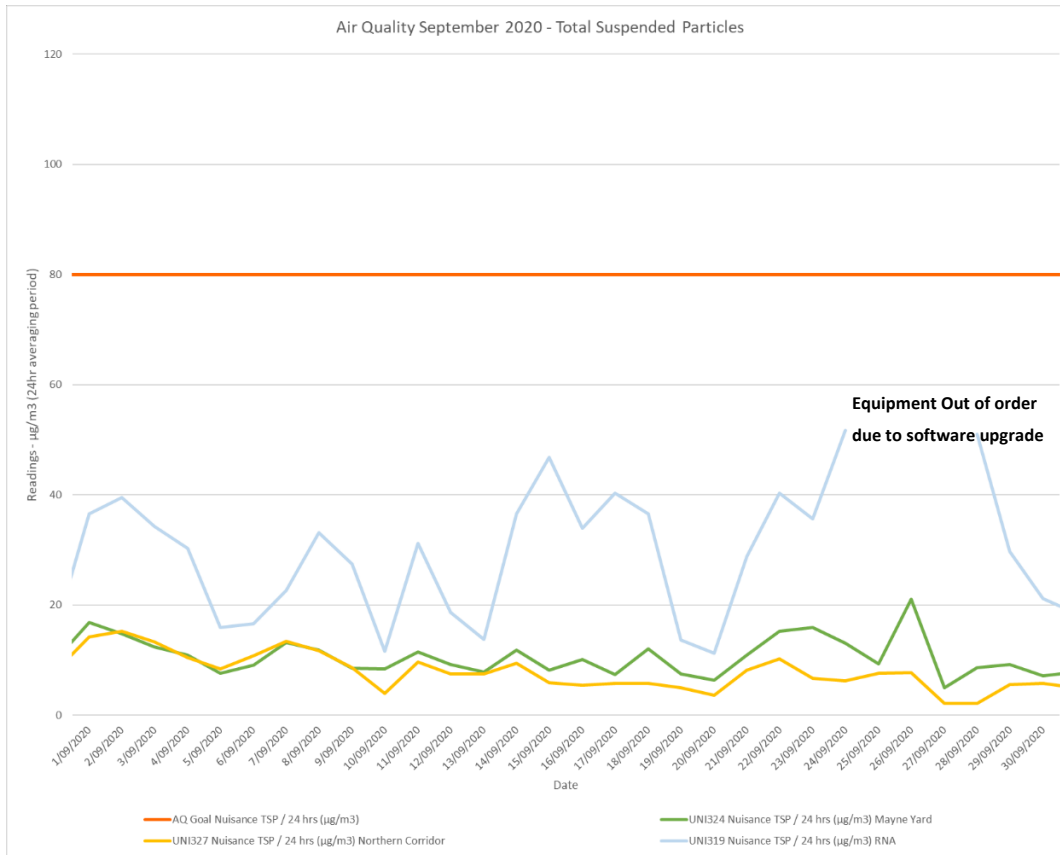


Figure 2: Air Quality Monitoring (TSP) - September 2020 Results

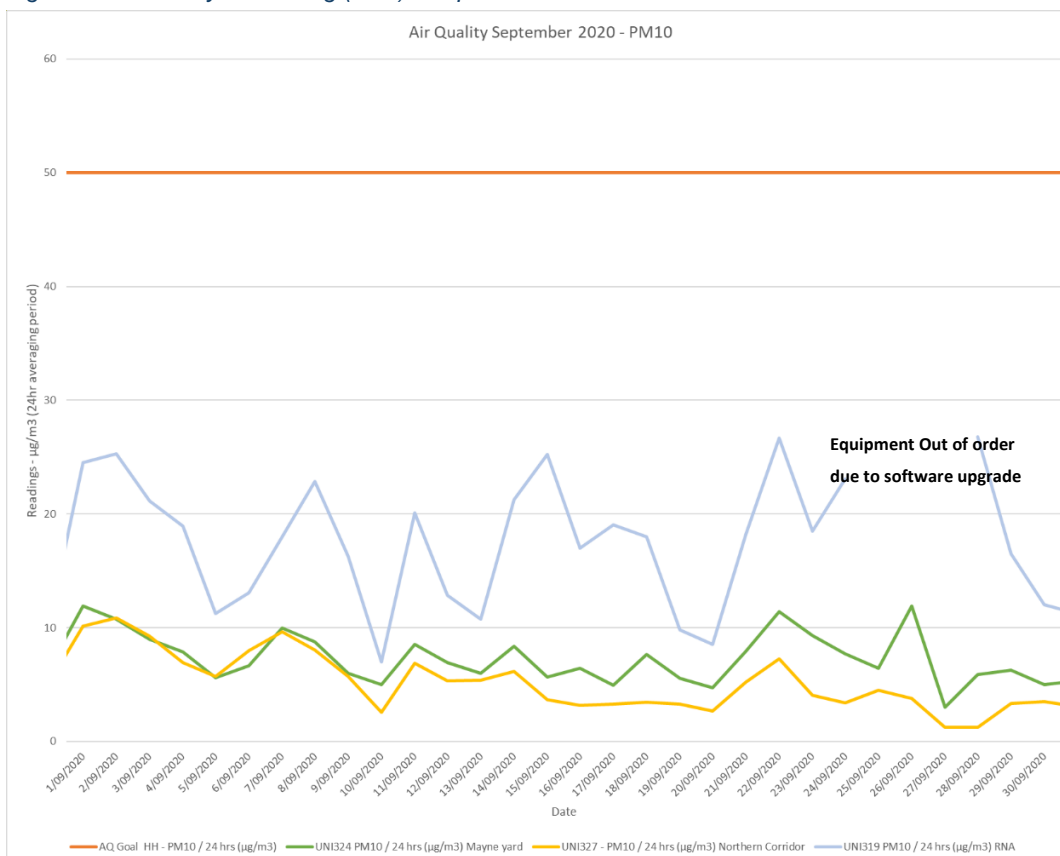


Figure 3: Air Quality Monitoring (PM10) - September 2020 Results

3.2.4 Interpretation

Particulate monitoring results did not exceed the relevant air quality goals specified by Imposed Condition 13 with the exception of DDG-002. This exceedance has been analysed and the findings of the review are presented in section 4.1.2

The C-EMP and the AQMP recognise that particulate matter monitoring can be a lag indicator. Therefore, the monitoring regime detailed in the C-EMP consists of a combination of surveillance regimes through inspections at the time the works are occurring and particulate matter monitoring to validate the surveillance regime findings and potential complaints.

Site inspections at Mayne Yard, RNA Showgrounds and the Northern Corridor by the environment team confirmed that:

- There was no visible dust leaving the site boundaries
- Waters carts were on site and used for dust suppression / fill conditioning
- During line drilling and rock breaking activities at RNA, continuous dust suppression with hoses has been undertaken
- Stabilised egress was in place and in functioning order at each access points

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

3.3 Water Quality – Surface Water

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(b) and Condition 18 was not triggered.

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

There were no groundwater discharges.

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.

A maximum monthly rain recording of 7mm over a 24-hour period was recorded at the Salisbury weather station, which does not exceed the default trigger for post rainfall monitoring.

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

3.3.1 Rainfall Records

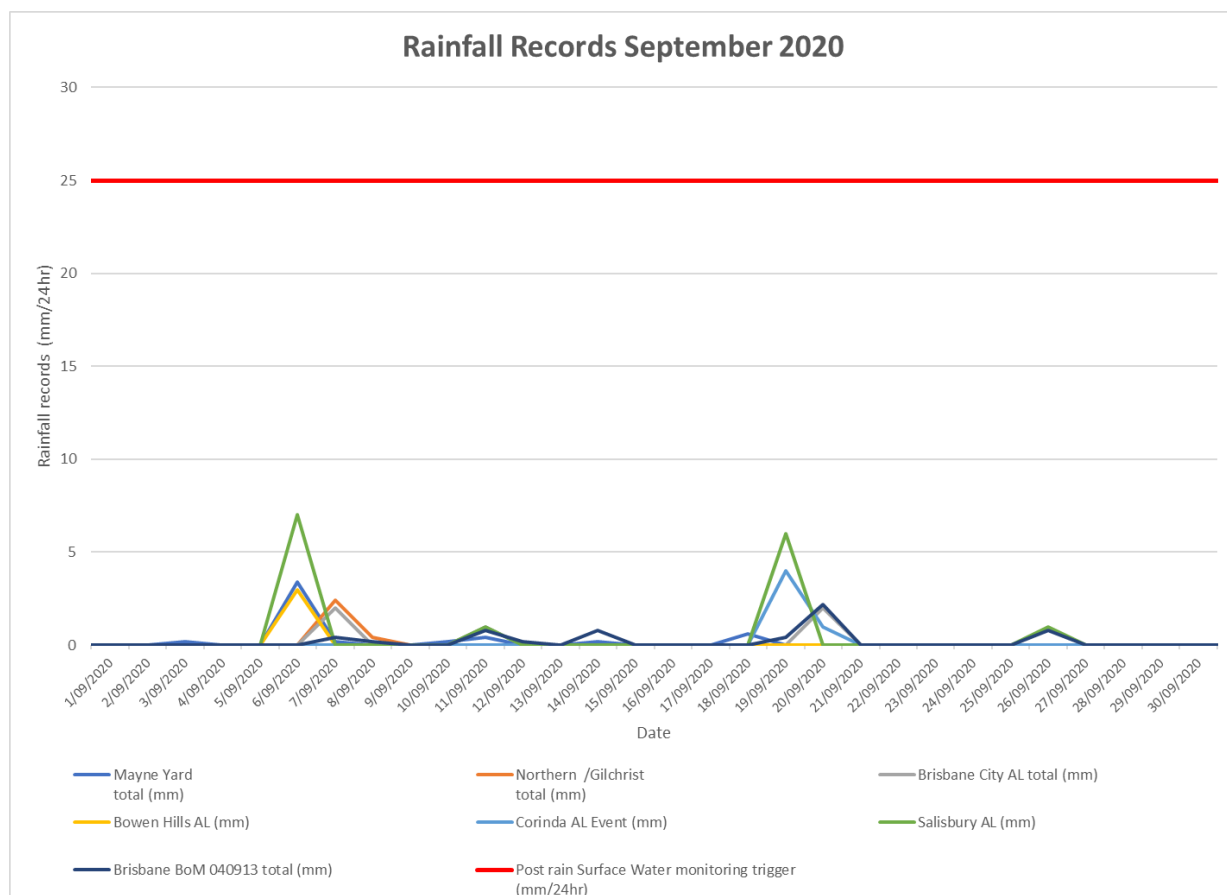


Figure 4: Rainfall – September 2020 Results

3.3.2 Discharge Monitoring / Post Rainfall Monitoring

Post Rainfall monitoring was not triggered during September.

3.3.3 C-EMP Monitoring

During the reporting period, UNITY also undertook one (1) surface routine water monthly monitoring event. This monitoring is being undertaken as it may inform the Dis-1 Credit for the ISCA Excellent Rating the Project is pursuing. The results are presented in the following sections.

3.3.4 Monitoring Results

3.3.4.1 Breakfast Creek

The below table summarises the in-situ records collected during one (1) round of routine surface water monitoring.

Results in blue exceed / do not meet the Water Quality Objectives nominated in the relevant *Environmental Protection Policy (Water and Wetland Biodiversity) 2019* documentation (EPP Water).

Results in red exceed / do not meet the Project Discharge Criteria for Compliance with Imposed Conditions 15 and 18.

Table 6: Breakfast Creek

Date	Location	Tide	Sampling Purpose	Turbidity (NTU)	TSS (mg/L)	DO (%)	pH (pH Unit)
WQO (EPP Water)				8	20	85-105% saturation	7.0-8.4
Discharge Criteria				Nil until Turbidity / TSS correlation achieve	50	Nil	Stable pH reading; and General sites: 6.5 – 8.5, or Wallum/Acidic Ecosystems: 5.0 – 7.0
10/09/20	SW 1 – Upstream of Mayne Yard	Falling Brackish to Marine conditions	Monthly Dis-1 Monitoring	In field: 5 Lab: 6.1	<5	82	7.2
10/09/20	SW 2 – Adjacent to Mayne Yard	Falling Brackish to Marine conditions	Monthly Dis-1 Monitoring	In field: 15 Lab: 11	6	81	7.4
10/09/20	SW 3 – Downstream of Mayne Yard	Falling Brackish to Marine conditions	Monthly Dis-1 Monitoring	In field: 27 Lab: 22	22	85	7.6

3.3.4.2 Barrambin (York's Hollow)

The below table summarises the in-situ records collected during one (1) round of surface water monitoring.

Results in blue exceed / do not meet the Water Quality Objectives nominated in the relevant *Environmental Protection Policy (Water and Wetland Biodiversity) 2019* documentation (EPP Water) as referenced in imposed Condition 15a.

Results in red exceed / do not meet the Project Discharge Criteria for Compliance with Imposed Conditions 15 and 18.

Table 7: Barrambin (York's Hollow)

Date	Location	Sampling Purpose	Turbidity (NTU)	TSS (mg/L)	DO (%)	pH (pH Unit)
WQO (EPP Water)			50	6	85-110% saturation	6.5-8.0
Discharge Criteria			Nil until Turbidity / TSS correlation achieve	50	Nil	Stable pH reading; and General sites: 6.5 – 8.5, or Wallum/Acidic Ecosystems: 5.0 – 7.0
10/09/20	SW 4 – Downstream of Northern Corridor	Monthly Dis-1 Monitoring	In field: 4 Lab: 5	7	70	7.4

3.3.4.3 Moolabin Creek, Rocky Water Holes Creek and Stable Swamp Creek

The below tables summarise the in-situ records collected during one (1) round of routine surface water monitoring at Moolabin Creek, Rocky Water Holes Creek and Stable Swamp Creek, the relevant surface water receivers for the Southern Corridor (F2S).

Results in blue exceed / do not meet the Water Quality Objectives nominated in the relevant *Environmental Protection Policy (Water and Wetland Biodiversity) 2019* documentation (EPP Water) as referenced in imposed Condition 15a.

Results in red exceed / do not meet the Project Discharge Criteria for Compliance with Imposed Conditions 15 and 18.

Table 8: Moolabin Creek

Date	Location	Sampling Purpose	Turbidity (NTU)	TSS (mg/L)	DO (%)	pH (pH Unit)
WQO (EPP Water)			50	6	85-110% saturation	6.5-8.0
Discharge Criteria			Nil until Turbidity / TSS correlation achieve	50	Nil	Stable pH reading; and General sites: 6.5 – 8.5, or Wallum/Acidic Ecosystems: 5.0 – 7.0
10/09/20	SW 5 – Upstream rail corridor	Monthly Dis-1 Monitoring	Field: 1 Lab: 8	18	94	7.27
10/09/20	SW 6 – Downstream rail corridor	Monthly Dis-1 Monitoring	Field: 6 Lab: 5	<5	75	7.61

Table 9: Rocky Water Holes Creek

Date	Location	Sampling Purpose	Turbidity (NTU)	TSS (mg/L)	DO (%)	pH (pH Unit)
WQO (EPP Water)			50	6	85-110% saturation	6.5-8.0
Discharge Criteria			Nil until Turbidity / TSS correlation achieve	50	Nil	Stable pH reading; and General sites: 6.5 – 8.5, or Wallum/Acidic Ecosystems: 5.0 – 7.0
10/09/20	SW 7 – Upstream Rail corridor	Monthly Dis-1 Monitoring	Field: 2 Lab: 5	<5	60	7.6

Date	Location	Sampling Purpose	Turbidity (NTU)	TSS (mg/L)	DO (%)	pH (pH Unit)
10/09/20	SW 8 – Downstream Rail corridor	Monthly Dis-1 Monitoring	Field: 10 Lab: 13	28	76	7.4

Table 10: Stable Swamp Creek

Date	Location	Sampling Purpose	Turbidity (NTU)	TSS (mg/L)	DO (%)	pH (pH Unit)
WQO (EPP Water)			50	6	85-110% saturation	6.5-8.0
Discharge Criteria			Nil until Turbidity / TSS correlation achieve	50	Nil	Stable pH reading; and General sites: 6.5 – 8.5, or Wallum/Acidic Ecosystems: 5.0 – 7.0
10/09/20	SW 9 – Downstream Rail corridor	Monthly Dis-1 Monitoring	Field: 3 Lab: 5	<5	83	7.7

3.3.5 Interpretation

No discharges were recorded from site during September.

Therefore, it has been concluded that the RIS scope of works is achieving the outcomes set out by the CGCR and OEMP.

4 Compliance Review

4.1 Non-Compliance Events

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

A Non-Compliance Event (NCE) is defined as Project Works that do not comply with the Imposed Conditions.

4.1.1 Non - Compliance Events Summary

Table 11: Summary of Non-Compliance Events

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

4.1.2 Review of Dust deposition gauge AQ-02 Exceedance

4.1.2.1 Issues Summary

The dust deposition results at AQ-02 (BGGS) located near the northern corridor exceeded the CGCR Air Quality objective of 120 mg/m²/day. The dust deposition results span the period of 13 August 2020 to 14 September 2020. UNITY reviewed the following information to ascertain whether the exceedance of the CG Air Quality Goal for Deposited Dust (nuisance) is likely related to UNITY's Project Works:

- Location of the gauges and compliance with AS3580.10.1
- Main potential contributing activities that were likely to generate dust (e.g. earthworks)
- Prevalent wind conditions during the aforementioned activities
- Field observations for visible dust during routine surveillance undertaken during the monitoring period.
- Field observations of the implementation of the recommended mitigation measures as detailed in the Site Environmental Plan
- Complaints (residents, workers, Victoria Park users) related to air quality during the monitoring period
- The potential impact of the regional Air Quality event that occurred 20-22 August
- Other monitoring data available (PM₁₀, TSP other dust deposition gauge data)

4.1.2.2 Findings

Unity engaged a Certified Air Quality Professional (CAQP) to assess the exceedance of the Deposited Dust Goal.

The findings of the review are as per the below:

- Location of the gauges and compliance with AS3580.10.1
 - AQ-03 (Northern Corridor) was sited in accordance with AS3580.10.1
 - AQ-02 (Brisbane Girls Grammar School) was sited in accordance with AS3580.10.1 – this was the last monitoring period with the dust deposition gauge in this location. It has now been moved to the pool at Brisbane Girls Grammar School as was recommended by the project certified air quality professional (CAQP).
- Potential contributing activities during the monitoring period:

- Drainage works south of the land bridge including drain trimming
- Remove and Replace as well as subgrade improvement works
- Placement of capping layers
- Installation of CSR route
- No other activities undertaken by UNITY in the northern corridor was identified as a potential contributing activity
- The prevalent wind conditions between 13 August and 14 September 2020 are presented in Plate 5 and 6 and summarised in Figure 7. The main points of this review are summarised below:
 - The winds were predominantly from the Southern quadrant, meaning the AQ-02 dust deposition gauge was upwind of the potential UNITY contributing emission sources for the majority of this reporting period (approximately 75% of construction hours)
 - For the remaining 25% of the construction hours it is highly likely that Unity works did contribute some of the dust loading measured in AQ-02 as the wind was coming from a North-North Eastern direction (DDG would have directly downwind of the site).
 - The majority of measured wind speeds were a gentle breeze or less under the Beaufort Scale.
- Routine inspections undertaken by the environmental team confirmed that
 - Water cart was on site and utilised during excavation and load out of material
 - Water cart undertaken dust suppression activities along the haul road
 - Loads leaving site were covered
 - Speed limits were clearly sign posted at gate and discussed during prestart as part of the Queensland rail briefing
 - There was no visual evidence of visible dust being mobilised beyond the project boundaries at the time of the inspection

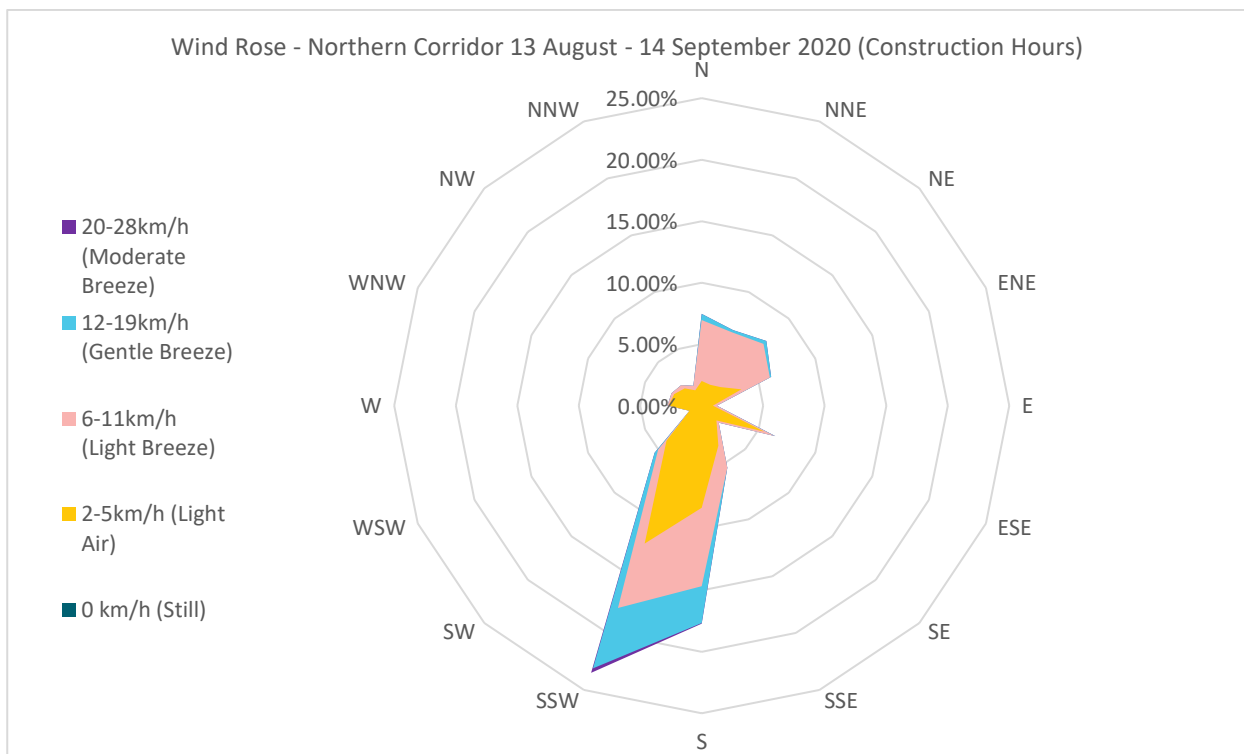


Plate 5: Prevalent Wind Conditions during monitoring period – Construction hours

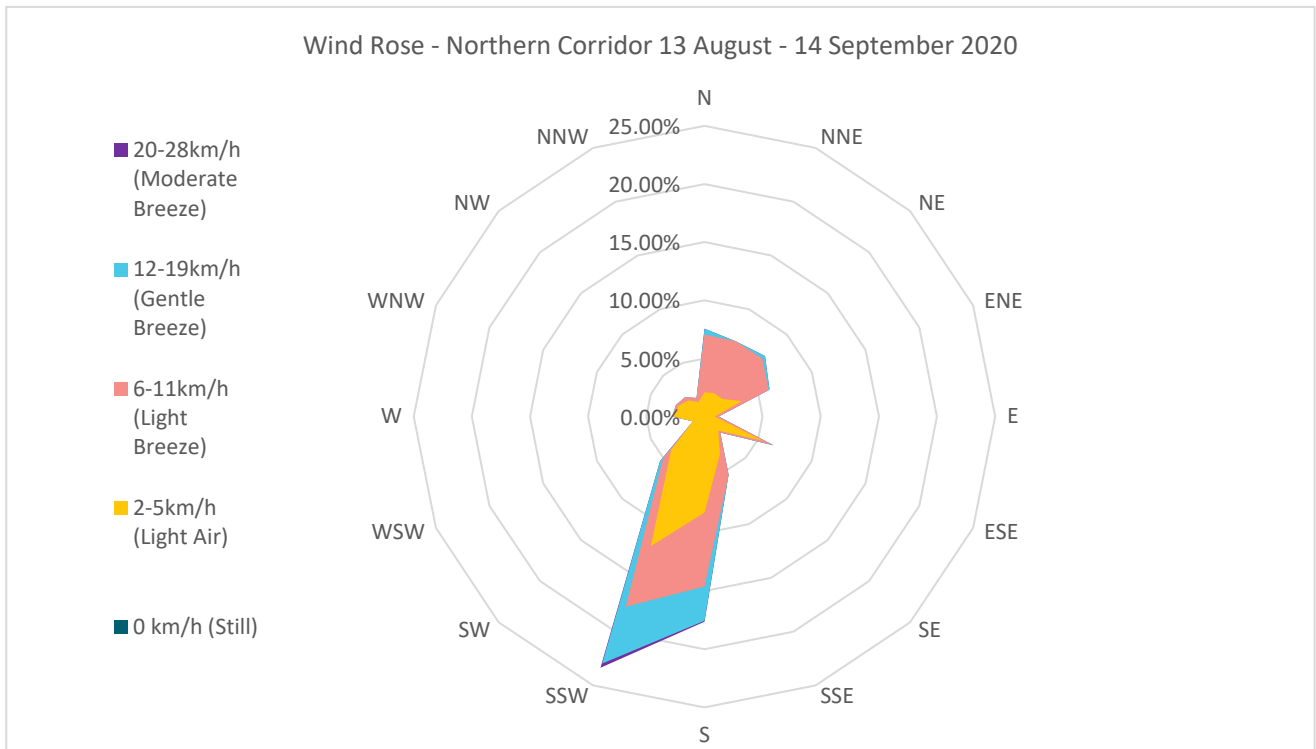


Plate 6: Prevalent Wind Conditions during monitoring period – All hours

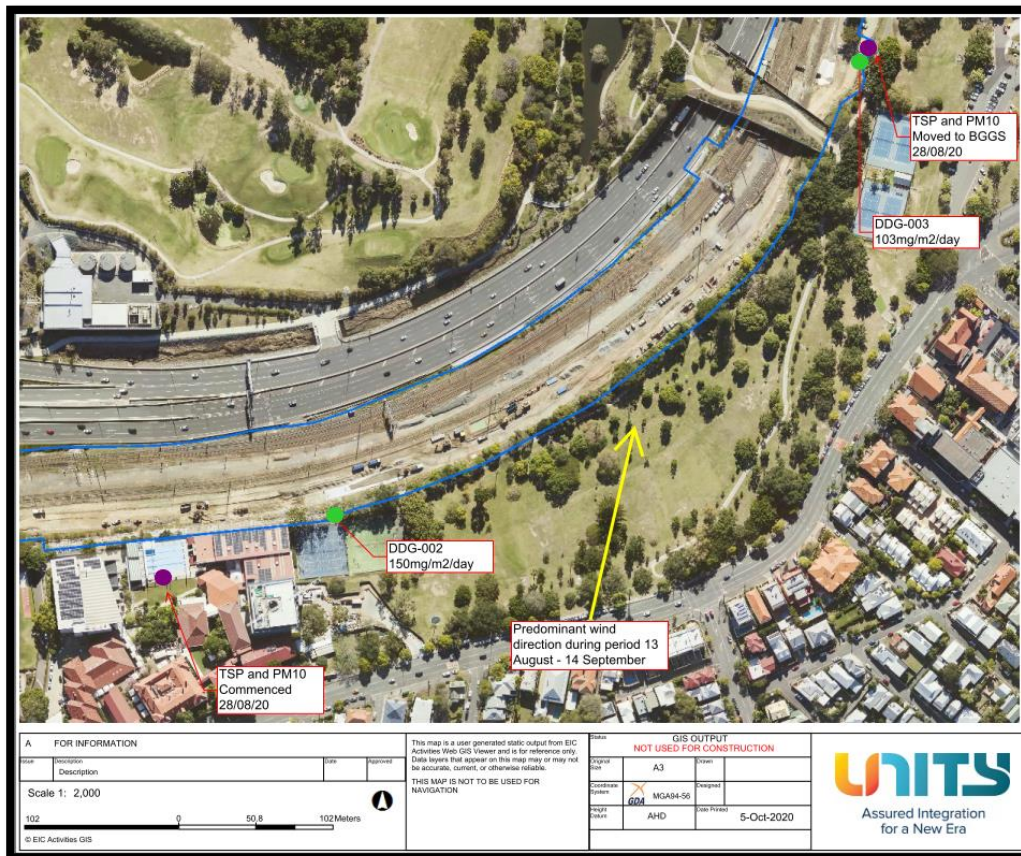


Figure 7: Prevalent Winds - Northern Corridor

- Field observations for visible dust during routine environmental inspections did not identify visible dust beyond the project boundaries.
- On 8 September it was noted during noise monitoring activities that a leaf blower was in use by non-project staff within close proximity to this location which created a short-term localised dust plume. The duration and frequency of this activity is unknown.
- No complaints related to air quality were received during this monitoring period at any nearby sensitive receivers.
- It is noted there was a regional air quality event between the 20/08/20 and 22/08/20 that resulted in exceedances of air quality parameters throughout South East Queensland – for more information refer August 2020 Monthly CGCR report.
- Other available data are presented below:
 - The results from the closest dust deposition gauge (AQ-03 400m to the NE of AQ-02), did not exceed the Deposited Dust Air Quality Goal (120 mg/m²/day) with a measured rate of 103 mg/m²/day.
 - There was an increase (month to month) at the project Dust Deposition Gauges of 184% (24mg/m²/day) at RNA, 61% (47mg/m²/day) and 106% (53mg/m²/day) at the Northern corridor and 22% (6mg/m²/day) at Mayne Yard (Figure 8).
 - Due to the limitations of the dust deposition methodology, it cannot be concluded but it is highly likely and assumed that the regional air quality event contributed to the consistent increases in deposited dust site-wide.

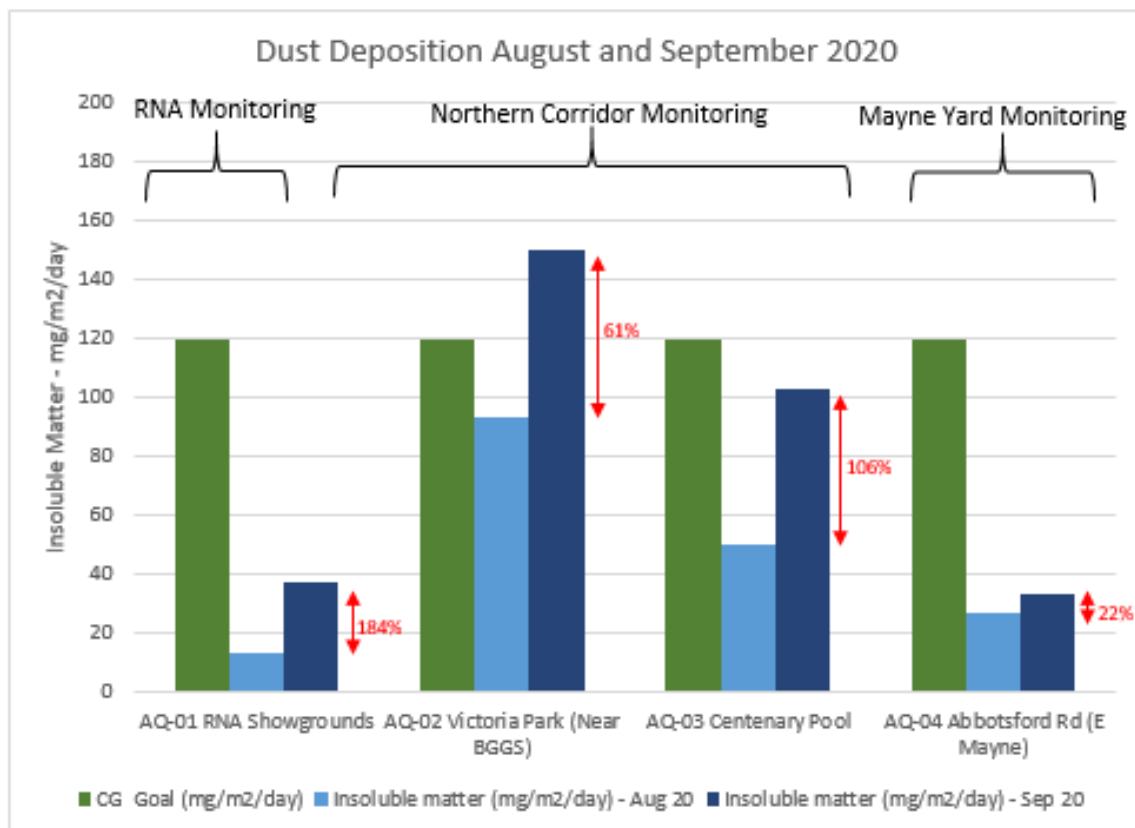


Figure 8: Project wide dust deposition gauges and increases during most recent DDG monitoring periods

- There were no recorded exceedances of the daily TSP or PM₁₀ Air Quality Goal at the Northern TSP/PM₁₀ monitoring station during the reporting period, (Figure 9 and Figure 10). There was an increase in both parameters during the regional air quality event (20-22 August 2020).

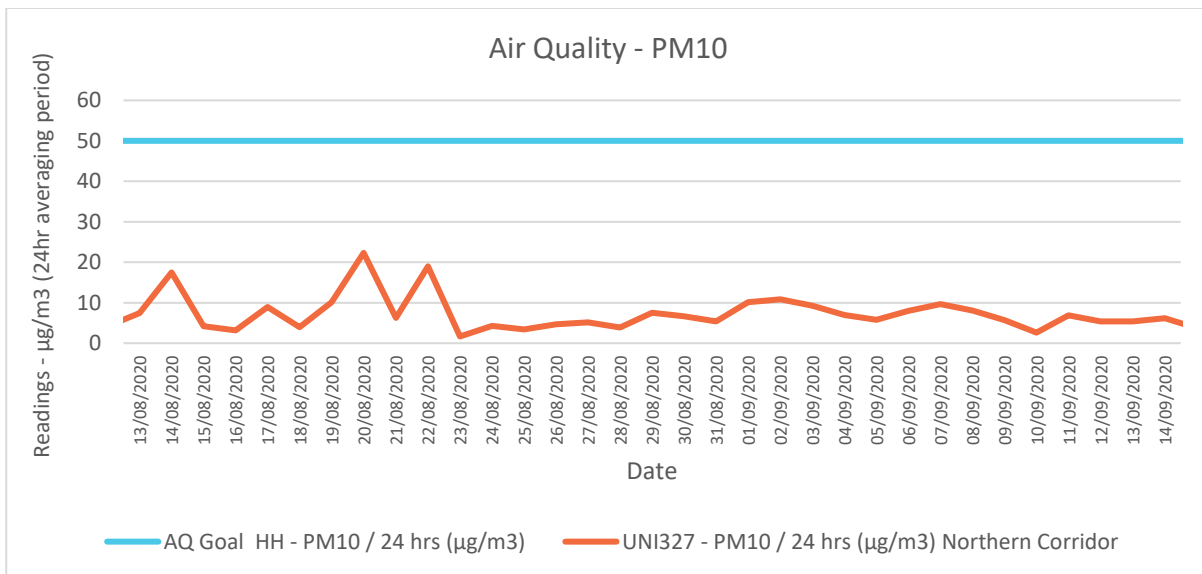


Figure 9: PM10 - Northern Corridor

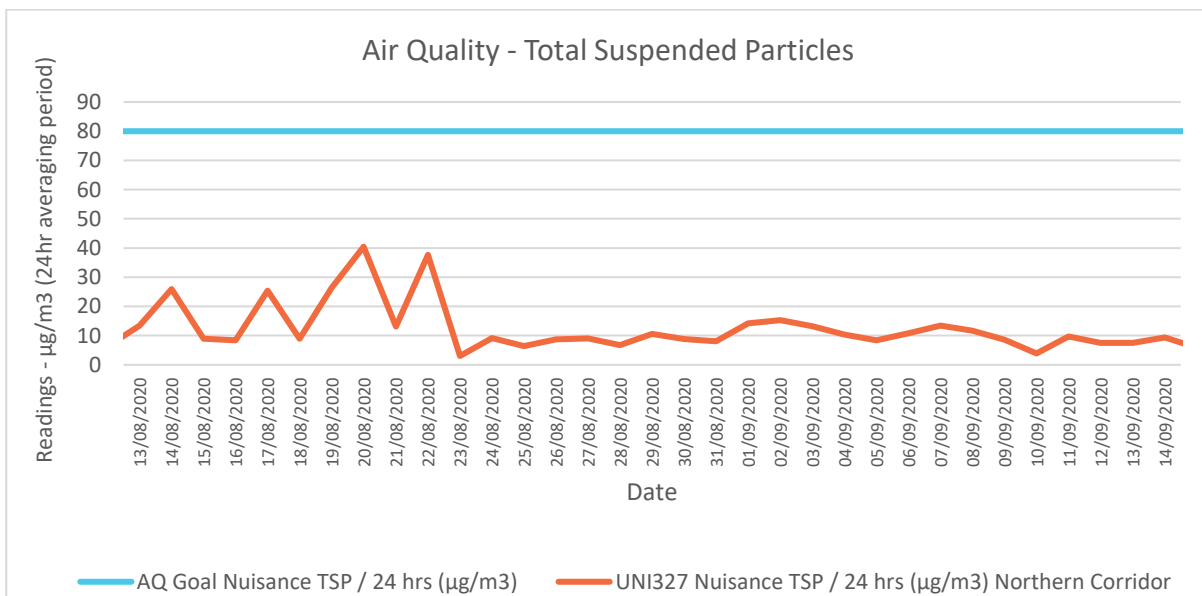


Figure 10: TSP - Northern Corridor

4.1.2.3 Conclusion

The CAQP took into consideration the data presented above. Their conclusion is as follows:

The monitoring method, as set out in the Australian standard, has its limitations and does not allow anyone to be quantitatively definitive about contributions to measured results.

What can be determined from the measured results and the supporting data is that it is very likely Unity Works would not have caused the exceedance alone.

It is very likely that there are other dust sources in the area that contributed enough dust to AQ-02 to cause the exceedance including the regional air quality event.

On this basis there is no Non-Compliance Event with Imposed Condition 13a.

4.2 C-EMP Compliance

The below table summarise compliance status with the C-EMP and relevant Subplans monitoring requirements for the reporting period.

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

Aspect	Monitoring requirement	Activities Risk profile	Monitoring undertaken	Compliance status with C-EMP / CEMP Subplan	Effect of the non-compliance
Air Quality	Visual monitoring program + Additional particulate monitoring as required based on the outcomes of the predictive assessment / risk profile	Moderate to High	Yes – visual monitoring undertaken as part of routine inspections Monitoring for TSP, PM10 and Deposited Dust also undertaken	Compliant	Not Applicable
Air Quality	Complaints response	Moderate to High	Not triggered – no complaints pertaining to nuisance dust	Compliant	Not Applicable
Noise	Buffer Distance Tests based on the outcomes of the predictive assessment based / risk profile of activities	Moderate to High	Yes	Compliant	Not Applicable
Noise	Plant Noise Audits for Noisy Plant to validate models input as required	Moderate to High	Yes	Compliant	Not Applicable
Noise	Complaints response	Moderate to High	Yes	Compliant	Not Applicable
Vibration	Construction Monitoring at Sensitive Places / DAPs - Model Verification based on the outcomes of the predictive assessment based / risk profile of activities	Moderate to High	Yes	Compliant	Not Applicable
Vibration	Complaints response	-	Not triggered – no complaints	Compliant	Not Applicable
Water Quality	Monthly monitoring	-	Yes	Compliant	Not Applicable
Water Quality	Post Rainfall	Moderate to High	Not triggered – no discharges	Compliant	Not Applicable
Water Quality	Dewatering	-	Not triggered – no dewatering to receiving water systems	Compliant	Not Applicable

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

None for this reporting period.

Attachment 2 Monitoring Locations – Noise



- Legend
- Project Boundary RFPC7
 - New Cadastral Boundary
 - Brisbane Imagery (25/06/2020)
 - Construction Monitoring at Sensitive places
 - Complaint Response
 - Plant Audit

A FOR INFORMATION			
Issue	Description	Date	Approved
	Noise		
Scale 1: 8,000			
406	0	203.2	406Meters
© EIC Activities GIS			

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THIS MAP IS NOT TO BE USED FOR NAVIGATION

GIS OUTPUT			
NOT USED FOR CONSTRUCTION			
Original Size	A3	Drawn	
Coordinate System	GDA MGA94-56	Designed	
Height Datum	AHD	Date Printed	16-Oct-2020



Cross River Rail - RIS Alliance

CG Monthly Report - September

Noise

Attachment 3 Monitoring Locations – Vibration



- Legend
- Project Boundary RFPC7
 - New Cadastral Boundary
 - Brisbane Imagery (25/06/2020)
 - Construction Monitoring at Sensitive Places
 - Background Data

A FOR INFORMATION			
Issue	Description	Date	Approved
	Vibration		
Scale 1: 5,000			
254	0	127.0	254 Meters
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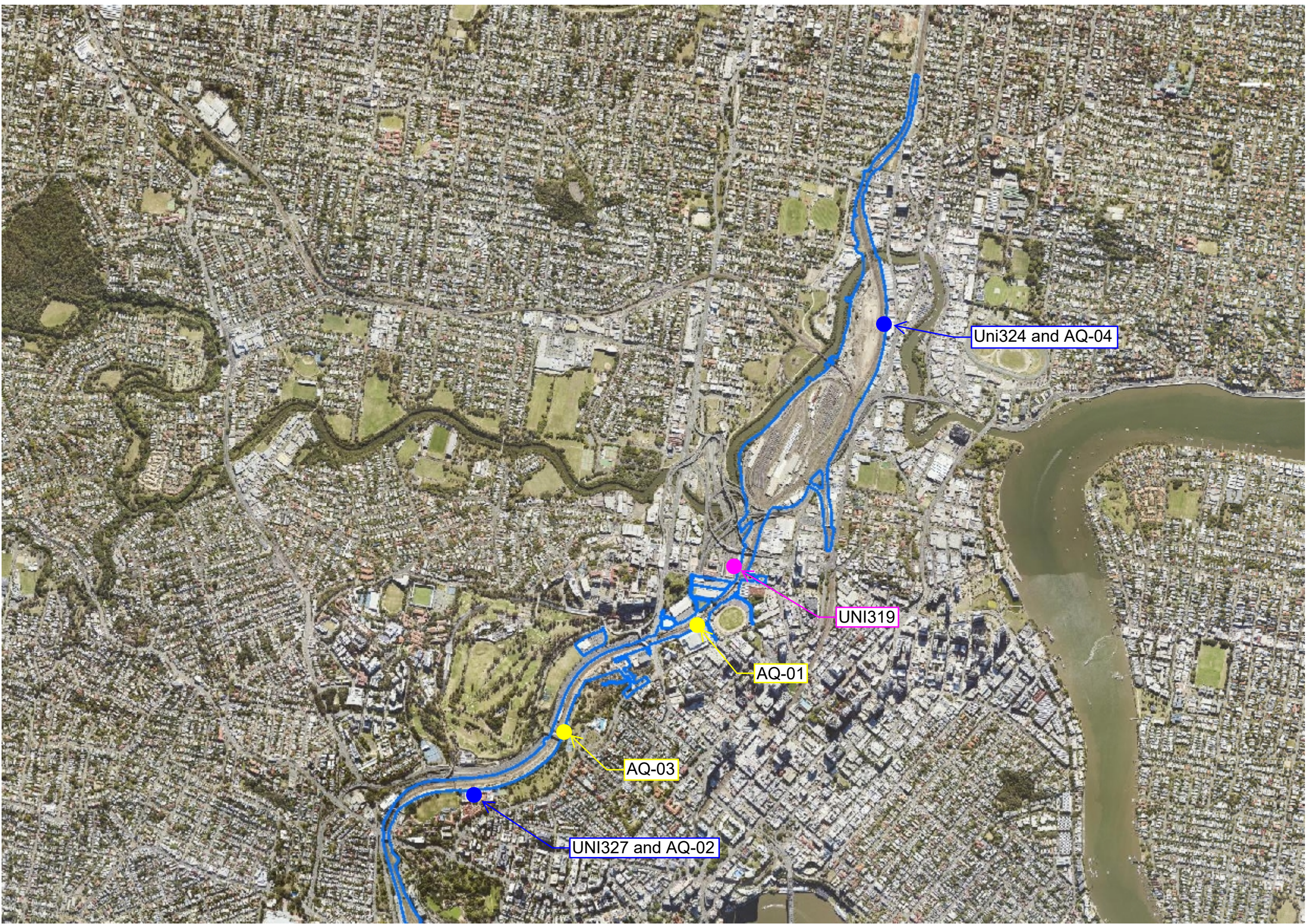


Cross River Rail - RIS Alliance

CG Monthly Report - September

Vibration

Attachment 4 Monitoring Locations – Air Quality



- Legend
- Project Boundary RFPC7
 - Brisbane Imagery (25/06/2020)
- Air Quality Monitoring
- DDG
 - DDG, TSP & PM10
 - TSP & PM10

A

FOR INFORMATION

Issue	Description	Date	Approved
	August 2020		

Scale 1: 20,000

1,016

0


508.0

1,016Meters

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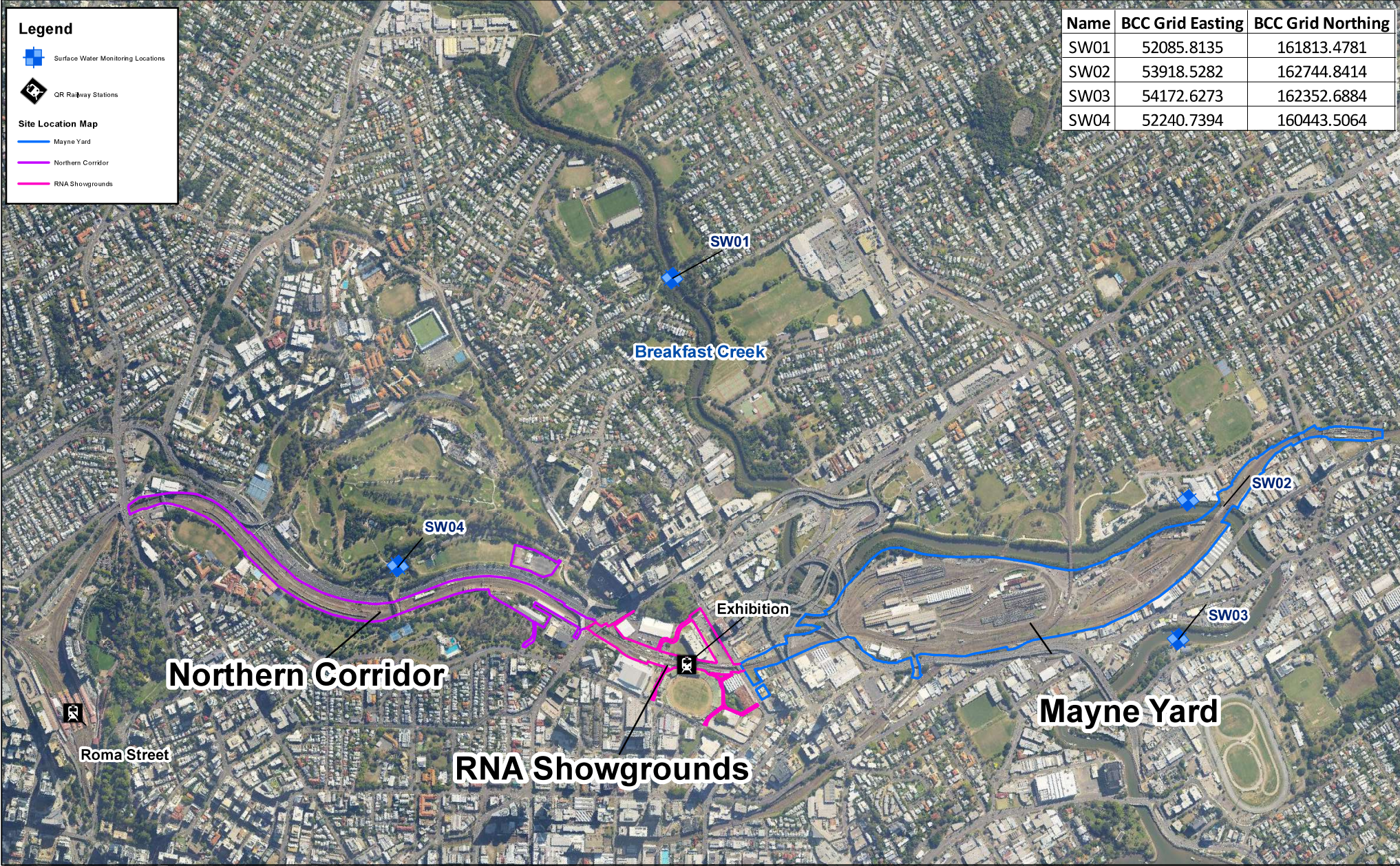


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Air Quality Monitoring locations

Attachment 5 Monitoring Locations – Surface Water



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

1	Overview Map	17/09/2019	J Perry
Rev	Description	Date	Approved

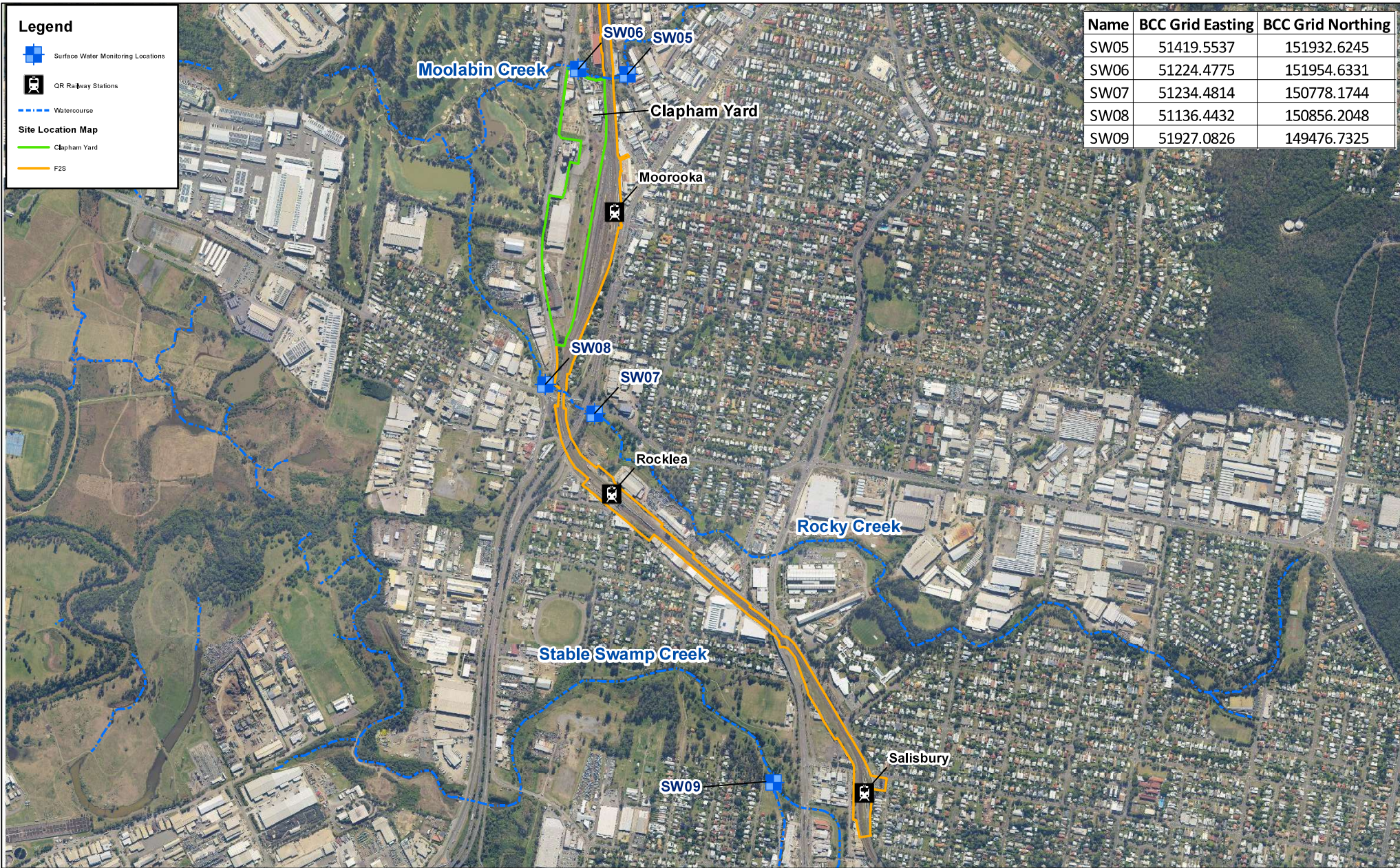
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Status		Issued for Information	
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Coordinate System	GDA 1994 BCSG02	Designed	J Clothier
Height Datum	AHD	Date Printed	2/13/2020
Filename:	Surface_Water_Northern_Area_Map.mxd		



Project Wide Surface Water Investigation				
Figure 1 - Surface Water Monitoring Locations				
Project Number	Discipline	Document	Document Number	Rev
	ENV	PL	002	1

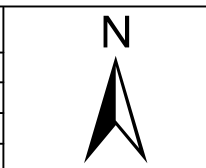


1	Southern Overview Map	17/09/2019	J Perry
Rev	Description	Date	Approved

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Scale 1 : 12,000 cm



Status	Issued for Information		
Original Size	A3	Drawn	GIS
Coordinate System	GDA 1994 BCSG02	Designed	J Clothier
Height Datum	AHD	Date Printed	2/13/2020
Filename:	Surface_Water_Southern_Area_Map.mxd		



Project Wide Surface Water Investigation				
Figure 2 - Surface Water Monitoring Locations				
Project Number	Discipline	Document	Document Number	Rev
	ENV	PL	002	1

Appendix B – TSD Monthly Report

COORDINATOR GENERAL MONTHLY REPORT: September 2020

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

1. Monthly Monitoring Summary

It is the Project'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 nine (9) occasions, and noise monitoring was conducted on forty (40) occasions during September 2020. Each vibration and noise monitoring event confirmed works adhered to project requirements.

Ambient air quality monitoring was conducted at the Roma Street, Albert St, Woolloongabba and Boggo Rd precinct sites during September 2020. Air quality monitoring confirmed works adhered to project requirements.

Water quality monitoring was conducted before the release of water from the site on fifteen (15) occasions. Each monitoring event confirmed project requirements were adhered to. One (1) round of surface water quality monitoring was also conducted that 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	Project works have been conducted compliant 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	The Construction Environmental Plan (CEMP) (Rev 7) has been updated to incorporate changes associated with RfPC-8 and was endorsed by the Environmental Monitor in September 2020.
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 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	Project works have been conducted in accordance with the approved hours of work.
11.	Noise – Work must aim to achieve internal noise goals for human health and well-being.	Yes	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	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	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	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	The Project possesses processes that 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	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 Project 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	The Project possesses processes that 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	The Project possesses processes that ensure acid sulphate soils are managed in accordance with Imposed Condition 19.
20.	Landscape and open space – general requirement to minimise impacts on landscapes and open space values and specific requirements around Victoria park	Yes	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	Project works are designed and implemented in accordance with Condition 21.
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1. Environmental Monitoring Results

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

3.1 Vibration

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

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

Nine (9) vibration monitoring sessions were conducted during September 2020.

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

Table 2: Vibration Monitoring Data

Start Date	Time (AM/PM)	Finish Date	Location (Street Name) (Construction Precinct)	Average Vibration level (mm/s)	Max Vibration Level (mm/s)	Vibration Goal (mm/s)	Receiver / Goal Type	Adhered to Project Requirements (Yes / No)
1/09/2020	8:05:00 AM	7/09/2020	Albert Street (Albert Street Precinct)	0.08	0.15	50	Residential	Yes
2/09/2020	8:58:00 AM	2/09/2020	Roma Street (Roma Street Precinct)	0.61	3.51	25	Court	Yes
3/09/2020	8:57:00 AM	8/09/2020	Roma Street (Roma Street Precinct)	0.09	0.19	2	Heritage Structure	Yes
10/09/2020	9:33:00 AM	10/09/2020	Roma Street (Roma Street Precinct)	0.48	1.02	25	Court	Yes
11/09/2020	10:28:00 AM	11/09/2020	Roma Street (Roma Street Precinct)	0.3	1.07	25	Court	Yes
15/09/2020	8:22:00 AM	21/09/2020	Roma Street (Roma Street Precinct)	0.09	0.25	2	Heritage Structure	Yes

22/09/2020	7:55:00 AM	22/09/2020	Roma Street (Roma Street Precinct)	0.27	0.83	25	Court	Yes
24/09/2020	11:53:00 AM	29/09/2020	Roma Street (Roma Street Precinct)	0.09	0.39	50	Commercial	Yes
30/09/2020	08:01:00 AM	30/09/2020	Vulture Street (Woolloongabba Precinct)	NA	4.77	10	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 Report acknowledges instances exist that these goals may not be achieved.

Noise monitoring was conducted on forty (40) occasions during September 2020. All noise monitoring data adhered to project requirements and is provided in the table below.

Table 3: Noise Monitoring Data

Date	Time (AM / PM)	Location (Street Name) (Construction Precinct)	Purpose of Monitoring	Internal or External ^[3] Monitoring	Activity	Dominant noise source	Noise Goal LA10 ^[1]	Noise level LA10 ^[1]	Noise Goal LAeq ^[2]	Noise level LAeq ^[2]	Adhered to Project Requirements (Yes / No)
3/09/2020	12:54:00 AM	Stanley Street (Woolloongabba Precinct)	Complaint response	External	Station Excavation, Tunnelling Excavation North & South, Spoil Shed Construction	Road Traffic	54	55.6	47	55.3	Yes
3/09/2020	11:24:00 AM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Construction	67	73.6	57	70.7	Yes
3/09/2020	11:42:00 AM	George Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Road Traffic & Construction	72	74.2	62	71.6	Yes
4/09/2020	1:31:00 PM	Albert Street (Albert Street Precinct)	Construction Monitoring at Sensitive Places	Internal	Construction	Commercial Building	55	52.1	45	52.6	Yes
7/09/2020	9:06:00 AM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	Internal	Demolition and Tunnel Construction	Concourse – General Public / Station Noise	60	68.8	50	66.3	Yes
7/09/2020	9:24:00 AM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Construction	72	61.6	62	59.3	Yes

8/09/2020	9:03:00 AM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	Internal	Demolition and Tunnel Construction	Concourse – General Public / Station Noise & Construction	60	71.1	50	68.5	Yes
8/09/2020	9:23:00 AM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Construction	72	77.3	62	73.9	Yes
9/09/2020	7:21:00 AM	Mary Street (Albert Street Precinct)	Construction Monitoring at Sensitive Places	External	Construction	Road Traffic	72	72	62	69.2	Yes
9/09/2020	5:26:00 PM	Mary Street (Albert Street Precinct)	Construction Monitoring at Sensitive Places	External	Construction	Road Traffic	72	69.5	62	67	Yes
10/09/2020	9:33:00 AM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Road Traffic and Construction at Times	62	75.8	52	72.4	Yes
10/09/2020	8:05:00 PM	George Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Stage 3 Demolition and Tunnel Construction	Road Traffic and Construction at Times	67	73.6	57	72.9	Yes
10/09/2020	8:28:00 PM	Herschel Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Road Traffic and General Public	67	65.4	57	62.9	Yes
10/09/2020	8:45:00 PM	Herschel Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Road Traffic	67	63.8	57	61.3	Yes
10/09/2020	9:46:00 PM	George Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Construction	67	74.4	57	71.6	Yes
10/09/2020	10:14:00 PM	Herschel Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Construction & Road traffic	59	67.5	52	65.3	Yes
10/09/2020	10:42:00 PM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Road Traffic	54	72.1	47	69	Yes

10/09/2020	11:03:00 PM	Herschel Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Construction & Road Traffic	59	64.9	52	62.8	Yes
11/09/2020	5:24:00 AM	Stanley Street (Woolloongabba Precinct)	Construction Monitoring at Sensitive Places	External	Station Excavation, Tunnelling Excavation North & South, Spoil Shed Construction	Road Traffic	54	66.1	47	61.7	Yes
14/09/2020	8:10:00 AM	Elliott Street (Boggo Road Precinct)	Model Verification	External	Demolition	Construction and Railway Traffic	57	67	47	62.8	Yes
14/09/2020	11:32:00 AM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	Internal	Demolition and Tunnel Construction	Concourse – General Public / Station Noise	60	69.5	50	66.3	Yes
14/09/2020	11:50:00 AM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Construction	72	65.1	62	62.9	Yes
15/09/2020	7:30:00 AM	Joe Baker Street (Boggo Road Precinct)	Model Verification	External	Demolition	Construction	77	65.1	67	61.5	Yes
17/09/2020	7:15:00 PM	Albert Street (Albert Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Construction and Commercial Operations	67	73.2	57	72.5	Yes
18/09/2020	6:40:00 AM	Stanley Street (Woolloongabba Precinct)	Model Verification	External	Station Excavation, Tunnelling Excavation North & South, Spoil Shed Construction	Road Traffic	54	70.4	47	67.7	Yes
21/09/2020	9:27:00 AM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Concourse – General Public / Station Noise	60	70.2	50	67.8	Yes
21/09/2020	9:45:00 AM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Construction	72	64.8	62	61.6	Yes
22/09/2020	12:06:00 PM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	Internal	Demolition and Tunnel Construction	Concourse – General Public / Station Noise	60	71.4	50	68.8	Yes

22/09/2020	12:24:00 PM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Construction	72	64.2	62	62	Yes
22/09/2020	12:48:00 PM	George Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Construction and Road Traffic	72	73.9	62	71.1	Yes
22/09/2020	8:43:00 PM	Hubert Street (Woolloongabba Precinct)	Complaint response	External	Station Excavation, Tunnelling Excavation North & South, Spoil Shed Construction	Road Traffic	62	53.4	52	51.7	Yes
22/09/2020	9:05:00 PM	Hubert Street (Woolloongabba Precinct)	Complaint response	External	Station Excavation, Tunnelling Excavation North & South, Spoil Shed Construction	Road Traffic and Construction	62	51.8	52	50.4	Yes
22/09/2020	9:22:00 PM	Hubert Street (Woolloongabba Precinct)	Complaint response	Internal	Station Excavation, Tunnelling Excavation North & South, Spoil Shed Construction	None Audible	42	34.1	35	33.3	Yes
23/09/2020	5:49:00 AM	Stanley Street (Woolloongabba Precinct)	Construction Monitoring at Sensitive Places	External	Station Excavation, Tunnelling Excavation North & South, Spoil Shed Construction	Road Traffic	54	73.1	47	70.4	Yes
28/09/2020	10:38:00 AM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	Internal	Demolition and Tunnel Construction	Concourse – General Public / Station Noise	60	70.9	50	70.5	Yes
28/09/2020	10:56:00 AM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	External	Demolition and Tunnel Construction	Construction	72	63.9	62	62.2	Yes
29/09/2020	1:10:00 PM	Roma Street (Roma Street Precinct)	Construction Monitoring at Sensitive Places	Internal	Demolition and Tunnel Construction	Concourse – General Public / Station Noise	60	73.9	50	71.4	Yes
29/09/2020	7:14:00 AM	Vulture Street (Woolloongabba Precinct)	Model Verification	External	Station Excavation, Tunnelling Excavation North & South, Spoil Shed Construction	Road Traffic	72	74.4	62	70.3	Yes

30/09/2020	5:48:00 AM	Vulture Street (Woolloongabba Precinct)	Construction Monitoring at Sensitive Places	External	Station Excavation, Tunnelling Excavation North & South, Spoil Shed Construction	Road Traffic	54	71.7	47	68.3	Yes
30/09/2020	08:01:00 AM	Main Street (Woolloongabba Precinct)	Construction Monitoring at Sensitive Places	External	Controlled Blast	NA	NA	NA	130 ^[4]	114 ^[4]	Yes

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

3.3 Air Quality

3.3.1 Deposited Dust Results

Air quality requirements (levels) are defined as goals within Imposed Condition 13. The goals are to be aimed for.

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

Dust deposition monitoring was performed during September 2020. The dust deposition gauges result for the reporting period are detailed below, and all monitoring data adhered to project requirements.

Table 4: Air Quality Monitoring – Deposited Dust Data

Location	Project Wide Air Quality Criteria & Goals ^[1]			Monitoring results	Comments
	Criterion	Air Quality Indicator	Goal		
Roma Street Precinct/ Northern Portal	Nuisance	Deposited dust	120 mg/m ² /day	20.00 mg/m ² /day	Air quality monitoring was performed during the reporting period. All results adhered to project requirements.
Albert Street Precinct				13.30 mg/m ² /day	
Woolloongabba Precinct				26.67 mg/m ² /day NA ^[2]	
Boggo Road Precinct/ Southern Portal				16.67 mg/m ² /day ^[2] 60.0 mg/m ² /day	

- ^[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] During the monitoring period, one of the dust deposition gauges located at the Woolloongabba precinct was stolen. No data was therefore available for this instrument.

3.3.2 Particulates and Ambient Air Quality Results

Total Suspended Particules (TSP) and particulate matter less than 10µm (PM10) monitoring was conducted during September 2020.

TSP and PM10 are monitored using portable air quality units, as well as nearby Government air quality stations. Targeted monitoring of potential dust-generating activities is conducted by the mobile air quality units and was completed at the Roma Street, Albert Street, Woolloongabba, and Boggo Road Precincts during September 2020. Three (3) Government air quality stations near to the Construction Precincts are also utilised.

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

Woolloongabba					Roma Street				Boggo Road				Albert Street			
Date	TSP GOAL	TSP	PM10 GOAL	PM10	TSP GOAL	TSP	PM10 GOAL	PM10	TSP GOAL	TSP	PM10 GOAL	PM10	TSP GOAL	TSP	PM10 GOAL	PM10
	(µg/m3/24 hr)				(µg/m3/24 hr)				(µg/m3/24 hr)				(µg/m3/24 hr)			
01-Sep-20	80	11.75	50	11.58	80	15.04	50	15.00	80	12.94	50	12.91	80	-	50	-
02-Sep-20	80	10.46	50	10.40	80	8.91	50	8.91	80	10.58	50	10.57	80	-	50	-
03-Sep-20	80	13.60	50	13.52	80	7.52	50	6.94	80	16.60	50	16.58	80	5.22	50	5.20
04-Sep-20	80	7.83	50	7.73	80	3.38	50	3.38	80	8.76	50	8.74	80	12.06	50	12.00
05-Sep-20	80	6.47	50	6.42	80	2.54	50	2.54	80	8.73	50	8.70	80	11.32	50	11.30
06-Sep-20	80	8.19	50	8.12	80	3.16	50	3.16	80	10.40	50	10.38	80	11.67	50	11.63
07-Sep-20	80	6.05	50	5.95	80	4.17	50	4.17	80	9.25	50	9.20	80	8.75	50	8.71
08-Sep-20	80	5.13	50	5.04	80	7.07	50	6.82	80	7.55	50	7.53	80	7.99	50	7.96
09-Sep-20	80	4.12	50	4.00	80	4.2	50	3.87	80	5.86	50	5.84	80	7.19	50	7.15
10-Sep-20	80	3.61	50	3.51	80	7.25	50	6.87	80	4.76	50	4.74	80	5.52	50	5.45
11-Sep-20	80	3.98	50	3.91	80	9.45	50	9.02	80	5.02	50	5.00	80	6.35	50	6.33
12-Sep-20	80	3.40	50	3.37	80	7.69	50	7.27	80	4.94	50	4.90	80	5.22	50	5.20
13-Sep-20	80	3.61	50	3.60	80	5.84	50	5.68	80	5.92	50	5.90	80	6.34	50	6.33
14-Sep-20	80	4.88	50	4.83	80	5.83	50	5.62	80	7.53	50	7.44	80	8.93	50	8.89
15-Sep-20	80	4.40	50	4.30	80	4.12	50	3.53	80	9.23	50	9.20	80	7.27	50	7.23
16-Sep-20	80	4.45	50	4.37	80	6.47	50	6.29	80	6.11	50	6.08	80	7.48	50	7.44
17-Sep-20	80	5.09	50	4.99	80	3.87	50	3.62	80	6.44	50	6.41	80	7.46	50	7.41
18-Sep-20	80	5.24	50	5.17	80	2.96	50	2.88	80	9.28	50	9.26	80	8.38	50	8.33
19-Sep-20	80	4.07	50	4.02	80	3.25	50	3.21	80	4.21	50	4.21	80	11.82	50	11.78

20-Sep-20	80	4.21	50	4.19	80	3.46	50	3.44	80	4.89	50	4.88	80	7.15	50	7.13
21-Sep-20	80	6.88	50	6.80	80	5.7	50	5.55	80	6.17	50	6.15	80	9.38	50	9.34
22-Sep-20	80	10.36	50	10.28	80	7.64	50	7.47	80	8.46	50	8.44	80	13.40	50	13.33
23-Sep-20	80	10.19	50	10.05	80	6.94	50	6.53	80	9.30	50	9.26	80	11.62	50	11.49
24-Sep-20	80	5.02	50	4.85	80	3.22	50	3.00	80	4.37	50	4.30	80	6.39	50	6.28
25-Sep-20	80	8.29	50	8.11	80	3.79	50	3.55	80	8.63	50	8.54	80	13.47	50	13.35
26-Sep-20	80	5.27	50	4.92	80	4.72	50	4.57	80	3.86	50	3.68	80	6.68	50	6.46
27-Sep-20	80	2.21	50	2.09	80	2.55	50	2.54	80	2.37	50	2.33	80	7.57	50	7.36
28-Sep-20	80	4.08	50	4.00	80	3.03	50	2.77	80	5.25	50	5.22	80	6.02	50	5.99
29-Sep-20	80	4.22	50	4.15	80	3.35	50	3.11	80	5.89	50	5.85	80	5.86	50	5.82
30-Sep-20	80	4.55	50	4.48	80	3.41	50	3.17	80	5.60	50	5.58	80	7.83	50	7.78

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

- Brisbane CBD: PM₁₀ daily Maximum average: **64.9 µg/m³/24 hr** (<https://apps.des.qld.gov.au/air-quality/chart/?station=cdb¶meter=18&date=1/09/2020&timeframe=month>)
- South Brisbane: PM₁₀ daily Maximum average: **87.6 µg/m³/24 hr** (<https://apps.des.qld.gov.au/air-quality/chart/?station=sbr¶meter=18&date=1/09/2020&timeframe=month>)
- Woolloongabba: PM₁₀ daily Maximum average: **60.3 µg/m³/24 hr** (<https://apps.des.qld.gov.au/air-quality/chart/?station=woo¶meter=18&date=1/09/2020&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 South Brisbane, 1–30 September 2020

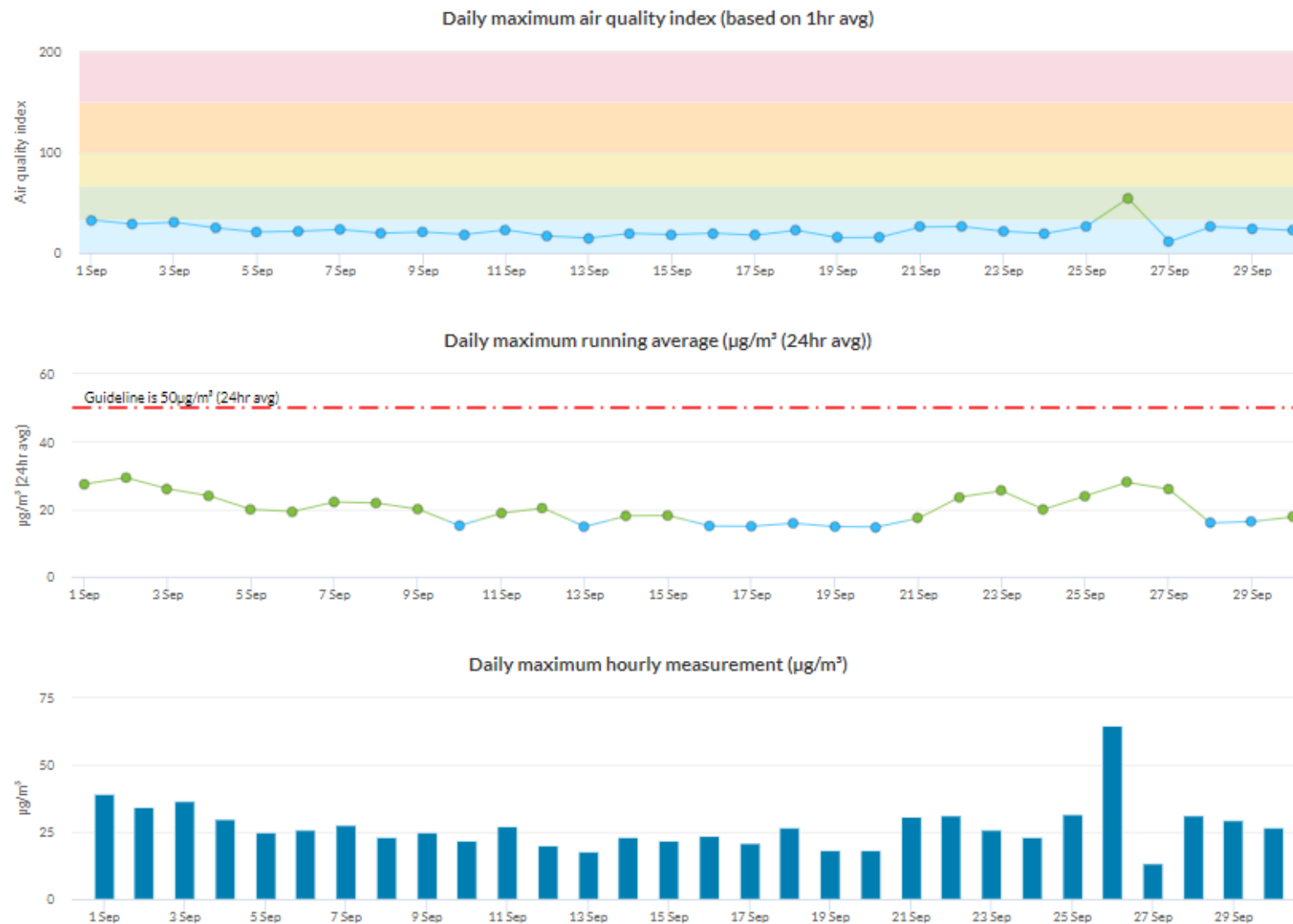


Figure 1: Brisbane CBD – DES Station - PM10 graph for August 2020 (reproduction from the DES website accessed October 2020)

Particle PM10 at South Brisbane, 1–30 September 2020

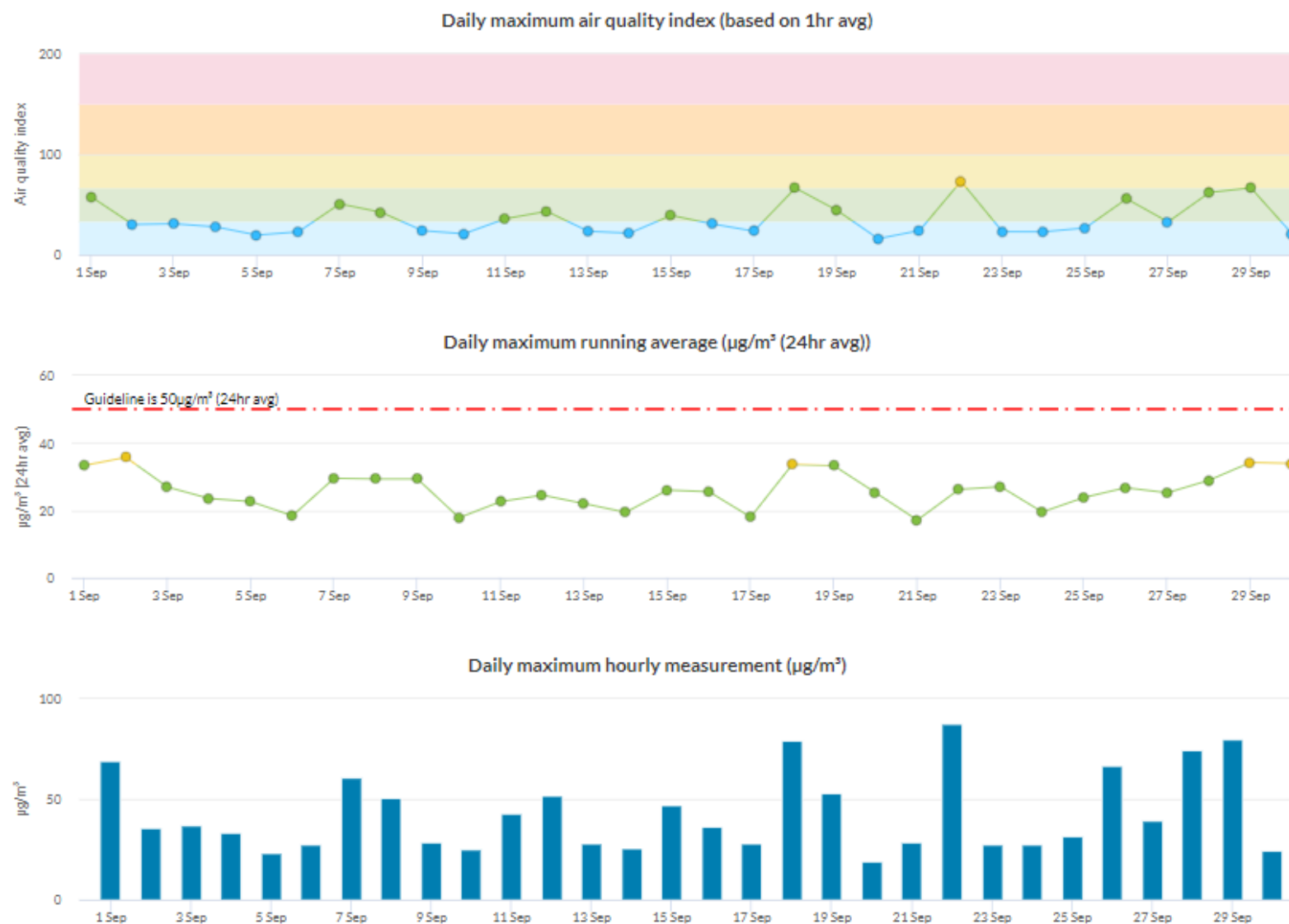


Figure 2: South Brisbane – DES Station - PM10 graph for August 2020 (reproduction from the DES website accessed October 2020)

Particle PM10 at Woolloongabba, 1–30 September 2020

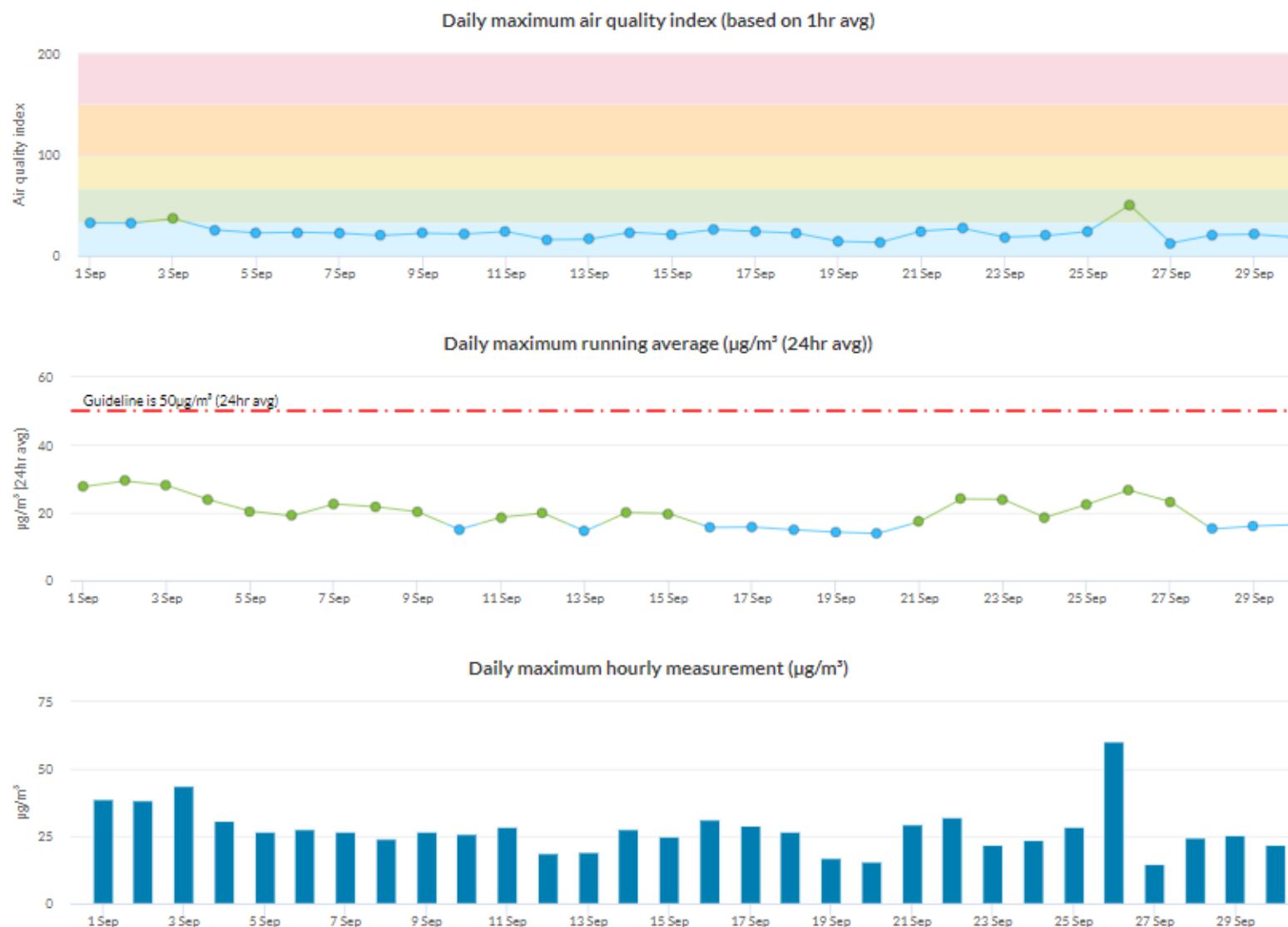


Figure 3: Woolloongabba – DES Station - PM10 graph for August 2020 (reproduction from the DES website accessed October 2020)

3.4 Water Quality – Discharge

CBGU undertook fifteen (15) water quality monitoring events prior to the release from the site during September 2020.

Water quality monitoring data is provided in the table below.

Table 6: Water Quality Monitoring Data

Location	Date	Water Quality Objectives ^[6]											Adhered to Project Requirements (Yes / No)
		Turbidity (NTU)	Suspended solids (mg/L)	Chlorophyll a (µg/L)	Total nitrogen (µg/L)	Oxidised N (µg/L)	Ammonia N (µg/L)	Organic N (µg/L)	Total phosphorus (µg/L)	Filterable reactive phosphorus (FRP) (µg/L)	Dissolved oxygen ^[1] (µg/L)	pH(µg/L)	
Woolloongabba	28/08/2020	3.10	<5	<1	2500.00	270.00	340.00	1900.00	20.00	<10	82.30 ^[1]	8.30	Yes
Roma Street	31/08/2020	0.60	-	-	-	-	-	-	-	-	-	7.57	Yes
Boggo Road	4/09/2020	6.70	<5	<1	1200.00	230.00	440.00	600.00	<10	<10	107.72 ^[1]	7.82	Yes
Woolloongabba	4/09/2020	6.50	32.00	<1	6100.00	600.00	190.00	5300.00	50.00	<10	102.88 ^[1]	8.31	Yes
Roma Street	7/09/2020	0.20	-	-	-	-	-	-	-	-	-	7.10	Yes
Albert Street	7/09/2020	0.40	<5	<1	9900.00	490.00	1690.00	7700.00	40.00	<10	107.79 ^[1]	7.77	Yes
Roma Street	14/09/2020	0.10	<5	<1	5400.00	170.00	1330.00	3900.00	20.00	<10	82.30 ^[1]	7.35	Yes
Albert Street	14/09/2020	1.04	10.00	<1	5100.00	100.00	770.00	4200.00	20.00	<10	92.90	7.07	Yes
Boggo Road	16/09/2020	0.41	<5	<1	1000.00	230.00	300.00	500.00	<10	<10	95.61	7.98	Yes
Woolloongabba	18/09/2020	7.19	13.00	<1	3700.00	800.00	40.00	3600.00	70.00	<10	31.47 ^[1]	8.38	Yes
Roma Street	21/09/2020	0.30	-	-	-	-	-	-	-	-	-	7.70	Yes

Albert Street	21/09/2020	0.50	<5	<1	6600.00	50.00	600.00	6000.00	20.00	<10	86.88 ^[1]	7.53	Yes
Woolloongabba	23/09/2020	5.96	6.00	-	-	-	-	-	-	-	-	8.35	Yes
Boggo Road	29/09/2020	4.11		-	-	-	-	-	-	-	-	7.12	Yes
Roma Street	29/09/2020	0.30	-	-	-	-	-	-	-	-	-	7.80	Yes

- 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.
- [1] 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.

3.5 Water Quality – Surface Water

During August 2020, CBGU JV undertook one (1) round of surface water sampling at four (4) locations (upstream and downstream).

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

Table 7: Offsite Upstream & Downstream Water Quality Data

Location	Aspect	Date	Purpose of Monitoring	Turbidity (NTU)	Suspended solids (mg/L)	EC (µS/cm)	Dissolved oxygen (%)	pH
Albert Street	Upstream	14/9/20	Monthly	10.21	14.0	>3999	106.12	7.82
Albert Street	Downstream	14/9/20	Monthly	11.65	13.0	>3999	101.45	7.84
Gabba	Upstream	14/9/20	Monthly	12.46	19.0	>3999	121.3	7.72
Gabba	Downstream	14/9/20	Monthly	8.14	7.0	>3999	114.98	7.84
Boggo Road	Downstream	14/9/20	Monthly	1.46	8.0	>3999	35.1	7.55
Roma Street	Upstream	28/9/20	Monthly	12.1	24.0	>3999	102.88	7.94
Roma Street	Downstream	28/9/20	Monthly	10.4	13.0	>3999	105.3	7.99

- [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 8: Non-Compliance Events

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

5 Complaints

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

During August 2020, seven (13) complaints relating to the Project were received as detailed in Table 9 below.

Table 9: Summary of Complaints

No.	Date	Location	Description of Issue	Responses	Status of Event
1.	07/09/2020	Peter Doherty Street (Boggo Road Precinct)	Noise, dust and spoil haulage	A stakeholder emailed the Project regarding dust management, approved haulage routes, truck coverings and RfPC8. The Stakeholder was informed of the construction activities, approved haul routes, and mitigation practices. Attended noise and air quality monitoring confirmed works adhered to project requirements.	Closed
2.	08/09/20	Herschel Street (Roma Street Precinct)	Noise	A stakeholder called the Project hotline regarding noise from Roma Street construction site. The stakeholder was informed of construction activities and mitigation practices. Attended noise monitoring confirmed that works adhered to project requirements.	Closed

3.	09/09/20	Herschel Street (Roma Street Precinct)	Noise	A stakeholder called the project hotline regarding noise from Roma Street site. The stakeholder was informed of construction activities and mitigation practices. Attended noise monitoring confirmed that works adhered to project requirements.	Closed
4.	11/9/20	Roma Street (Roma Street Precinct)	Noise	A stakeholder emailed the Project regarding out of hours work at Roma Street site. The stakeholder was informed of construction activities and mitigation practices. Attended noise monitoring confirmed that works adhered to project requirements.	Closed
5.	14/9/2020	(Woolloongabba Precinct)	Road condition	A stakeholder contacted the Project regarding sediment tracking from the Woolloongabba site. The site communicated the mitigation measures in place and ensured ongoing street sweeper operations.	Closed
6.	15/9/2020	Duke Street (Woolloongabba Precinct)	Noise	A stakeholder called the project hotline regarding noise from the Woolloongabba site. The stakeholder was informed of construction activities and mitigation practices. Attended noise monitoring confirmed that works adhered to project requirements.	Closed
7.	18/9/20	Herschel Street (Roma Street Precinct)	Noise	A stakeholder emailed the Project regarding out of hours work at Roma Street site. The stakeholder was informed of construction activities and mitigation practices. Attended noise monitoring confirmed that works adhered to project requirements.	Closed
8.	21/09/20	Herschel Street (Roma Street Precinct)	Noise	A stakeholder emailed the Project regarding out of hours work at Roma Street site. The stakeholder was informed of construction activities and mitigation practices. Attended noise monitoring confirmed that works adhered to project requirements.	Closed
9.	22/9/20	Peter Doherty Street (Boggo Road Precinct)	Noise, dust, construction traffic	A stakeholder wrote to the Project regarding the noise, dust and the condition of Boggo Road. The stakeholder was informed of the construction activities, approved haul routes, and mitigation practices. Attended noise and air quality monitoring confirmed works adhered to project requirements.	Closed
10.	24/09/20	Anglesey Street (Woolloongabba Precinct)	Noise	A stakeholder emailed the Project regarding out of hours work at the Woolloongabba site. The stakeholder was informed of construction activities and mitigation practices. Attended noise monitoring confirmed that works adhered to project requirements.	Closed

11.	25/09/2020	Anglesey Street (Woolloongabba Precinct)	Construction traffic	A stakeholder contacted the Project regarding sediment tracking from the Woolloongabba site. The site communicated the mitigation measures in place and ensured ongoing street sweeper operations.	Closed
12.	27/09/2020	Peter Doherty Street (Boggo Road Precinct)	Dust and road condition	A stakeholder emailed the Project regarding dust management and the road condition. The stakeholder was informed of the construction activities, approved haul routes, and mitigation practices. Attended noise and air quality monitoring confirmed works adhered to project requirements.	Closed
13.	29/9/20	(Roma Street Precinct)	Noise	A stakeholder emailed the Project regarding out of hours work at Roma Street site. The stakeholder was informed of construction activities and mitigation practices. Attended noise monitoring confirmed that works adhered to project requirements.	Closed