Quarterly Environment Construction Monitoring Report

Q1 2022 –

January to March 2022

Pitt Street Integrated Station Development

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A	11/04/22	E Eveleigh	T Taylor		Review by Renzo Tonin
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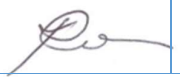
Signature					

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1. Introduction

1.1 Project Summary

The Sydney Metro City and Southwest is the second portion of the new standalone rail network known as the Sydney Metro, which is Australia's largest public transport infrastructure project and a priority rail project for the NSW Government. CPB Contractors (CPB) have been contracted by Transport for New South Wales to design and construct the Integrated Station Development (ISD) component of the future Pitt Street Station.

Pitt Street is situated within the Sydney CBD, largely surrounded by high-rise commercial and residential buildings. The Station is a binocular cavern station with north and southbound platform caverns running beneath Pitt and Castlereagh Streets respectively. The Station has two entrance shafts from the surface one at Pitt Street North and Pitt Street South connected to the platform caverns via adit tunnels.

Pitt Street North is located on Park Street between Pitt and Castlereagh Street, with the station entrance facing onto Park Street. The Over Station Development (OSD) surrounds the station entrance and access is provided on Pitt, Park and Castlereagh Streets. Pitt Street South is located on the corner of Pitt and Bathurst Street. It is configured in an 'L' shape which wraps around the Edinburgh Castle Hotel with the station entrance opening onto Bathurst Street. Access to the OSD is provided from Pitt Street.

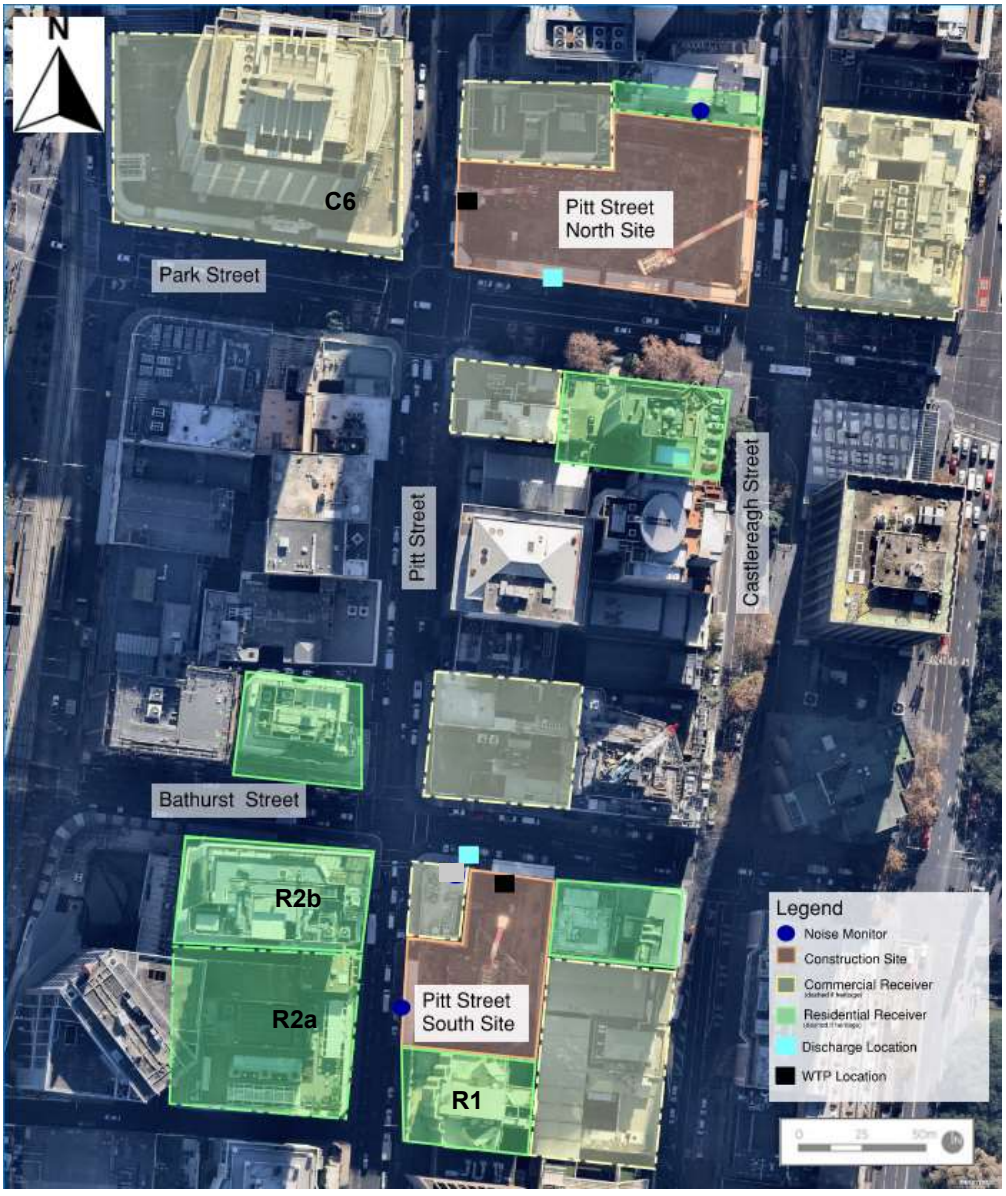

Figure 1-1 Pitt Street Station location and indicative monitoring layout

1.2 Site Activities

The Construction Environment Management Plan (CEMP) and associated sub-plans were approved by the Department of Planning, Industry and Environment (DPIE) on 24 December 2020 and construction works commenced on the project on 6 January 2021. The CEMP was revised with minor updates and reviewed during October to December 2021 with Revision 1 (dated 21/02/2022) approved by the ER on 23 February 2022.

This is the first quarterly report for 2022 and reflects the monitoring that was conducted from January to March 2022. **Table 1-1** outlines the site activities that occurred during the reporting period.

Table 1-1 Site Activities

Location	Site Activities
Pitt Street North	Slab pours completed from L00 to L01 Central blade walls, western jump form and mega column complete and jump forms dismantled Castlereagh Street side capping beam demolition completed and Park Street commenced (not yet complete) Stripping formwork up to level B03 West core hoist installed Shotcrete to B05, B04 and B03 North and East perimeter walls
Pitt Street South	Eastern jump form dismantling completed South ventilation shaft completed – cycles 3, 4, 5 and 6 completed Blockwork to B04 and B03 completed, ongoing to B02 and commencing on B01 Slab pour to Level 00 completed Slab pours to Level 01 and Level 02 commenced Man and material hoist installed Service fitout for B04 and B03 commenced Tunnel ventilation jump form pours 4,5, 6, 7 and 8 completed Central jump form pour completed Front of house fit out for level B04
Caverns	Completion for portion 1 – trackway. Milestone achieved GRC panel installation ongoing Installing aluminium tube sub-frames Installing south adit steel boom Installing the adit GRC brackets Pouring slab on ground in south adit. Services rough-in to platform and adits Installing cladding subframes above GRC panels

2. Reporting Requirements

A Planning Approval has been obtained to construct Sydney Metro City and Southwest Chatswood to Sydenham, which was identified as Critical State-Significant Infrastructure (CSSI) SSI 15_7400.

Conditions C9 to C16 of the Planning Approval describes monitoring and reporting requirements for the ISD Works.

Monitoring and reporting requirements are detailed in the Construction Environmental Management Plan (approved by NSW DPIE on 24 Dec 2020), and the following associated sub-plans:

- Soil, Water and Groundwater Management Sub-Plan; and

- Noise and Vibration Management Sub-Plan

The following report details environmental monitoring that was undertaken during this reporting period conducted as per the Planning Approval, the approved CEMP (Revision 1) and its associated sub-plans.

A copy of the Planning Approval can be found by following the link below to the NSW Planning Portal website.

https://www.planningportal.nsw.gov.au/major-projects/project/3601

The results of the Construction Monitoring Program are included in this Construction Monitoring Report and will be submitted to the Acoustic Advisor (AA), Sydney Metro and the Environmental Representative (ER) who will endorse the document prior to submission to DPIE and being made publicly available on the project website located at https://pittstreetsydneymetroisd.com.au. CPB will also issue the Construction Monitoring report to Council, NRAR and EPA.

2.1 Inspections

Periodic environmental inspections are undertaken by CPB to verify the adequacy of all environmental mitigation measures. In addition, inspections are conducted before and following significant rainfall events that are predicted to be over 10mm in 24 hours. Weather data for the period is included in **Appendix A**. A total of 17 environmental inspections were conducted by CPB during the reporting period.

The Site Environmental Plans (SEPs) identify the environmental control measures on both PSISD sites. SEPs and environmental controls are monitored through these periodic environmental inspections and are updated as required to reflect the changing nature of the PSISD sites. All records of SEP inspections are documented in the CPB Environmental Inspection Checklist. Pitt Street South and Pitt Street North are inspected independently, and the caverns/ adits are included in those inspections. Internal CPB inspections are conducted by the CPB Environmental and Project Team. ER inspections are attended by Sydney Metro, CPB, the DPIE endorsed Acoustic Advisor (AA) and the ER.

During the reporting period inspections conducted by Sydney Metro Environmental Representatives and the ER/AA were limited to one on 15 March 2022 due to Covid restrictions. Photographic evidence of the progress of the site was however provided to the ER/AA during the weekly meetings held every 3 weeks.

2.2 Water Quality Monitoring

2.2.1 Background

Water quality parameters were determined from the Discharge Impact Assessment (supporting the Construction Environmental Management Plan Rev 0) which was updated in May 2021 to include the TSS/NTU correlation following ER review of the first Construction Monitoring Report (Q1 2021) and clarification of the Discharge Management Protocol.

Water quality parameters for the discharge criteria for the Project are presented in **Table 2-1**.

Table 2-1 Water Quality Discharge Criteria Parameters

Parameter	Unit	Discharge Criteria
pH	pH	6.5 – 8.5
Total Suspended Solids	mg/L	50mg/L (TSS:NTU correlation equivalent of 50NTU)
Oil and Grease	Visual	No visible surface sheen
Copper	mg/L	0.0013mg/L (50 percentile limit) 0.005mg/L (100 percentile limit)
Zinc	mg/L	0.015mg/L (50 percentile limit) 0.043mg/L (100 percentile limit)

CPB has a temporary stormwater connection for both the North site and South sites approved by the City of Sydney Council (CoSC) since 4 December 2020. Water is collected at the Pitt Street North site (PSN) and Pitt Street South site (PSS) in permanent stormwater tanks the capacity of which are approximately 200kL and 100kL respectively. Water is pumped form the stormwater tanks to the treatment system where it is then tested prior to discharge. At PSN there is a water reuse system established that provides water for site activities.

Water discharged from the site is predominantly rainwater and construction (potable) water. Negligible groundwater is encountered which is evidenced by the frequency of discharge relating more to rainfall events than construction activities.

2.2.2 Water Quality Monitoring Methodology

Regular field tests are conducted by CPB Environmental Team using the calibrated water quality probe within the stormwater pit to confirm parameters are within the discharge criteria for pH, NTU and no visible oil and grease. If water requires treatment it is treated in the stormwater pit with the appropriate chemicals and retested again until compliant values are obtained. If the parameters are within the field criteria and monthly laboratory samples have been obtained, a permit to dewater will be issued. Additional field tests are undertaken by taking a sample of water from the sample valve located post-treatment to confirm the pH and NTU values and no visible oil and grease during discharge.

Table 2-2 outlines the CPB water quality monitoring equipment used during the reporting period.

Table 2-2 Water Quality Monitoring Equipment Details

Monitoring Type	Equipment Details	Serial Number	Calibration Date
Water Quality Multi Parameter Meter	Yeo-Kal 611	426	15/07/2021
Water Quality Multi Parameter Meter	Yeo-Kal 618	676	4/03/2022
Water Quality Multi Parameter Meter	Yeo-Kal 618	638	1/03/2022

Laboratory testing is conducted monthly via grab samples to confirm the criteria in Table 2-1 in accordance with the Discharge Impact Assessment – Discharge Management Protocol.
Laboratory Testing of water quality is undertaken at Eurofins Sydney Laboratory in Lane Cove West, a NATA accredited laboratory. Laboratory results are provided in Appendix D.

2.2.3 Water Quality Monitoring Results

Detailed discharge monitoring results for this reporting period are presented in **Table 2-3.**

Commissioning samples were taken at Pitt Street North site on 15 February 2022 to validate the discharge criteria as per the Discharge Management Protocol for the new water treatment system. A single parameter in the monthly sampling event at PSS on 17 January 2022 and 24 February 2022 exceeded the Stage 2 protocol (exceedance of one parameter), the site supervisor was notified and no further discharge occurred until an investigation into the exceedance was undertaken. Subsequent samples were taken and compliant results were obtained. No monthly samples exceeded the Stage 3 protocol exceedance (2 consecutive exceedances of the same parameter) during the reporting period. All discharges have been compliant with the Discharge Management Protocol.

Table 2-3 Discharge Water Monitoring Data

Parameter, Criteria or Measured Value									
Identifier	**Dates Sampled**	**pH (6.5-8.5)**	**Turbidity (<50NTU)**	**Copper (<0.005 mg/L)**	**Zinc (<0.043 mg/L)**	**Oil & Grease (visible/ <10mg/L)**	**Testing Method**	**Status**	
PSS01	7/01/2022	8.27	29.1			Nil	Field	Compliant	
PSS01	14/01/2022	8.47	48.3			Nil	Field	Compliant	
PSS01	17/01/2022	7.6	6.2	<0.001	0.005	18	Laboratory	Stage 2 exceedance	
PSS01	25/01/2022	*	*	*	*	<10	Laboratory	Compliant	
PSS01	27/01/2022	8.46	13.7			Nil	Field	Compliant	
PSS01	3/02/2022	8.37	13.7			Nil	Field	Compliant	
PSN01	15/02/2022	7.9	1.1	<0.001	<0.005	<10	Laboratory	Compliant	PSN Commissioning samples
PSN01	15/02/2022	7.9	<1	<0.001	<0.005	<10	Laboratory	Compliant	
PSN01	15/02/2022	8.2	7	<0.001	<0.005	<10	Laboratory	Compliant	
PSN01	15/02/2022	8.2	6.8	<0.001	<0.005	<10	Laboratory	Compliant	
PSN01	15/02/2022	8.2	5.2	<0.001	<0.005	<10	Laboratory	Compliant	
PSN01	18/02/2022	8.43	12.2			Nil	Field	Compliant	
PSN01	24/02/2022	8.22	16			Nil	Field	Compliant	
PSS01	24/02/2022	8.05	19.6			Nil	Field	Compliant	
PSS01	24/02/2022	9.2	2.3	<0.001	<0.005	<10	Laboratory	Stage 2 exceedance	
PSS01	28/02/2022	7.7	*	*	*	*	Laboratory	Compliant	
PSS01	1/03/2022	8.53	15.1			Nil	Field	Compliant	
PSN01	1/03/2022	8.53	15.4			Nil	Field	Compliant	
PSS01	23/03/2022	8.5	3.8	<0.001	<0.005	<10	Laboratory	Compliant	
PSN01	23/03/2022	8.1	6	<0.001	0.012	<10	Laboratory	Compliant	
PSS01	28/03/2022	8.32	6.7			Nil	Field	Compliant	
PSN01	29/03/2022	7.99	8.7			Nil	Field	Compliant	
PSS01	31/03/2022	8.03	18.8			Nil	Field	Compliant	

* No Laboratory testing was taken of these parameters. Only the parameter that exceeded the criteria was re-tested as a requirement of a Stage 2 exceedance.

2.2.4 Groundwater Monitoring Results

Water discharged from the site is predominantly rainwater collected and potable water used for dust suppression which is evident from the relation between rainfall events and the discharge dates. It is therefore determined that less than 7kL/day of groundwater seepage is being captured and discharged.

Monthly settlement monitoring of the buildings adjacent to the PSISD sites has been undertaken to monitor for any settlement due to groundwater seepage. Total Survey Solutions are engaged by CPB to monitor the movement of structures over the entire Pitt Street Metro Project. This includes monitoring of the external buildings adjacent to the North and South sites, walls of the North and South station boxes and through the caverns/ adits between them. The monitoring uses total station instruments to

take direct measurements to reference targets on and inside adjacent buildings and walls to calculate any movement measured as an angle of tilt that is recorded live on Geomotion. The angles that trigger concern have been determined by Structural Engineers and alarms have been set to activate text messages if the triggers are reached. The PSN site tiltmeters located on the walls of the station box were decommissioned in January 2022 and were replaced by targets on the Ground Floor slab. There were no settlement monitoring triggers at Pitt Street South site and Pitt Street North site during the reporting period.

2.3 Noise and Vibration Monitoring

2.3.1 Background

The Main Works Construction Noise and Vibration Impact Statement (CNVIS) is regularly reviewed to ensure it captures all works being undertaken prior to works commencing. **Table 2-4** outlines the CNVIS developed during the reporting period. The current CNVIS is provided on the project website at https://pittstreetsydneymetroisd.com.au.

Table 2-4 CNVIS' developed and approved during the reporting period.

CNVIS	Details
CNVIS – Station Box Main Works	18/01/2022 – Revision 13 issued to Sydney Metro, ER and AA
	31/01/2022 – Revision 13.1 issued to Sydney Metro, ER and AA
	28/02/2022 – Revision 13.2 issued to Sydney Metro, ER and AA and endorsed by the AA on 7 March 2022

Out of Hours works (OOHW) were conducted during the reporting period in accordance with the Sydney Metro Out of Hours Protocol and subsequent approved Out of Hours Works Applications (OOHWA).

2.3.2 Noise and Vibration Criteria

Relevant criteria relating to noise and vibration are outlined in the PSISD Construction Noise and Vibration Management Sub Plan and respective CNVIS. These are outlined in **Table 2-5**.

Table 2-5 Construction noise management levels at receivers[1, 2]

Receiver type	Time of Day[2]	EIS Chapter 10 Requirements				CSSI Approval Requirements	
		ICNG*	Ground Borne Noise	Sleep Disturbance	Construction Traffic	Condition E37[3]	Condition E41[4]
Pitt Street South							
Residential	Day (Standard – 7am-6pm)	74dB(A)$L_{eq(15min)}$ 75dB(A)$L_{eq(15min)}$ – Highly Noise Affected Threshold	45dB(A)$L_{eq}{}^{1}{}_{(5min)}$ (internal noise level)	N/A	60dB(A)$L_{eq(15hr)}$	60dB(A)$L_{eq(15min)}$ (internal noise level) 80dB(A)$L_{eq(15min)}$ (external noise level)**	N/A
	Day (OOH)	69dB(A)$L_{eq(15min)}$	45dB(A)$L_{eq}{}^{1}{}_{(5min)}$ (internal noise level)	N/A	60dB(A)$L_{eq(15hr)}$	60dB(A)$L_{eq(15min)}$ (internal noise level) 80dB(A)$L_{eq(15min)}$ (external noise level)**	N/A
	Evening (OOH)	66dB(A)$L_{eq(15min)}$	40dB(A)$L_{eq}{}^{1}{}_{(5min)}$ (internal noise level)	N/A	60dB(A)$L_{eq(15hr)}$	N/A	60dB(A)$L_{eq(15min)}$ (internal noise level) 80dB(A)$L_{eq(15min)}$ (external noise level)**
	Night (OOH)	63dB(A)$L_{eq(15min)}$	35dB(A)$L_{eq1(5min)}$ (internal noise level)	65dB(A) L_{max} (external noise level)	55dB(A)$L_{eq(9hr)}$	N/A	45dB(A)$L_{eq(15min)}$ (internal noise level) 65dB(A)$L_{eq(15min)}$ (external noise level)**

Commercial	When in use	70dB(A)$L_{eq(15min)}$	N/A	N/A	N/A	60dB(A)$L_{eq(15min)}$ (internal noise level) 80dB(A)$L_{eq(15min)}$ (external noise level)**	N/A
Pitt Street North							
Residential	Day (Standard – 7am-6pm)	73dB(A)$L_{eq(15min)}$ (weekdays) 75dB(A) – Highly Noise Affected Threshold	45dB(A)$L_{eq}^{1}{}_{(5min)}$ (internal noise level)	N/A	60dB(A)$L_{eq(15hr)}$	60dB(A)$L_{eq(15min)}$ (internal noise level) 80dB(A)$L_{eq(15min)}$ (external noise level)**	N/A
	Day (OOH)***	68dB(A)$L_{eq(15min)}$	45dB(A) $L_{eq}^{1}{}_{(5min)}$ (internal noise level)	N/A	60dB(A)$L_{eq(15hr)}$	60dB(A)$L_{eq(15min)}$ (internal noise level) 80dB(A)$L_{eq(15min)}$ (external noise level)**	N/A
	Evening	66dB(A)$L_{eq(15min)}$	40dB(A) $L_{eq}^{1}{}_{(5min)}$ (internal noise level)	N/A	60dB(A)$L_{eq(15hr)}$	N/A	60dB(A)$L_{eq(15min)}$ (internal noise level) 80dB(A)$L_{eq(15min)}$ (external noise level)**
	Night	64dB(A)$L_{eq(15min)}$	35dB(A) $L_{eq}^{1}{}_{(5min)}$ (internal noise level)	65dB(A) L_{max} (external noise level)	55dB(A)$L_{eq(9hr)}$	N/A	45dB(A)$L_{eq(15min)}$ (internal noise level) 65dB(A)$L_{eq(15min)}$ (external noise level)**
Commercial	When in use	70dB(A)$L_{eq(15min)}$	N/A	N/A	N/A	60dB(A)$L_{eq(15min)}$ (internal noise level) 80dB(A)$L_{eq(15min)}$ (external noise level)**	N/A

*ICNG noise management levels for residential receivers are based on the background noise levels presented in Section 4 of the CNVIS.

** External noise target determined by assuming a 20dB (A) noise reduction between outside and inside (closed windows).

1. Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5m above ground level unless stated otherwise.
2. Noise management levels apply when receiver areas are in use only.
3. Exceedance of this level triggers the need for consideration of respite periods as per Conditions of Approval E38.
4. Exceedances of this level trigger the need to consider additional mitigation methods as detailed in Sydney Metro City and South West Noise and Vibration Strategy.

As a conservative approach, and in accordance with *British Standard BS 7385-2*, the vibration screening criteria has been applied to buildings at Pitt Street:

- Screening criteria – 2.5 mm/s (Peak Particle Velocity (PPV)

2.3.3 Attended Monitoring Methodology

Attended noise monitoring was undertaken during this reporting period with details provided in Section 2.3.4. Attended monitoring is undertaken when two OOH scenarios occur simultaneously where predicted exceedances are expected to be >20dB above RBL, as well as in response to recommendations by the ER and AA, or if required on receival of a complaint.

Some measurement locations are affected by road traffic noise, (buses/truck passing by etc) intermittently generating noise levels similar or higher than the construction noise. As such, conducting a long-term noise measurement (15 minute Leq) was not possible – the measurement would be effected by extraneous noise. To address this, shorter duration measurements Leq had to be made during breaks

in traffic (to get measurement periods not effected by intermittent extraneous noise). Given that acoustic criteria are set using a 15 minute Leq descriptor, it is necessary to account for the fact that the equipment item operates for only a percentage of the 15 minute period, i.e:

- When determining the Leq(15min) noise level for equipment items such as a road saw, jackhammer and compactor, we assume the item is used for approximately 50% of any 15 minute period.
- When determining the Leq(15min) noise level for equipment items such as concrete pumps and vacuum trucks, these are assumed to operate continuously.

The recordings were taken from a height of 1.2 m from the ground, at least 1m from the walls or other major reflecting surfaces.

Table 2-6 CNVIS Requirements

Plan	Requirements
CNVIS r12 - Section 7.2	In the event that use of hydraulic hammers or vibratory rollers is required, vibration monitoring will be conducted at receivers R1 and R3 in addition to those detailed above. Given these buildings are not heritage buildings, this can potentially be done in the event of complaint by occupants or by attended vibration measurement.
CNVIS r12 – Appendix E	Long term vibration monitors will be installed at the heritage buildings sharing a common boundary with the site (Receivers C1, C2, C5 and R4). Monitoring to commence 2 days before the start of detailed excavation.

2.3.4 Attended Monitoring Results

Attended noise monitoring results during the reporting period are provided in Table 2-7 below.

There were no activities generating vibration during the reporting period therefore no attended vibration monitoring was required.

Table 2-7 Attended Noise Monitoring Data

Monitoring Location	Date	Time	Nearest Receiver (ref Fig 1-1) /Type	Measured Value dB(A)L_{eq} (15min)	Adjusted noise level at receiver dB(A)L_{eq} (15min)	Predicted Value from CNVIS r12 at Receiver dB(A)L_{eq} (15min)	Work Activity	Comments
Pitt Street North on Castlereagh Street – 30m from noise source	02/02/22	18:00	Commercial Receiver R4	70.1	70.1	73	Site deliveries/ jumpform dismantle	ISD compliant

From measured noise values a predicted noise level at the receiver can be calculated and compared with the predicted maximum noise levels at Receivers as stated in the CNVIS. From the values provided in the table above all noise levels were compliant.

2.3.5 Real-Time Monitoring Methodology

Real-time noise monitors have been maintained and monitored by Acoustic Consultants Renzo Tonin since November 2020. The real-time links to the monitoring data have been submitted to Sydney Metro, DPE and EPA and all records stored. Locations of these monitors are depicted in **Figure 2-1**.

It is noted that the noise monitoring locations are conservative and measure external noise levels and not internal noise levels. The noise and vibration consultant has provided advice to CPB that a 25 dB(A) (for the North) and 20dB(A) (for the South) noise reduction between the external noise level and the internal noise level has been determined following on-site outside/inside noise level measurements. This has been adopted by the project in assessing performance against the CoA E38 as approved in the CNVMP.

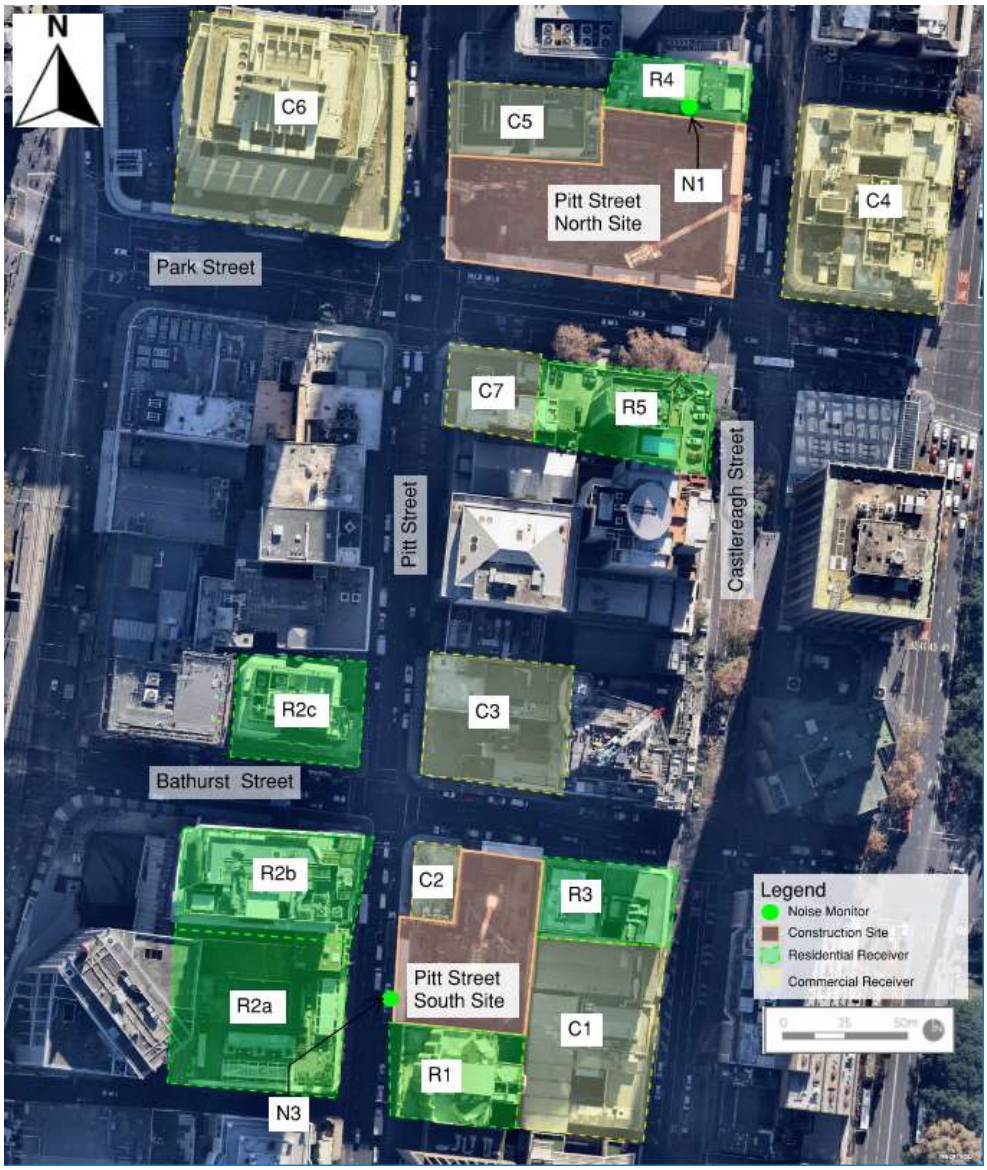

Figure 2-1 Pitt Street Station Real-Time Monitor Locations

Condition E28 of the CSSI 15_7400 requires that *vibration from construction activities does not exceed the vibration limits set out in the British Standard BS 7385-2:1993 Evaluation and measurement for vibration in buildings: Guide to damage levels from groundborne vibration* which was interpreted in the CNVIS to set a limit of 2.5 mm/s peak component particle velocity as a conservative approach for the project. There are no construction activities during the reporting period identified in Table 1-1 that would be expected to generate vibration levels exceeding 2.5m/s. All demolition works for capping beam were completed using concrete saws.

Condition E38 of the CSSI 15_7400 requires that *internal noise levels be less than L_{eq}(15 minute) 60 dB(A) for at least 6.5 hours between 7am and 8pm (Upper Limit), of which at least 3.25 hours must be below L_{Aeq}(15 minute) 55 dB(A) (Lower Limit). Within these hours, works are 'permitted' to generate noise greater than 60dB(A) for up to 6.5 hours (the equivalent of 26x15 minute periods), and 'requires' 3.25 hours of noise generated to be less than 55dB(A) (the equivalent of 13x15 minute periods).* A SMS/Email alert system has been set up to notify the project team that CoA E38 limits are approaching. Following receipt of an SMS / Email, site activities are reviewed and works with high noise are ceased. Compliance during the reporting period with this condition are shown below in **Tables 2-9 and 2-10.**

The equipment used for noise measurements was an NTi Audio Type XL2 precision sound level analyser which is a class 1 instrument having accuracy suitable for field and laboratory use. The instrument was calibrated prior and subsequent to measurements using a Bruel & Kjaer Type 4231 calibrator. No significant drift in calibration was observed. All instrumentation complies with IEC 61672 (parts 1-3) '*Electroacoustics - Sound Level Meters*' and IEC 60942 *'Electroacoustics - Sound calibrators'*

and carries current NATA certification (or if less than 2 years old, manufacturers certification). **Table 2-8** outlines the noise monitoring equipment that has been used during the reporting period.

Photos of the real-time equipment are shown in **Appendix B** and calibration certificates for the equipment in **Table 2-8** can be seen in **Appendix C.**

Table 2-8 Monitoring Equipment Details

Monitoring Type / Location	Equipment Details	Serial Number	Last Calibration Date	Off Hire Date
Attended Noise	Rion NL-20	00143337	29/01/2021	N/A
Noise calibrator	Pulsar Model 106	93277	24/01/2022	N/A
Real-Time Noise – N1	NTi Audio Type XL2	RTA07-ATP3	26/02/2021	On site
Real-Time Noise – N3	NTi Audio Type XL2	RTA07-004	18/01/2021	On site

2.3.6 Real-Time Monitoring Results

Real-time noise monitors were operating at Pitt Street North and Pitt Street South during the reporting period. Summarised real-time noise monitoring results outlining compliance with CoA E38 are presented for the North site in **Table 2-9** and for the South site in **Table 2-10**. Noise levels in this reporting period were compliant with the predicted noise levels set out in the CNVIS.

The noise monitor at Pitt Street South site was offline during the period 21/12/2021 to 05/01/2022. During this time no construction activities occurred as the site was shut for the Christmas break.

All real-time vibration monitors were removed in Q3 2021, the removal process occurred in consultation with the AA, ER and in accordance with the planning approval and CNVMP.

Table 2-9 Condition E38 Compliance North Site (Pitt Street)

Monitoring Location (Address)	Monitoring Date	Start Time	End Time	Period below 60 $L_{eq(15minute)}$ dB(A) - (Hours)	Period below 55 $L_{eq(15minute)}$ dB(A) - (Hours)	Min 6.5 hrs below 60dB(A) $L_{eq(15min)}$	Min 3.25 hrs below 55dB(A) $L_{eq(15min)}$
Pitt Street (North)	5/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	6/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	7/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	8/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	9/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	10/01/2022	7am	8pm	13	12	Yes	Yes
Pitt Street (North)	11/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	12/01/2022	7am	8pm	13	12.75	Yes	Yes
Pitt Street (North)	13/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	14/01/2022	7am	8pm	13	12.25	Yes	Yes
Pitt Street (North)	15/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	16/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	17/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	18/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	19/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	20/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	21/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	22/01/2022	7am	8pm	13	12.75	Yes	Yes
Pitt Street (North)	23/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	24/01/2022	7am	8pm	7.25	6.5	Yes	Yes
Pitt Street (North)	25/01/2022	7am	8pm	9.5	8.25	Yes	Yes

Monitoring Location (Address)	Monitoring Date	Start Time	End Time	Period below 60 $L_{eq(15minute)}$ dB(A) - (Hours)	Period below 55 $L_{eq(15minute)}$ dB(A) - (Hours)	Min 6.5 hrs below 60dB(A) $L_{eq(15min)}$	Min 3.25 hrs below 55dB(A) $L_{eq(15min)}$
Pitt Street (North)	26/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	27/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	28/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	29/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	30/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	31/01/2022	7am	8pm	10.25	8.75	Yes	Yes
Pitt Street (North)	1/02/2022	7am	8pm	12.75	11.25	Yes	Yes
Pitt Street (North)	2/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	3/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	4/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	5/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	6/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	7/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	8/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	9/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	10/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	11/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	12/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	13/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	14/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	15/02/2022	7am	8pm	13	12.75	Yes	Yes
Pitt Street (North)	16/02/2022	7am	8pm	13	12.5	Yes	Yes

Monitoring Location (Address)	Monitoring Date	Start Time	End Time	Period below 60 $L_{eq(15minute)}$ dB(A) - (Hours)	Period below 55 $L_{eq(15minute)}$ dB(A) - (Hours)	Min 6.5 hrs below 60dB(A) $L_{eq(15min)}$	Min 3.25 hrs below 55dB(A) $L_{eq(15min)}$
Pitt Street (North)	17/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	18/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	19/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	20/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	21/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	22/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	23/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	24/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	25/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	26/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	27/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	28/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	1/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	2/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	3/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	4/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	5/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	6/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	7/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	8/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	9/03/2022	7am	8pm	13	12.25	Yes	Yes
Pitt Street (North)	10/03/2022	7am	8pm	10	7	Yes	Yes

Monitoring Location (Address)	Monitoring Date	Start Time	End Time	Period below 60 $L_{eq(15minute)}$ dB(A) - (Hours)	Period below 55 $L_{eq(15minute)}$ dB(A) - (Hours)	Min 6.5 hrs below 60dB(A) $L_{eq(15min)}$	Min 3.25 hrs below 55dB(A) $L_{eq(15min)}$
Pitt Street (North)	11/03/2022	7am	8pm	11.75	10	Yes	Yes
Pitt Street (North)	12/03/2022	7am	8pm	12.25	9	Yes	Yes
Pitt Street (North)	13/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	14/03/2022	7am	8pm	10.75	9	Yes	Yes
Pitt Street (North)	15/03/2022	7am	8pm	12.5	8.25	Yes	Yes
Pitt Street (North)	16/03/2022	7am	8pm	11	6.25	Yes	Yes
Pitt Street (North)	17/03/2022	7am	8pm	13	7.25	Yes	Yes
Pitt Street (North)	18/03/2022	7am	8pm	11.25	9.25	Yes	Yes
Pitt Street (North)	19/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	20/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	21/03/2022	7am	8pm	11	7.25	Yes	Yes
Pitt Street (North)	22/03/2022	7am	8pm	13	12	Yes	Yes
Pitt Street (North)	23/03/2022	7am	8pm	13	11.25	Yes	Yes
Pitt Street (North)	24/03/2022	7am	8pm	13	11.25	Yes	Yes
Pitt Street (North)	25/03/2022	7am	8pm	13	11.25	Yes	Yes
Pitt Street (North)	26/03/2022	7am	8pm	13	10.75	Yes	Yes
Pitt Street (North)	27/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (North)	28/03/2022	7am	8pm	13	10.5	Yes	Yes
Pitt Street (North)	29/03/2022	7am	8pm	12.5	10	Yes	Yes
Pitt Street (North)	30/03/2022	7am	8pm	12.75	9.75	Yes	Yes
Pitt Street (North)	31/03/2022	7am	8pm	13	10	Yes	Yes

Table 2-10 Condition E38 Compliance South Site (Pitt Street)

Monitoring Location (Address)	Monitoring Date	Start Time	End Time	Period below 60 $L_{eq(15minute)}$ dB(A) - (Hours)	Period below 55 $L_{eq(15minute)}$ dB(A) - (Hours)	Min 6.5 hrs below 60dB(A) $L_{eq(15min)}$	Min 3.25 hrs below 55dB(A) $L_{eq(15min)}$
Pitt Street (South)	5/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	6/01/2022	7am	8pm	13	12.5	Yes	Yes
Pitt Street (South)	7/01/2022	7am	8pm	13	10.75	Yes	Yes
Pitt Street (South)	8/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	9/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	10/01/2022	7am	8pm	11	9	Yes	Yes
Pitt Street (South)	11/01/2022	7am	8pm	13	10.25	Yes	Yes
Pitt Street (South)	12/01/2022	7am	8pm	13	12.75	Yes	Yes
Pitt Street (South)	13/01/2022	7am	8pm	13	10.25	Yes	Yes
Pitt Street (South)	14/01/2022	7am	8pm	12.5	8.5	Yes	Yes
Pitt Street (South)	15/01/2022	7am	8pm	13	11	Yes	Yes
Pitt Street (South)	16/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	17/01/2022	7am	8pm	13	8.25	Yes	Yes
Pitt Street (South)	18/01/2022	7am	8pm	13	9.25	Yes	Yes
Pitt Street (South)	19/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	20/01/2022	7am	8pm	12.5	9.75	Yes	Yes
Pitt Street (South)	21/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	22/01/2022	7am	8pm	12.25	9.5	Yes	Yes
Pitt Street (South)	23/01/2022	7am	8pm	13	12.75	Yes	Yes
Pitt Street (South)	24/01/2022	7am	8pm	10.75	4.5	Yes	Yes
Pitt Street (South)	25/01/2022	7am	8pm	12.25	6.25	Yes	Yes
Pitt Street (South)	26/01/2022	7am	8pm	13	13	Yes	Yes

Monitoring Location (Address)	Monitoring Date	Start Time	End Time	Period below 60 $L_{eq(15minute)}$ dB(A) - (Hours)	Period below 55 $L_{eq(15minute)}$ dB(A) - (Hours)	Min 6.5 hrs below 60dB(A) $L_{eq(15min)}$	Min 3.25 hrs below 55dB(A) $L_{eq(15min)}$
Pitt Street (South)	27/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	28/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	29/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	30/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	31/01/2022	7am	8pm	11.75	7.5	Yes	Yes
Pitt Street (South)	5/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	6/01/2022	7am	8pm	13	12.5	Yes	Yes
Pitt Street (South)	7/01/2022	7am	8pm	13	10.75	Yes	Yes
Pitt Street (South)	8/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	9/01/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	10/01/2022	7am	8pm	11	9	Yes	Yes
Pitt Street (South)	11/01/2022	7am	8pm	13	10.25	Yes	Yes
Pitt Street (South)	12/01/2022	7am	8pm	13	12.75	Yes	Yes
Pitt Street (South)	1/02/2022	7am	8pm	13	11.75	Yes	Yes
Pitt Street (South)	2/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	3/02/2022	7am	8pm	13	12.75	Yes	Yes
Pitt Street (South)	4/02/2022	7am	8pm	13	10.5	Yes	Yes
Pitt Street (South)	5/02/2022	7am	8pm	12.75	9	Yes	Yes
Pitt Street (South)	6/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	7/02/2022	7am	8pm	11.5	8.5	Yes	Yes
Pitt Street (South)	8/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	9/02/2022	7am	8pm	12.75	6.5	Yes	Yes

Monitoring Location (Address)	Monitoring Date	Start Time	End Time	Period below 60 $L_{eq(15minute)}$ dB(A) - (Hours)	Period below 55 $L_{eq(15minute)}$ dB(A) - (Hours)	Min 6.5 hrs below 60dB(A) $L_{eq(15min)}$	Min 3.25 hrs below 55dB(A) $L_{eq(15min)}$
Pitt Street (South)	10/02/2022	7am	8pm	13	5	Yes	Yes
Pitt Street (South)	11/02/2022	7am	8pm	13	12.25	Yes	Yes
Pitt Street (South)	12/02/2022	7am	8pm	12.75	8.5	Yes	Yes
Pitt Street (South)	13/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	14/02/2022	7am	8pm	11.25	5	Yes	Yes
Pitt Street (South)	15/02/2022	7am	8pm	11	6.75	Yes	Yes
Pitt Street (South)	16/02/2022	7am	8pm	10.75	4.25	Yes	Yes
Pitt Street (South)	17/02/2022	7am	8pm	11	3.25	Yes	Yes
Pitt Street (South)	18/02/2022	7am	8pm	9.25	5	Yes	Yes
Pitt Street (South)	19/02/2022	7am	8pm	10.75	8.25	Yes	Yes
Pitt Street (South)	20/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	21/02/2022	7am	8pm	9	6.25	Yes	Yes
Pitt Street (South)	22/02/2022	7am	8pm	12.75	10.25	Yes	Yes
Pitt Street (South)	23/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	24/02/2022	7am	8pm	13	12.75	Yes	Yes
Pitt Street (South)	25/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	26/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	27/02/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	28/02/2022	7am	8pm	10.75	10	Yes	Yes
Pitt Street (South)	1/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	2/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	3/03/2022	7am	8pm	13	13	Yes	Yes

Monitoring Location (Address)	Monitoring Date	Start Time	End Time	Period below 60 $L_{eq(15minute)}$ dB(A) - (Hours)	Period below 55 $L_{eq(15minute)}$ dB(A) - (Hours)	Min 6.5 hrs below 60dB(A) $L_{eq(15min)}$	Min 3.25 hrs below 55dB(A) $L_{eq(15min)}$
Pitt Street (South)	4/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	5/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	6/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	7/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	8/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	9/03/2022	7am	8pm	13	12.25	Yes	Yes
Pitt Street (South)	10/03/2022	7am	8pm	10	7	Yes	Yes
Pitt Street (South)	11/03/2022	7am	8pm	11.75	10	Yes	Yes
Pitt Street (South)	12/03/2022	7am	8pm	12.25	9	Yes	Yes
Pitt Street (South)	13/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	14/03/2022	7am	8pm	10.75	9	Yes	Yes
Pitt Street (South)	15/03/2022	7am	8pm	12.5	8.25	Yes	Yes
Pitt Street (South)	16/03/2022	7am	8pm	11	6.25	Yes	Yes
Pitt Street (South)	17/03/2022	7am	8pm	13	7.25	Yes	Yes
Pitt Street (South)	18/03/2022	7am	8pm	11.25	9.25	Yes	Yes
Pitt Street (South)	19/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	20/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	21/03/2022	7am	8pm	11	7.25	Yes	Yes
Pitt Street (South)	22/03/2022	7am	8pm	13	12	Yes	Yes
Pitt Street (South)	23/03/2022	7am	8pm	13	11.25	Yes	Yes
Pitt Street (South)	24/03/2022	7am	8pm	13	11.25	Yes	Yes
Pitt Street (South)	25/03/2022	7am	8pm	13	11.25	Yes	Yes

Monitoring Location (Address)	Monitoring Date	Start Time	End Time	Period below 60 $L_{eq(15minute)}$ dB(A) - (Hours)	Period below 55 $L_{eq(15minute)}$ dB(A) - (Hours)	Min 6.5 hrs below 60dB(A) $L_{eq(15min)}$	Min 3.25 hrs below 55dB(A) $L_{eq(15min)}$
Pitt Street (South)	26/03/2022	7am	8pm	13	10.75	Yes	Yes
Pitt Street (South)	27/03/2022	7am	8pm	13	13	Yes	Yes
Pitt Street (South)	28/03/2022	7am	8pm	13	10.5	Yes	Yes
Pitt Street (South)	29/03/2022	7am	8pm	12.5	10	Yes	Yes
Pitt Street (South)	30/03/2022	7am	8pm	12.75	9.75	Yes	Yes
Pitt Street (South)	31/03/2022	7am	8pm	13	10	Yes	Yes

Conclusion

Based on the monitoring results presented in this report, compliance with the monitoring programs and criteria for Water Quality and Groundwater has been verified.

Observed noise levels do not exceed the forecasted levels presented in the project CNVIS Rev 12 and Rev 13.2. Based on the monitoring results and site investigations, CPB considers that the noise associated with the stated construction works was compliant with the project approvals and requirements during the monitoring period.

3. Appendices

A - Weather Data

Sydney, New South Wales
January 2022 Daily Weather Observations

Most observations from Observatory Hill, but some from Fort Denison and Sydney Airport.

Australian Government
Bureau of Meteorology

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9am						3pm					
		Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Sa	20.6	28.2	0	10.6	9.3	NE	48	13:54	24.1	69	7	NNE	22	1014.5	26.3	64	7	NE	28	1011.2
2	Su	20.6	29.2	0	7.6	12.8	ENE	48	15:26	23.6	80	1	NE	17	1011.1	29.0	64	1	NE	28	1007.9
3	Mo	20.7	29.6	0	11.4	11.7	SE	33	15:02	24.5	65	2	E	4	1010.8	29.2	53	2	SE	15	1010.4
4	Tu	21.3	29.1	0	8.0	12.0	ESE	35	14:12	24.5	70	5	SE	13	1011.6	27.3	61	3	ESE	22	1011.2
5	We	21.5	27.2	3.8	9.4	1.1	ENE	48	21:47	22.3	96	7	SSE	13	1012.8	23.6	92	7	ESE	19	1011.3
6	Th	21.6	28.7	12.0	2.8	8.1	ENE	54	14:52	24.8	83	6	ENE	35	1014.2	27.6	70	7	ENE	37	1013.4
7	Fr	22.3	26.3	1.0	5.8	1.2	NE	59	12:16	22.9	96	8	NE	19	1014.1	26.0	80	7	NE	33	1011.4
8	Sa	19.4	30.2	29.6	2.2	9.1	WNW	44	23:08	22.5	90	7	NNW	11	1009.5	28.4	69	4	E	19	1009.0
9	Su	20.8	25.6	0.2	8.0	1.0	SSW	33	01:48	22.1	86	5	S	11	1016.1	24.1	85	8	SSW	19	1016.1
10	Mo	22.0	29.4	1.8	4.0	5.1	NE	37	16:01	25.3	87	7	ENE	13	1019.0	28.1	73	7	ENE	26	1018.0
11	Tu	22.7	28.1	0	5.6	4.3	ENE	35	15:45	25.1	85	7	NE	13	1020.0	26.0	80	8	E	24	1018.4
12	We	21.9	29.1	0	6.2	4.3	E	37	22:07	23.9	82	6	S	15	1020.1	25.4	73	7	SE	19	1018.6
13	Th	19.8	25.0	43.6	5.2	4.8	SSW	30	12:07	22.1	94	7	WNW	9	1018.8	21.3	97	7	SE	11	1016.6
14	Fr	19.5	28.9	47.0	5.0	9.6	ENE	41	15:02	22.9	97	7	ESE	7	1011.4	28.4	66	6	NE	20	1008.4
15	Sa	21.2	28.1	0.4	9.4	4.7	NNE	37	17:29	22.6	93	7	NNE	9	1006.0	27.4	76	3	ENE	20	1003.7
16	Su	22.1	29.3	0	5.4	10.9	S	44	03:55	24.4	84	5	SSW	19	1008.3	28.4	67	1	S	19	1008.2
17	Mo	21.2	28.6	0	6.6	7.0	E	30	14:08	24.3	88	6	SSW	4	1011.0	27.7	75	8	E	20	1008.6
18	Tu	22.6	23.8	0	8.0	0.0	SSW	43	06:12	23.2	87	8	S	24	1012.9	22.0	89	8	SSW	22	1012.8
19	We	18.6	23.8	12.6	2.8	0.4	SSE	57	15:19	18.7	96	8	SSW	22	1018.7	22.4	81	8	SSE	28	1020.8
20	Th	18.6	24.3	5.0	5.2	5.6	SSE	54	03:59	21.6	61	7	SSE	30	1027.2	23.2	58	6	SSE	35	1027.8
21	Fr	18.5	26.1	1.6	8.6	3.9	ESE	50	13:52	21.7	69	6	ESE	19	1028.8	20.9	79	7	ESE	35	1027.7
22	Sa	17.4	25.5	3.8	5.4	9.5	ESE	37	11:49	20.6	88	5	ESE	19	1024.4	24.7	57	5	SSE	24	1022.1
23	Su	18.7	25.4	2.6	6.8	5.5	ESE	31	13:26	20.4	93	7	S	15	1018.4	23.8	73	7	SE	13	1016.3
24	Mo	18.7	28.2	1.2	5.0	6.9	ESE	28	14:05	21.1	91	7	WNW	9	1015.1	26.7	65	6	ESE	20	1012.0
25	Tu	20.6	26.9	0	6.4	5.5	E	30	13:53	23.0	76	7	NE	7	1012.2	26.0	64	7	E	24	1010.1
26	We	19.7	27.7	0	4.8	10.0	ENE	30	10:58	23.5	71	7	E	9	1014.0	27.3	54	1	ENE	22	1013.8
27	Th	19.8	28.6	0	11.4	7.7	NE	41	16:33	22.7	73	7	SSE	2	1016.7	27.1	61	4	ENE	30	1014.4
28	Fr	21.7	29.4	0	11.4	12.2	NE	46	15:36	24.0	76	3	NE	17	1016.9	28.8	62	3	NE	28	1014.5
29	Sa	21.5	29.5	0	8.0	10.1	NE	44	15:32	23.7	80	5	NE	19	1016.0	28.3	66	6	NE	26	1013.4
30	Su	22.0	30.0	0	10.2	8.5	E	30	15:31	23.9	83	6	ENE	11	1016.0	28.0	69	6	E	20	1013.6
31	Mo	21.2	30.0	0	8.2	9.6	E	31	15:40	24.4	82	6	WNW	6	1010.9	29.4	65	2	E	17	1007.5
Statistics for January 2022																					
Mean		20.6	27.7		6.9	6.9				23.0	82	6		14	1015.4	26.2	70	5		23	1013.8
Lowest		17.4	23.8		2.2	0.0				18.7	61	1	SSE	2	1006.0	20.9	53	1	SE	11	1003.7
Highest		22.7	30.2	47.0	11.4	12.8	NE	59		25.3	97	8	ENE	35	1028.8	29.4	97	8	ENE	37	1027.8
Total				166.2	215.4	212.4															

Temperature, humidity and rainfall observations are from Sydney (Observatory Hill) {station 066214}. Pressure, cloud, evaporation and sunshine observations are from Sydney Airport AMO {station 066037}. Wind observations are from Fort Denison {station 066022}

Sydney Airport is about 10 km to the south of Observatory Hill.

IDCJDW2124.202201 Prepared at 13:00 UTC on 18 May 2022

Sydney, New South Wales
February 2022 Daily Weather Observations

Most observations from Observatory Hill, but some from Fort Denison and Sydney Airport.

Australian Government
Bureau of Meteorology

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9am						3pm					
		Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Tu	21.8	31.9	0	8.2	9.4	N	30	17:46	24.3	87	1	WSW	2	1003.5	30.9	67	7	ENE	15	998.3
2	We	20.3	21.3	7.8		0.0	S	46	11:19	20.4	98	8	S	19	1004.8	20.8	85	8	S	24	1006.0
3	Th	18.1	24.3	7.0	10.4	8.0	SSW	63	15:49	19.9	72	4	SW	24	1007.7	22.5	61	7	SSW	35	1007.6
4	Fr	15.6	23.7	4.4	8.8	5.8	SSE	59	16:21	18.1	86	5	SSW	17	1015.0	18.2	93	7	WNW	6	1015.9
5	Sa	17.2	25.3	15.4	8.6	6.5	SE	56	09:04	19.1	77	7	ESE	35	1019.3	24.4	50	7	SSE	30	1018.9
6	Su	18.6	26.1	0.4	9.0	10.1	SSE	61	11:38	22.0	57	5	SE	20	1022.5	22.9	65	6	SE	9	1023.3
7	Mo	17.1	25.1	15.6	8.0	4.3	ESE	52	01:31	19.5	85	6	S	24	1022.4	20.3	86	6	SSW	15	1020.6
8	Tu	16.0	25.5	12.8	3.8	6.8	SW	31	00:25	16.8	96	8	W	7	1017.4	23.9	65	3	ESE	22	1013.8
9	We	16.6	31.3	1.8	6.6	12.8	E	31	12:42	19.1	87	1	WNW	13	1011.6	27.3	54	3	E	19	1009.5
10	Th	18.7	30.7	0	8.8	9.8	SW	43	21:02	21.4	74	0	W	11	1012.5	29.4	54	2	E	15	1010.1
11	Fr	20.3	24.3	5.0	8.6	3.1	SSE	50	14:16	22.8	83	6	SSW	20	1016.2	24.2	77	7	S	22	1016.3
12	Sa	19.8	25.5	5.8	6.0	2.0	SE	43	01:04	22.3	59	7	SE	19	1018.4	21.3	82	7	ESE	20	1018.4
13	Su	17.9	27.5	12.0	4.2	9.3	ESE	33	01:03	19.6	96	5	W	13	1022.1	27.2	53	4	ENE	19	1021.6
14	Mo	16.8	28.1	0	9.0	11.3	ENE	43	12:32	19.9	82	7	WNW	7	1025.1	27.9	57	7	NE	24	1023.6
15	Tu	19.1	28.5	0	7.2	11.5	ENE	44	15:50	21.3	86	2	W	4	1024.5	28.0	60	1	NE	28	1022.3
16	We	19.0	28.7	0	9.4	11.2	NE	43	16:29	21.4	86	2	WNW	9	1020.6	28.3	56	2	ENE	28	1016.3
17	Th	18.9	29.6	0	9.6	10.8	N	37	17:55	21.2	86	5	NNW	2	1010.7	28.9	65	5	ENE	15	1006.9
18	Fr	20.5	29.8	0.6	8.0	11.7	SE	50	20:46	23.3	90	4	N	2	1010.4	29.8	68	1	ESE	20	1009.8
19	Sa	20.9	24.0	0.2	9.0	0.0	SE	46	01:37	22.3	67	7	SE	17	1020.5	22.2	75	8	SE	13	1019.6
20	Su	18.8	29.8	0	4.0	12.1	NE	50	17:56	20.9	85	1	WNW	9	1014.2	28.6	58	1	NE	22	1008.1
21	Mo	20.9	31.6	0	6.6	6.6	NW	65	05:57	24.3	55	7	W	15	1007.1	28.8	62	7	SE	24	1009.0
22	Tu	21.1	23.5	8.2	8.0	0.0	E	54	12:41	22.6	90	7	ESE	28	1016.7	20.0	98	8	NE	6	1018.3
23	We	20.0	26.3	105.2		3.2	E	67	00:10	22.0	99	7		Calm	1019.4	25.1	90	7	SSW	2	1018.1
24	Th	21.0	27.9	44.4	3.8	1.0	E	52	22:54	21.6	99	8	E	13	1018.6	26.6	76	7	ENE	17	1016.3
25	Fr	20.8	24.2	24.4	2.6	0.0	E	41	23:01	21.2	99	7	N	11	1015.3	21.2	91	8	SE	7	1014.0
26	Sa	19.6	21.5	49.8	1.4	0.0	ENE	39	13:45	20.0	99	8	N	6	1015.9	21.0	99	8	ENE	28	1014.8
27	Su	19.4	26.7	22.0	3.2	2.9	NE	28	18:45	20.4	98	7	WNW	9	1015.0	25.7	77	7	ESE	13	1012.9
28	Mo	20.4	25.7	13.2	1.6	0.0	ENE	31	23:44	21.4	99	7	SSE	9	1015.0	25.4	79	7	ESE	7	1013.2
Statistics for February 2022																					
Mean		19.1	26.7		6.7	6.1				21.0	84	5		13	1015.8	25.0	71	5		18	1014.4
Lowest		15.6	21.3		1.4	0.0				16.8	55	0		Calm	1003.5	18.2	50	1	SSW	2	998.3
Highest		21.8	31.9	105.2	10.4	12.8	E	67		24.3	99	8	ESE	35	1025.1	30.9	99	8	SSW	35	1023.6
Total				356.0	174.4	170.2															

Temperature, humidity and rainfall observations are from Sydney (Observatory Hill) {station 066214}. Pressure, cloud, evaporation and sunshine observations are from Sydney Airport AMO {station 066037}. Wind observations are from Fort Denison {station 066022}

Sydney Airport is about 10 km to the south of Observatory Hill.

IDCJDW2124.202202 Prepared at 13:00 UTC on 17 May 2022

Sydney, New South Wales
March 2022 Daily Weather Observations

Most observations from Observatory Hill, but some from Fort Denison and Sydney Airport.

Australian Government
Bureau of Meteorology

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9am						3pm					
		Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Tu	19.4	23.1	34.6	2.4	0.2				20.0	99	7	E	28	1012.9	20.5	95	7	ESE	35	1011.7
2	We	20.0	22.7	25.2	4.0	0.0	E	63	10:41	22.5	85	7	ESE	39	1010.3	21.0	96	8	E	26	1009.4
3	Th	19.7	24.9	50.8	2.4	1.3	ESE	57	16:28	21.5	98	7	SSE	24	1009.4	24.1	87	7	SSE	30	1009.0
4	Fr	21.4	26.9	19.6	2.6	6.7	ESE	48	02:09	23.2	98	6	SSE	20	1011.5	25.7	82	6	SE	22	1010.1
5	Sa	20.7	28.0	8.6	3.3	5.3	WNW	44	22:11	22.0	100	7	W	4	1008.0	26.3	81	7	ENE	19	1005.0
6	Su	20.2	24.8	33.8	5.6	0.9	SSW	56	14:08	21.1	100	8	S	30	1004.9	22.6	94	8	S	30	1006.4
7	Mo	21.1	27.8	31.4	7.2	1.0	ESE	50	04:59	23.6	97	8	ESE	17	1008.6	27.1	88	7	ESE	19	1007.4
8	Tu	21.3	22.4	95.4			SSW	80	19:53	21.5	100	8	SSW	11	1005.6	20.3	100	8	SW	28	1004.0
9	We	18.3	24.4	50.8		5.6	SSW	61	11:35	21.1	77	7	SW	24	1008.6	24.1	61	7	SSW	31	1011.3
10	Th	15.7	23.3	0.2	6.8	8.9	SSE	44	15:34	16.9	64	2	SW	13	1018.1	22.9	52	3	SSW	20	1017.0
11	Fr	15.1	24.8	0	8.0	9.9	ESE	33	14:06	16.8	80	4	W	19	1020.1	22.8	62	3	SSE	19	1019.0
12	Sa	16.8	26.5	0.2	6.0	7.9	ENE	31	13:04	18.4	92	7	WNW	13	1022.9	25.9	57	3	ENE	24	1022.0
13	Su	16.8	23.8	1.8	3.8	2.3	ESE	28	18:15	18.1	95	6	NW	11	1024.6	23.3	68	7	SE	9	1023.1
14	Mo	16.7	23.7	0.2	2.8	5.1	E	33	21:18	18.0	99	2	WNW	15	1022.4	20.4	93	6	SSW	4	1021.8
15	Tu	16.3	26.3	2.4	3.4	9.3	ESE	35	15:15	18.1	97	3	SSE	6	1022.9	25.3	57	4	ESE	24	1021.1
16	We	18.1	26.4	11.6	7.0	3.4	ESE	39	23:01	19.7	99	7	NW	9	1021.0	23.5	75	7	ESE	17	1018.7
17	Th	18.3	26.9	5.4	2.0	7.4	E	24	13:45	19.6	100	1	WNW	15	1018.6	25.9	72	7	E	19	1015.3
18	Fr	19.6	28.6	0	4.4	7.3	SSW	50	20:16	21.4	96	6	N	2	1017.0	27.5	62	4	E	19	1015.6
19	Sa	19.3	22.8	37.0	6.8	1.8	SSE	48	10:28	20.3	90	7	SE	26	1019.2	22.2	66	7	S	28	1019.2
20	Su	16.3	27.0	0.4	5.0	10.1	ESE	35	14:20	17.9	80	4	W	20	1017.6	26.5	54	1	SE	20	1015.7
21	Mo	17.8	25.9	0	7.0	7.1	S	31	11:31	19.6	80	7	W	15	1017.4	25.1	53	5	SSE	19	1015.5
22	Tu	16.1	27.7	0	2.8	10.3	NNE	37	17:20	17.8	94	2	W	13	1014.2	27.3	62	1	ENE	19	1009.1
23	We	17.8	24.3	0	5.6	2.4	S	46	12:53	22.5	87	7	S	24	1008.7	23.1	74	7	SSE	26	1010.9
24	Th	18.5	21.7	1.6	5.8	0.2	SE	31	03:54	18.7	95	8	WSW	6	1016.7	20.3	92	8	NE	11	1015.7
25	Fr	17.6	24.6	16.6	1.4	2.1	ESE	48	21:47	18.9	100	7	W	9	1019.1	22.9	76	7	SSE	13	1019.0
26	Sa	17.9	22.5	8.4	2.8	0.8	ESE	43	05:58	19.8	87	7	SSE	2	1022.0	21.3	75	7	ESE	22	1020.3
27	Su	16.7	22.9	1.8	2.8	0.0	ESE	44	10:56	18.1	99	7	W	13	1020.0	22.6	84	8	SE	11	1017.0
28	Mo	18.1	25.4	14.2	1.2	3.0	SSE	31	21:17	19.4	100	7	WNW	9	1013.7	24.0	78	7	ESE	17	1012.0
29	Tu	19.4	23.4	57.4	3.4	0.3	SW	39	05:49	20.2	100	8	S	6	1012.2	22.5	89	8	ESE	6	1010.6
30	We	18.4	23.5	27.6	1.8	3.1	SSW	50	16:18	20.3	100	6	SSW	13	1010.8	22.6	81	7	SSW	28	1008.8
31	Th	18.1	21.5	17.0	5.0	1.3	SSE	76	14:08	18.5	82	7	SW	17	1013.4	21.5	69	8	SSE	37	1014.4
Statistics for March 2022																					
Mean		18.3	24.8		4.2	4.2				19.9	92	6		15	1015.2	23.6	75	6		21	1014.1
Lowest		15.1	21.5		1.2	0.0				16.8	64	1	#	2	1004.9	20.3	52	1	SSW	4	1004.0
Highest		21.4	28.6	95.4	8.0	10.3	SSW	80		23.6	100	8	ESE	39	1024.6	27.5	100	8	SSE	37	1023.1
Total				554.0	123.1	125.0															

Temperature, humidity and rainfall observations are from Sydney (Observatory Hill) {station 066214}. Pressure, cloud, evaporation and sunshine observations are from Sydney Airport AMO {station 066037}. Wind observations are from Fort Denison {station 066022}

Sydney Airport is about 10 km to the south of Observatory Hill.

IDCJDW2124.202203 Prepared at 16:00 UTC on 16 May 2022

B – Photos of Real-Time Equipment

Figure B-1 N1 Pitt Street North

Figure B-2 N3 Pitt Street South (facing Pitt Street)

C – Calibration Certificates

NATacoustic
Acoustic Calibration & Testing Laboratory
Level 1, 418A Elizabeth Street., Surry Hills NSW 2010 AUSTRALIA
Ph: (02) 8218 0570 email: service@natacoustic.com.au website: www.natacoustic.com.au
A division of Renzo Tonin & Associates (NSW) Pty Ltd ABN 29 117 462 861

Certificate of Calibration
Sound Level Meter

Calibration Date	18/01/2021	**Job No**	RB844	**Operator**	AM
Client Name	RENZO TONIN & ASSOCIATES (NSW) PTY LTD				
Client Address	LEVEL 1 418A ELIZABETH ST SURRY HILLS 2010				

Test Item

Instrument Make	NTI	**Model**	XL2-TA	**Serial No**	#A2A-08038-E0 #RTA07-004
Microphone Make	NTI	**Model**	MC230	**Serial No**	#8045
Preamplifier Make	NTI	**Model**	MA220	**Serial No**	#3336
Ext'n Cable Make	NTI	**Model**	N/A	**Serial No**	N/A
Accessories	Nil			**Firmware**	4.20

SLM Type	1
Filters Class	1

Environmental Conditions	**Measured**	
	Start	**End**
Air Temp. (°C)	23.5	23.5
Rel. Humidity (%)	56.2	54.9
Air Pressure (kPa)	100.4	101.3

Applicable Standards:
Periodic tests were performed in accordance with procedures from IEC 61672-3 :2013 and IEC 61260-3 :2016

Applicable Work Instruction:
RWi-08 SLM & Calibrator Verification

Laboratory Equipment :
B&K4226 Multifunction Acoustic Calibrator SN 2288472
Agilent Function Generator Model 33220A SN MY43004013
Agilent Digital Multimeter Model 34401A SN MY41004386

Traceability:
The results of the tests and measurements included in this document are traceable via the test methods described under each test, and by the use of the above equipment, which has been calibrated by NATA accredited calibration facilities.
This document shall not be reproduced, except in full.

Scope:
This certificate is issued on the basis that the instrument complies with the manufacturer's specification.
See "Sound Level Meter Verification - Summary of Tests" page for an itemised list of results for each test.

Uncertainty:
The uncertainty is stated at a confidence level of 95% using a k factor of 2.

Calibration Statement:
The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013 and IEC 61260-3:2016, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 and IEC 61260-1:2014 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 and IEC 61260-1:2014 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 and IEC 61260-3:2016 cover only a limited subset of the specifications in IEC 61672-1:2013 and IEC 61260-1:2014.

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory Number 14966

Accredited for compliance with ISO/IEC 17025 - Calibration

Authorized Signatory:

Print Name: Ariel Michael Date: 19/01/2021

Template Document Name: RQT-05 (rev 72) SLM ISO Verification

NATacoustic
Sound Level Meter Verification - Summary of Tests

Calibration Date	18/01/2021	**Job No**	RB844	**Operator**	AM
Client Name	RENZO TONIN & ASSOCIATES (NSW) PTY LTD				
Client Address	LEVEL 1 418A ELIZABETH ST SURRY HILLS 2010				

1. Instrument Information & Reference Conditions

Instrument Make	NTI	**Model**	XL2-TA	**Serial No**	#A2A-08038-E0 #RTA07-004
Microphone Make	NTI	**Model**	MC230	**Serial No**	#8045
Preamplifier Make	NTI	**Model**	MA220	**Serial No**	#3336
Ext'n Cable Make	NTI	**Model**	N/A	**Serial No**	N/A
Accessories	Nil			**Firmware**	4.20

Freq Weightings	**FLAT**	No	**A**	Yes	**C**	Yes	**Z**	Yes
Time Weightings	**Fast**	Yes	**Slow**	Yes	**Impulse**	Yes		

SLM Type	1
Filter Class	1

Instruction Manual is Available	Yes

2. Preliminary Inspection and Power Supply	**Logger Inspected**	Yes
	Calibration Equipment Okay	Yes
	Power Supply Ok (Start)	Yes
	Power Supply Ok (End)	Yes

		Measured	
3. Environmental Conditions	**Environmental Conditions**	**Start**	**End**
	Air Temp. (°C)	23.5	23.5
	Rel. Humidity (%)	56.2	54.9
	Air Pressure (kPa)	100.4	101.3
	Conforming	Yes	Yes

Test Description			**Value / Conforming**	**Uncert (+/-)**
4(a). Initial Calibration		**Calibration Frequency Hz**	1000.0	N/A
		Indicated Level Before Adjustment (dB)	114.1	0.11
		Indicated Level After Adjustment (dB)	114.0	0.11
		Stability During Continuous Operation (dB)	Yes	N/A
5(a). Self-Generated Noise, Microphone Installed		**A**	17.0	0.09
5(b). Self-Generated Noise, Electrical		**A**	10.7	0.09
		C	14.5	0.09
		Z	20.2	0.09
6. Acoustical Signal Test		**125 Hz**	Yes	0.42
		1 kHz	Yes	0.42
		8 kHz	Yes	0.60
7. Electrical Frequency Weighting		**A**	Yes	0.09
		C	Yes	0.09
		Z	Yes	0.09
8. Frequency & Time Weightings 1kHz	**8(a). Frequency Weighting**	**C**	Yes	0.09
		Z	Yes	0.09
		FLAT	N/A	0.09
	8(b). Time Weighting	**Slow**	Yes	0.09
		Leq	Yes	0.09
9(a). Level Linearity 8kHz (Increasing)		**Conforming**	Yes	0.13
9(b). Level Linearity 8kHz (Decreasing)		**Conforming**	Yes	0.13
10(a). Level Linearity Including the Level Range (Reference Signal)		**Conforming**	Yes	0.13
10(b). Level Linearity Including the Level range (5dB Above Under-range)		**Conforming**	Yes	0.13
11. Toneburst Response		**Fast**	Yes	0.13
		Slow	Yes	0.13
		SEL/Leq	Yes	0.13
12. Peak C sound level		**8 kHz**	Yes	0.09
		500 Hz	Yes	0.09
13. Overload indication		**Conforming**	Yes	0.09
		Latches	N/A	N/A
14. High-level Stability		**Conforming**	Yes	0.09
15(a). Octave Band Filter Relative Attenuation (≤2kHz)		**Conforming**	Yes	0.09
15(b). Octave Band Filter Relative Attenuation (>2kHz)		**Conforming**	Yes	0.09
16. Octave Band Filter Relative Attenuation at Midband Frequency		**Conforming**	Yes	0.09
17(a). Octave Band Filter Level Linearity 31.5Hz (Increasing)		**31.5Hz**	Yes	0.13
17(b). Octave Band Filter Level Linearity 1kHz (Increasing)		**1kHz**	Yes	0.13
17(c). Octave Band Filter Level Linearity 16kHz (Increasing)		**16kHz**	Yes	0.13
18(a). Octave Band Filter Level Linearity 31.5Hz (Decreasing)		**31.5Hz**	Yes	0.13
18(b). Octave Band Filter Level Linearity 1kHz (Decreasing)		**1kHz**	Yes	0.13
18(c). Octave Band Filter Level Linearity 16kHz (Decreasing)		**16kHz**	Yes	0.13
19(a). Octave Level Linearity Including the Level range (31.5Hz)		**31.5Hz**	Yes	0.13
19(b). Octave Level Linearity Including the Level range (1kHz)		**1kHz**	Yes	0.13
19(c). Octave Level Linearity Including the Level range (16kHz)		**16kHz**	Yes	0.13
20(a). Octave Band Filter Lower Limit (Reference Range)		**Conforming**	Yes	0.09
20(b). Octave Band Filter Lower Limit (Lowest Range)		**Conforming**	Yes	0.09
21(a). Third Octave Band Filter Relative Attenuation (≤31.5Hz)		**Conforming**	Yes	0.09
21(b). Third Octave Band Filter Relative Attenuation (40Hz-315Hz)		**Conforming**	Yes	0.09
21(c). Third Octave Band Filter Relative Attenuation (400Hz-3.15kHz)		**Conforming**	Yes	0.09
21(d). Third Octave Band Filter Relative Attenuation (≥4kHz)		**Conforming**	Yes	0.09
22. Third Octave Band Filter Relative Attenuation at Midband Frequency		**Conforming**	Yes	0.09

23(a). Third Octave Band Filter Level Linearity 31.5Hz (Increasing)	**31.5Hz**	Yes	0.13
23(b). Third Octave Band Filter Level Linearity 1kHz (Increasing)	**1kHz**	Yes	0.13
23(c). Third Octave Band Filter Level Linearity 16kHz (Increasing)	**16kHz**	Yes	0.13
24(a). Third Octave Band Filter Level Linearity 31.5Hz (Decreasing)	**31.5Hz**	Yes	0.13
24(b). Third Octave Band Filter Level Linearity 1kHz (Decreasing)	**1kHz**	Yes	0.13
24(c). Third Octave Band Filter Level Linearity 16kHz (Decreasing)	**16kHz**	Yes	0.13
25(a). Third Octave Level Linearity Including the Level range (31.5Hz)	**31.5Hz**	Yes	0.13
25(b). Third Octave Level Linearity Including the Level range (1kHz)	**1kHz**	Yes	0.13
25(c). Third Octave Level Linearity Including the Level range (16kHz)	**16kHz**	Yes	0.13
26(a). Octave Band Filter Lower Limit (Reference Range)	**Conforming**	Yes	0.09
26(b). Octave Band Filter Lower Limit (Lowest Range)	**Conforming**	Yes	0.09
SLM Overall Conforming		**Yes**	

☐ Checked

Template Document Name: RQT-05 (rev 72) SLM ISO Verification

NATacoustic
Acoustic Calibration & Testing Laboratory
Level 1, 418A Elizabeth Street., Surry Hills NSW 2010 AUSTRALIA
Ph: (02) 8218 0570 email: service@natacoustic.com.au website: www.natacoustic.com.au
A division of Renzo Tonin & Associates (NSW) Pty Ltd ABN 29 117 462 861

Certificate of Calibration
Sound Level Meter

Calibration Date	26/02/2021	**Job No**	RB858	**Operator**	AH
Client Name	RENZO TONIN & ASSOCIATES (NSW) PTY LTD				
Client Address	LEVEL 1 418A ELIZABETH ST SURRY HILLS 2010				

Test Item

Instrument Make	NTI	**Model**	XL2-TA	**Serial No**	#A2A-12491-E0 #RTA07-ATP0
Microphone Make	NTI	**Model**	MC230	**Serial No**	#9681
Preamplifier Make	NTI	**Model**	MA220	**Serial No**	#6476
Ext'n Cable Make	NTI	**Model**	N/A	**Serial No**	N/A
Accessories	Nil			**Firmware**	4.21

SLM Type	1
Filters Class	1

Environmental Conditions	**Measured**	
	Start	**End**
Air Temp. (°C)	23.5	23.6
Rel. Humidity (%)	65.0	63.7
Air Pressure (kPa)	100.5	100.4

Applicable Standards:
Periodic tests were performed in accordance with procedures from IEC 61672-3 :2013 and IEC 61260-3 :2016

Applicable Work Instruction:
RWi-08 SLM & Calibrator Verification

Laboratory Equipment :
B&K4226 Multifunction Acoustic Calibrator SN 2288472
Agilent Function Generator Model 33220A SN MY43004013
Agilent Digital Multimeter Model 34401A SN MY41004386

Traceability:
The results of the tests and measurements included in this document are traceable via the test methods described under each test, and by the use of the above equipment, which has been calibrated by NATA accredited calibration facilities.
This document shall not be reproduced, except in full.

Scope:
This certificate is issued on the basis that the instrument complies with the manufacturer's specification.
See "Sound Level Meter Verification - Summary of Tests" page for an itemised list of results for each test.

Uncertainty:
The uncertainty is stated at a confidence level of 95% using a k factor of 2.

Calibration Statement:
The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013 and IEC 61260-3:2016, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organization responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2017 and IEC 61260-2:2017, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 and IEC 61260-1:2014, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013 and IEC 61260-1:2014.

NATA WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory Number 14966

Accredited for compliance with ISO/IEC 17025 - Calibration

Authorized Signatory:

Print Name: Ariel Michael Date: 26/02/2021

Template Document Name: RQT-05 (rev 72) SLM ISO Verification

NATacoustic
Sound Level Meter Verification - Summary of Tests

Calibration Date	26/02/2021	**Job No**	RB858	**Operator**	AH
Client Name	RENZO TONIN & ASSOCIATES (NSW) PTY LTD				
Client Address	LEVEL 1 418A ELIZABETH ST SURRY HILLS 2010				

1. Instrument Information & Reference Conditions

Instrument Make	NTI	**Model**	XL2-TA	**Serial No**	#A2A-12491-E0 #RTA07-ATP03
Microphone Make	NTI	**Model**	MC230	**Serial No**	#9681
Preamplifier Make	NTI	**Model**	MA220	**Serial No**	#6476
Ext'n Cable Make	NTI	**Model**	N/A	**Serial No**	N/A
Accessories	Nil			**Firmware**	4.21

Freq Weightings	**FLAT**	No	**A**	Yes	**C**	Yes	**Z**	Yes	
Time Weightings	**Fast**	Yes	**Slow**	Yes	**Impulse**	Yes			

SLM Type	1
Filter Class	1

Instruction Manual is Available	Yes

2. Preliminary Inspection and Power Supply	**Logger Inspected**	Yes
	Calibration Equipment Okay	Yes
	Power Supply Ok (Start)	Yes
	Power Supply Ok (End)	Yes

		Measured	
3. Environmental Conditions	**Environmental Conditions**	**Start**	**End**
	Air Temp. (°C)	23.5	23.6
	Rel. Humidity (%)	65.0	63.7
	Air Pressure (kPa)	100.5	100.4
	Conforming	Yes	Yes

Test Description			**Value / Conforming**	**Uncert (+/-)**
4(a). Initial Calibration		**Calibration Frequency Hz**	1000.0	N/A
		Indicated Level Before Adjustment (dB)	113.9	0.11
		Indicated Level After Adjustment (dB)	114.0	0.11
		Stability During Continuous Operation (dB)	Yes	N/A
5(a). Self-Generated Noise, Microphone Installed		**A**	16.2	0.09
5(b). Self-Generated Noise, Electrical		**A**	8.5	0.09
		C	12.9	0.09
		Z	18.6	0.09
6. Acoustical Signal Test		**125 Hz**	Yes	0.42
		1 kHz	Yes	0.42
		8 kHz	Yes	0.60
7. Electrical Frequency Weighting		**A**	Yes	0.09
		C	Yes	0.09
		Z	Yes	0.09
8. Frequency & Time Weightings 1kHz	**8(a). Frequency Weighting**	**C**	Yes	0.09
		Z	Yes	0.09
		FLAT	N/A	0.09
	8(b). Time Weighting	**Slow**	Yes	0.09
		Leq	Yes	0.09
9(a). Level Linearity 8kHz (Increasing)		**Conforming**	Yes	0.13
9(b). Level Linearity 8kHz (Decreasing)		**Conforming**	Yes	0.13
10(a). Level Linearity Including the Level Range (Reference Signal)		**Conforming**	Yes	0.13
10(b). Level Linearity Including the Level range (5dB Above Under-range)		**Conforming**	Yes	0.13
11. Toneburst Response		**Fast**	Yes	0.13
		Slow	Yes	0.13
		SEL/Leq	Yes	0.13
12. Peak C sound level		**8 kHz**	Yes	0.09
		500 Hz	Yes	0.09
13. Overload indication		**Conforming**	Yes	0.09
		Latches	N/A	N/A
14. High-level Stability		**Conforming**	Yes	0.09
15(a). Octave Band Filter Relative Attenuation (≤2kHz)		**Conforming**	Yes	0.09
15(b). Octave Band Filter Relative Attenuation (>2kHz)		**Conforming**	Yes	0.09
16. Octave Band Filter Relative Attenuation at Midband Frequency		**Conforming**	Yes	0.09
17(a). Octave Band Filter Level Linearity 31.5Hz (Increasing)		**31.5Hz**	Yes	0.13
17(b). Octave Band Filter Level Linearity 1kHz (Increasing)		**1kHz**	Yes	0.13
17(c). Octave Band Filter Level Linearity 16kHz (Increasing)		**16kHz**	Yes	0.13
18(a). Octave Band Filter Level Linearity 31.5Hz (Decreasing)		**31.5Hz**	Yes	0.13
18(b). Octave Band Filter Level Linearity 1kHz (Decreasing)		**1kHz**	Yes	0.13
18(c). Octave Band Filter Level Linearity 16kHz (Decreasing)		**16kHz**	Yes	0.13
19(a). Octave Level Linearity Including the Level range (31.5Hz)		**31.5Hz**	Yes	0.13
19(b). Octave Level Linearity Including the Level range (1kHz)		**1kHz**	Yes	0.13
19(c). Octave Level Linearity Including the Level range (16kHz)		**16kHz**	Yes	0.13
20(a). Octave Band Filter Lower Limit (Reference Range)		**Conforming**	Yes	0.09
20(b). Octave Band Filter Lower Limit (Lowest Range)		**Conforming**	Yes	0.09
21(a). Third Octave Band Filter Relative Attenuation (≤31.5Hz)		**Conforming**	Yes	0.09
21(b). Third Octave Band Filter Relative Attenuation (40Hz-315Hz)		**Conforming**	Yes	0.09
21(c). Third Octave Band Filter Relative Attenuation (400Hz-3.15kHz)		**Conforming**	Yes	0.09
21(d). Third Octave Band Filter Relative Attenuation (≥4kHz)		**Conforming**	Yes	0.09
22. Third Octave Band Filter Relative Attenuation at Midband Frequency		**Conforming**	Yes	0.09

23(a). Third Octave Band Filter Level Linearity 31.5Hz (Increasing)	**31.5Hz**	Yes	0.13
23(b). Third Octave Band Filter Level Linearity 1kHz (Increasing)	**1kHz**	Yes	0.13
23(c). Third Octave Band Filter Level Linearity 16kHz (Increasing)	**16kHz**	Yes	0.13
24(a). Third Octave Band Filter Level Linearity 31.5Hz (Decreasing)	**31.5Hz**	Yes	0.13
24(b). Third Octave Band Filter Level Linearity 1kHz (Decreasing)	**1kHz**	Yes	0.13
24(c). Third Octave Band Filter Level Linearity 16kHz (Decreasing)	**16kHz**	Yes	0.13
25(a). Third Octave Level Linearity Including the Level range (31.5Hz)	**31.5Hz**	Yes	0.13
25(b). Third Octave Level Linearity Including the Level range (1kHz)	**1kHz**	Yes	0.13
25(c). Third Octave Level Linearity Including the Level range (16kHz)	**16kHz**	Yes	0.13
26(a). Octave Band Filter Lower Limit (Reference Range)	**Conforming**	Yes	0.09
26(b). Octave Band Filter Lower Limit (Lowest Range)	**Conforming**	Yes	0.09
SLM Overall Conforming		**Yes**	

☐ Checked

Template Document Name: RQT-05 (rev 72) SLM ISO Verification

Acoustic Research Labs Pty Ltd
Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3.2013
Calibration Certificate

Calibration Number C21038

Client Details	CPB Contractors Level 4, 201 Elizabeth Street Sydney NSW 2000
Equipment Tested/ Model Number :	Rion NL-20
Instrument Serial Number :	00143337
Microphone Serial Number :	94478
Pre-amplifier Serial Number :	10094

Pre-Test Atmospheric Conditions		**Post-Test Atmospheric Conditions**	
Ambient Temperature :	23°C	**Ambient Temperature :**	22.6°C
Relative Humidity :	52.5%	**Relative Humidity :**	50.2%
Barometric Pressure :	100.78kPa	**Barometric Pressure :**	100.77kPa

Calibration Technician :	Jeff Yu	**Secondary Check:**	Max Moore
Calibration Date :	29 Jan 2021	**Report Issue Date :**	29 Jan 2021

Approved Signatory : Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	*Pass*	17: Level linearity incl. the level range control	*Pass*
13: Electrical Sig. tests of frequency weightings	*Pass*	18: Toneburst response	*Pass*
14: Frequency and time weightings at 1 kHz	*Pass*	19: C Weighted Peak Sound Level	*N/A*
15: Long Term Stability	*Pass*	20: Overload Indication	*Pass*
16: Level linearity on the reference level range	*Pass*	21: High Level Stability	*Pass*

The sound level meter submitted for testing has successfully completed the class 2 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2013 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013 and because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

Least Uncertainties of Measurement -

Acoustic Tests		Environmental Conditions	
125Hz	*±0.12dB*	*Temperature*	*±0.2°C*
1kHz	*±0.11dB*	*Relative Humidity*	*±2.4%*
8kHz	*±0.13dB*	*Barometric Pressure*	*±0.015kPa*
Electrical Tests	*±0.10dB*		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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Sound Calibrator

IEC 60942-2017

Calibration Certificate

Calibration Number C21042

Client Details CPB Contractors
Level 4, 201 Elizabeth Street
Sydney NSW 2000

Equipment Tested/ Model Number : Pulsar Model 106
Instrument Serial Number : 93277

Atmospheric Conditions
Ambient Temperature : 22.9°C
Relative Humidity : 50.7%
Barometric Pressure : 100.74kPa

Calibration Technician : Jeff Yu
Secondary Check: Max Moore
Calibration Date : 29 Jan 2021
Report Issue Date : 29 Jan 2021

Approved Signatory : Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	*Pass*
Frequency Generated	*Pass*
Total Distortion	*Pass*

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.01	1000.30

The sound calibrator has been shown to conform to the class 2 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed..

Least Uncertainties of Measurement -

Specific Tests		Environmental Conditions	
Generated SPL	*±0.14dB*	*Temperature*	*±0.2°C*
Frequency	*±0.09%*	*Relative Humidity*	*±2.4%*
Distortion	*±0.09%*	*Barometric Pressure*	*±0.015kPa*

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

* The tests <1000 kHz are not covered by Acoustic Research Labs Pty Ltd NATA accreditation.

NATA
WORLD RECOGNISED ACCREDITATION

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator

IEC 60942:2017

Calibration Certificate

Calibration Number C22019

Client Details CPB Contractors
Level 4, 201 Elizabeth Street
Sydney NSW 2000

Equipment Tested/ Model Number : Pulsar Model 106
Instrument Serial Number : 93277

Atmospheric Conditions

Ambient Temperature : 23.5°C
Relative Humidity : 55.3%
Barometric Pressure : 100.4kPa

Calibration Technician : Lucky Jaiswal
Secondary Check: Max Moore
Calibration Date : 24 Jan 2022
Report Issue Date : 24 Jan 2022

Approved Signatory : Juan Aguero

Characteristic Tested	Result
Generated Sound Pressure Level	*Pass*
Frequency Generated	*Pass*
Total Distortion	*Pass*

	Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
	94	1000	93.96	1000.30

The sound calibrator has been shown to conform to the class 2 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed..

Uncertainties of Measurement -

Specific Tests		Environmental Conditions	
Generated SPL	*±0.11dB*	*Temperature*	*±0.1°C*
Frequency	*±0.07%*	*Relative Humidity*	*±1.9%*
Distortion	*±0.50%*	*Barometric Pressure*	*±0.014kPa*

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

Yeo-Kal Electronics Pty Ltd 18/26 Wattle Road, Brookvale NSW Australia
Telephone +61 2 9939 2616 Fax +61 2 9905 1100

CERTIFICATE OF CALIBRATION

Model: 611

Make: Yeo-Kal Electronics Pty Ltd.

Serial Number 426
Date/s of Calibration 15/07/21

Standards:

Temperature: Mercury in glass thermometer. Certified thermometer R246

Salinity: 35.00ppt seawater standardised with a model 610MK1V Salinometer against IAPSO Standard Seawater P101 K15= 1.00002 (Chlorinity 19.377). The conversion between conductivity and salinity is performed using the Practical Salinity Scale. UNESCO Technical Papers in marine Science 1983.

Conductivity: 1413us/cm. The conversion of low conductivity raw data to conductivity referenced to 25Deg C is performed using constants derived from the HANDBOOK OF CHEMISTRY AND PHYSICS 1963, Chemical Rubber Publishing Company, Page 2691, Conductivity of Standard Solutions using KCL, 0.001M Solution.

Dissolved Oxygen: 100% saturated distilled water. The YK611 measures dissolved oxygen as % saturation and then it automatically converts the reading to milligrams per litre. This conversion is calculated from the dissolved oxygen solubility tables found in International Oceanographic Tables vol.2. National Institute of Oceanography 1972. Zero oxygen achieved by purging probe with nitrogen/ or zero dummy plug.

Turbidity: Formazin 200ntu prepared as per Standard Methods. 0ntu prepared using distilled water.

pH: 4 and 10 buffers prepared as per Standard Methods. Ref: Durst, R.A. 1975 Standard Reference Materials: Standardization of pH Measurements NBS Spec Publ.260-53, National Bur. Standards, Washington D.C.

ORP: Buffers 7 and 10 with quinhydrone prepared as per standard methods and American Society for Testing and Materials. The redox potential conforms to International Standard IEC 746-5 "Expressions of Performance of Electrochemical Analyzers, Part 5: Oxidation-Reduction potential". In accordance with this standard, the Redox potential is referred to the standard ("normal") hydrogen electrode (NHE) and is expressed in mV.

Depth: Calibrated using a Druck DPI 610 pressure calibrator / 2.0 meter water column.

Model 611- Serial 426

At the time of calibration the sensors were calibrated to the following accuracy.

Temperature: $^{+}/_{-}$ 0.05 ^{o} C

Salinity: +/-0.1ppt

Conductivity: +/- 5us/cm

pH: +/- 0.03

ORP: +/- 3mv

Dissolved Oxygen: Normally ($^{+}/_{-}$ 0.5%).

Turbidity: +/- 0.3ntu for range of 0-200ntu.

Yeo-Kal Reference: RFS 2714

Calibrated by: G. Yeomans

SERIAL NUMBER: 426

CAL DATE/TIME	SENSOR	OFFSET	SLOPE
15/07/21 08:25	TEMPERATURE	2412.842	115.513
15/07/21 09:05	SAL/COND MSCM	1.000	20665.807
15/07/21 09:00	COND USCM	9.651	4.826
15/07/21 09:22	DISSOLVED OXYGEN	-18.000	2.922
15/07/21 09:14	PH	3998.747	-581.728
15/07/21 09:18	ORP	515.000	2.881
15/07/21 09:25	TURBIDITY	-280.000	3.440

Yeo-Kal Electronics Pty Ltd 18 / 26 Wattle Road, Brookvale NSW Australia
Telephone +61 2 9939 2616 Fax +61 2 9905 1100

CERTIFICATE OF CALIBRATION

Model: 618

Make: Yeo-Kal Electronics Pty Ltd.

Serial Number 638
Date/s of Calibration 01,05,28/03/22

Temperature checked did not need calibration.

Standards:

Temperature: Mercury in glass thermometer. Certified thermometer R246

Salinity: 35.00ppt seawater standardised with a model 610MK1V Salinometer against IAPSO Standard Seawater P101 K15= 1.00002 (Chlorinity 19.377). The conversion between conductivity and salinity is performed using the Practical Salinity Scale. UNESCO Technical Papers in marine Science 1983.

Conductivity: 1413us/cm. The conversion of low conductivity raw data to conductivity referenced to 25Deg C is performed using constants derived from the HANDBOOK OF CHEMISTRY AND PHYSICS 1963, Chemical Rubber Publishing Company, Page 2691, Conductivity of Standard Solutions using KCL, 0.001M Solution.

Dissolved Oxygen: 100% saturated distilled water. The YK611 measures dissolved oxygen as % saturation and then it automatically converts the reading to milligrams per litre. This conversion is calculated from the dissolved oxygen solubility tables found in International Oceanographic Tables vol.2. National Institute of Oceanography 1972. Zero oxygen achieved by purging probe with nitrogen/ or zero dummy plug.

Turbidity: Formazin 200ntu prepared as per Standard Methods. 0ntu prepared using distilled water.

pH: 4 and 10 buffers prepared as per Standard Methods. Ref: Durst, R.A. 1975 Standard Reference Materials: Standardization of pH Measurements NBS Spec Publ.260-53, National Bur. Standards, Washington D.C.

ORP: Buffers 7 and 10 with quinhydrone prepared as per standard methods and American Society for Testing and Materials. The redox potential conforms to International Standard IEC 746-5 “Expressions of Performance of Electrochemical Analyzers, Part 5: Oxidation-Reduction potential”. In accordance with this standard, the Redox potential is referred to the standard (“normal”) hydrogen electrode (NHE) and is expressed in mV.

Depth: Calibrated using a Druck DPI 610 pressure calibrator / 2.0 meter water column.

Model 618- Serial 638

At the time of calibration the sensors were calibrated to the following accuracy.

Temperature: +/- 0.05 ° C

Salinity: +/-0.1ppt

Conductivity: +/- 5us/cm

pH: +/- 0.03

ORP: +/- 3mv

Dissolved Oxygen: Normally (+/- 0.5%).

Turbidity: +/- 0.3ntu for range of 0-200ntu.

Yeo-Kal Reference: RFS 2755

Calibrated by: G. Yeomans

CALIBRATION PARAMETERS

Ver: 4.18
$H
YEO-KAL MODEL R618
SERIAL NUMBER: 638
DATE OF DOWNLOAD: 28/03/22 07:35
DATE FORMAT: DD/MM/YY HH:MM

Param	Date	Time	lo_dat	lo_sp	lo_temp	hi_dat	hi_sp	hi_temp	offset	slope
Temp (C)	05/03/21	11:35	276511	11.60	11.51	367022	36.80	36.80	234847.2	3591.706
E.C (uscm)	01/03/22	09:38	298082	0	29.58	309235	1413	24.05	298082.0	8.046043
Turb (ntu)	28/03/22	07:26	298195	0	22.06	308618	200	22.16	298195.0	52.11500
pH (pH)	28/03/22	07:13	355438	4	22.16	271637	10	22.09	411328.9	-14100.6
ORP (mv)	01/03/22	09:36	294944	295	23.97	313468	472	23.87	264070.6	104.6553
Sal (ppt)	01/03/22	09:42	298063	0	0.00	338099	35	24.12	298063.0	767466.4
D.O.(%sat)	28/03/22	07:17	297517	0	0.00	317290	100	21.88	297517.0	102.5544
Depth (M)	05/03/21	12:04	307063	0	20.48	308973	2	23.93	307063.0	955.0000

$D
$H

YEO-KAL

Yeo-Kal Electronics Pty Ltd 18/26 Wattle Road, Brookvale NSW Australia
Telephone +61 2 9939 2616 Fax +61 2 9905 1100

CERTIFICATE OF CALIBRATION

Model: 618

Make: Yeo-Kal Electronics Pty Ltd.

Serial Number 676
Date/s of Calibration 04/03/22

Standards:

Temperature: Mercury in glass thermometer. Certified thermometer R246

Salinity: 35.00ppt seawater standardised with a model 610MK1V Salinometer against IAPSO Standard Seawater P101 K15= 1.00002 (Chlorinity 19.377). The conversion between conductivity and salinity is performed using the Practical Salinity Scale. UNESCO Technical Papers in marine Science 1983.

Conductivity: 1413us/cm. The conversion of low conductivity raw data to conductivity referenced to 25Deg C is performed using constants derived from the HANDBOOK OF CHEMISTRY AND PHYSICS 1963, Chemical Rubber Publishing Company, Page 2691, Conductivity of Standard Solutions using KCL, 0.001M Solution.

Dissolved Oxygen: 100% saturated distilled water. The YK611 measures dissolved oxygen as % saturation and then it automatically converts the reading to milligrams per litre. This conversion is calculated from the dissolved oxygen solubility tables found in International Oceanographic Tables vol.2. National Institute of Oceanography 1972. Zero oxygen achieved by purging probe with nitrogen/ or zero dummy plug.

Turbidity: Formazin 200ntu prepared as per Standard Methods. 0ntu prepared using distilled water.

pH: 4 and 10 buffers prepared as per Standard Methods. Ref: Durst, R.A. 1975 Standard Reference Materials: Standardization of pH Measurements NBS Spec Publ.260-53, National Bur. Standards, Washington D.C.

ORP: Buffers 7 and 10 with quinhydrone prepared as per standard methods and American Society for Testing and Materials. The redox potential conforms to International Standard IEC 746-5 "Expressions of Performance of Electrochemical Analyzers, Part 5: Oxidation-Reduction potential". In accordance with this standard, the Redox potential is referred to the standard ("normal") hydrogen electrode (NHE) and is expressed in mV.

Depth: Calibrated using a Druck DPI 610 pressure calibrator / 2.0 meter water column.

Model 618- Serial676

At the time of calibration the sensors were calibrated to the following accuracy.

Temperature: $^{+}/_{-}$ 0.05 $^{\circ}$ C

Salinity: +/-0.1ppt

Conductivity: +/- 5us/cm

pH: +/- 0.03

ORP: +/- 3mv

Dissolved Oxygen: Normally ($^{+}/_{-}$ 0.5%).

Turbidity: +/- 0.3ntu for range of 0-200ntu.

Yeo-Kal Reference: RFS 2749

Calibrated by: G. Yeomans

CALIBRATION PARAMETERS

Ver: 4.26
$H
YEO-KAL MODEL R618
SERIAL NUMBER: 676
DATE OF DOWNLOAD: 07/03/22 08:21
DATE FORMAT: DD/MM/YY HH:MM

Param	Date	Time	lo_dat	lo_sp	lo_temp	hi_dat	hi_sp	hi_temp	offset	slope
Temp (C)	04/03/22	11:27	281574	14.27	14.62	364578	41.40	31.15	237915.0	3059.491
E.C (uscm)	04/03/22	11:31	299884	0	35.44	304558	1413	24.64	299884.0	3.331799
Turb (ntu)	04/03/22	12:14	300936	0	23.40	307690	200	24.06	300936.0	33.77000
pH (pH)	04/03/22	11:58	348028	4	24.31	271481	10	23.78	399205.4	-12822.5
ORP (mv)	04/03/22	12:02	307432	295	23.35	318730	472	24.68	288602.0	63.83050
Sal (ppt)	04/03/22	11:34	299955	0	0.00	316194	35	24.13	299955.0	311236.4
D.O.(%sat)	04/03/22	12:08	299908	0	0.00	313586	100	23.71	299908.0	66.91729

$D
$H

D – Laboratory Results

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Attention: **Olivia Cooper**

Report **855791-W**
Project name PITT ST ISD
Project ID N01070
Received Date Jan 17, 2022

Client Sample ID			**S01**
Sample Matrix			**Water**
Eurofins Sample No.			**S22-Ja13217**
Date Sampled			**Jan 17, 2022**
Test/Reference	LOR	Unit	
Oil & Grease (HEM)	10	mg/L	18
pH (at 25 °C)	0.1	pH Units	7.6
Total Suspended Solids Dried at 103–105°C	5	mg/L	13
Turbidity	1	NTU	6.2
Heavy Metals			
Copper (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.005	mg/L	0.005

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Attention: **Olivia Cooper**

Report **857961-W**
Project name PITT ST ISD
Project ID N01070
Received Date Jan 25, 2022

Client Sample ID			**S01**
Sample Matrix			**Water**
Eurofins Sample No.			**S22-Ja29715**
Date Sampled			**Jan 25, 2022**
Test/Reference	LOR	Unit	
Oil & Grease (HEM)	10	mg/L	< 10

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Attention: **Olivia Cooper**

Report **863362-W-V2**
Project name PITT ST ISD
Project ID N01070
Received Date Feb 15, 2022

Client Sample ID			**NO1**	**NO2**	**NO3**	**NO4**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**S22-Fe26956**	**S22-Fe26957**	**S22-Fe26958**	**S22-Fe26959**
Date Sampled			**Feb 15, 2022**	**Feb 15, 2022**	**Feb 15, 2022**	**Feb 15, 2022**
Test/Reference	LOR	Unit				
Oil & Grease (HEM)	10	mg/L	< 10	< 10	< 10	< 10
pH (at 25 °C)	0.1	pH Units	7.9	7.9	8.2	8.2
Total Suspended Solids Dried at 103°C–105°C	5	mg/L	< 5	< 5	6.2	< 5
Turbidity	1	NTU	1.1	< 1	7.0	6.8
Heavy Metals						
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			**NO5**
Sample Matrix			**Water**
Eurofins Sample No.			**S22-Fe26960**
Date Sampled			**Feb 15, 2022**
Test/Reference	LOR	Unit	
Oil & Grease (HEM)	10	mg/L	< 10
pH (at 25 °C)	0.1	pH Units	8.2
Total Suspended Solids Dried at 103°C–105°C	5	mg/L	5.2
Turbidity	1	NTU	5.2
Heavy Metals			
Copper (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005

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Attention: **Emma Eveleigh**

Report **866245-W-V2**
Project name PITT ST ISD
Project ID N01070
Received Date Feb 24, 2022

Client Sample ID			**S01**
Sample Matrix			**Water**
Eurofins Sample No.			**S22-Fe50864**
Date Sampled			**Feb 24, 2022**
Test/Reference	LOR	Unit	
Oil & Grease (HEM)	10	mg/L	< 10
pH (at 25 °C)	0.1	pH Units	9.2
Total Suspended Solids Dried at 103°C–105°C	5	mg/L	< 5
Turbidity	1	NTU	2.3
Heavy Metals			
Copper (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005

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Attention: **Emma Eveleigh**

Report **867078-W-V2**
Project name PITT ST ISD
Project ID N01070
Received Date Feb 28, 2022

Client Sample ID			**S01**
Sample Matrix			**Water**
Eurofins Sample No.			**S22-Fe57535**
Date Sampled			**Feb 28, 2022**
Test/Reference	LOR	Unit	
pH (at 25 °C)	0.1	pH Units	7.7
Total Suspended Solids Dried at 103°C–105°C	5	mg/L	< 5
Turbidity	1	NTU	< 1

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Attention: **Emma Eveleigh**

Report **873828-W**
Project name PITT ST ISD
Project ID N01070
Received Date Mar 23, 2022

Client Sample ID			**S01**	**N01**
Sample Matrix			**Water**	**Water**
Eurofins Sample No.			**S22-Ma48752**	**S22-Ma48753**
Date Sampled			**Mar 23, 2022**	**Mar 23, 2022**
Test/Reference	LOR	Unit		
Oil & Grease (HEM)	10	mg/L	< 10	< 10
pH (at 25 °C)	0.1	pH Units	8.5	8.1
Total Suspended Solids Dried at 103°C–105°C	5	mg/L	< 5	< 5
Turbidity	1	NTU	3.8	6.0
Heavy Metals				
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	0.012