

Barangaroo Metro Station

Noise & Vibration Monitoring Report

October 2022 to March 2023

21 November 2023

Caption: Queensland Country Bank Stadium,
Townsville

Project overview

Project Site Address:

Hickson Road
Barangaroo
NSW 2000

BESIX Watpac State Division Address:

Level 24, 44 Market Street
SYDNEY
NSW 2000

Project Commencement Date:

12 March 2021

BESIX Watpac ABN:

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Document Control

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BESIX Watpac Approvals

| Name | Role & Title | Signature | Date |
|-----------------|---|---|----------|
| Anthony Richard | Reviewer / Planning and Environment Manager |  | 21/11/23 |
| Daniel Gooch | Reviewer / Construction Manager |  | 21/11/23 |
| Luke Hunter | Reviewer / Project Director |  | 21/11/23 |

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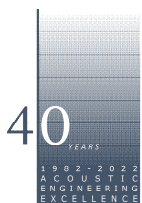
BARANGAROO METRO STATION

Noise & Vibration Monitoring Report

October 2022 – March 2023

Besix Watpac

TM031-1-08F01 Barangaroo Noise and Vibration Monitoring, 6 Monthly Report, October 2022 - March 2023 (r5)



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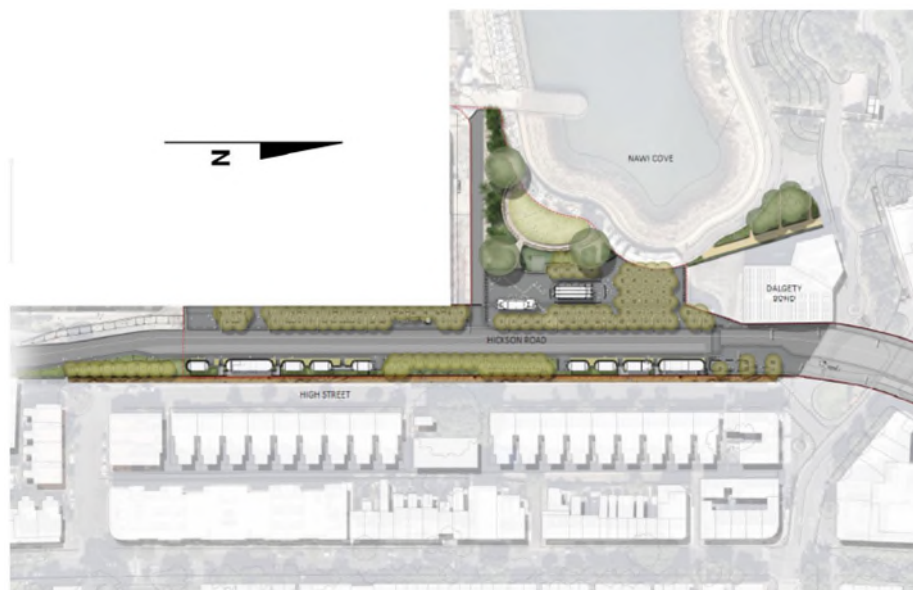
1 Introduction

The Sydney Metro City & Southwest Project is a 30-kilometre metro railway between Chatswood and Bankstown including 17 kilometres of new tunnels from Chatswood to Sydenham travelling under Sydney Harbour connecting 7 new underground stations at Crows Nest, Victoria Cross (North Sydney), Barangaroo, Pitt Street, Martin Place, Central and Waterloo. Upgrading 13 kilometres of the Bankstown line including 11 existing stations at Sydenham, Marrickville, Dulwich Hill, Hurlstone Park, Canterbury, Campsie, Belmore, Lakemba, Wiley Park, Punchbowl and Bankstown plus service facilities.

BESIX Watpac have been engaged by Sydney Metro to build the Barangaroo Station Construct Only Package (BR COP), forming part of the broader Sydney Metro City & Southwest Chatswood to Sydenham project.

The project site is located North of the Barangaroo precinct below Hickson Road on the North-western edge of the Sydney CBD and adjacent to Nawi Cove as shown in Figure 1-1. The station is the most northerly of the CBD stations.

Figure 1-1 – Location of Barangaroo Station



2 Purpose

This Noise and Vibration Monitoring Report (NVMR) is a summary of all noise and vibration monitoring conducted over the 6-month period from October 2022 to March 2023.

The Noise and Vibration Management Plan (CNVMP) outlines in Appendix E a Construction Noise and Vibration Monitoring Program which details the monitoring required by Condition of Approval (CoA) C10 and the frequency of reporting. The Construction Noise and Vibration Monitoring Program has been endorsed by the Acoustic Advisor (AA) and approved by the Secretary in accordance with CoA C13.

CoA C16 required the results of the monitoring program to be provided to the Secretary for information at the frequency identified in the program. The approved monitoring program states that the details of the noise and vibration monitoring will be reported on a six-monthly basis.

The independent Acoustic Advisor will be provided the report for endorsement prior to submission to the Secretary for information by Sydney Metro.

The applicable CoAs are shown in Table 2-1.

Table 2-1 - Conditions of Approval

| Condition | Description | Besix Watpac actions |
|-----------|--|---|
| C9 | The following Construction Monitoring Programs must be prepared in consultation with the relevant government agencies identified for each Construction Monitoring Program to compare actual performance of construction of the CSSI against predicted performance. Required Construction Monitoring Programs and (Relevant government agencies to be consulted for each Construction Monitoring Program): | |
| | Noise and Vibration (EPA and Relevant Council(s)) | Noise and Vibration – refer to the Construction Noise and Vibration Management Plan |
| | Blasting (EPA and Relevant Council(s)) | Blasting – Not applicable (Appendix A Staging Report) |
| | Water Quality – (EPA and Relevant Council(s)) | Water Quality – Not applicable (Appendix A Staging Report) |
| | Groundwater – (DPI Water) | Groundwater – Not applicable (Appendix A – Staging Report) |
| C16 | The results of the Construction Monitoring Programs must be submitted to the Secretary for information, and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program | This report |

3 Construction activities

Construction activities occurring on site during the reporting period have compromised the following:

- Deliveries;
- Removal of trees and relocation of sandstone blocks;
- Demolition of existing steel and concrete Hickson Rd ;
- Civil works including the excavation and installation of stormwater mains, condenser water lines and utility services installations;
- Backfilling and compaction of fill material to shark's fin area;
- Construction of the ventilation POD structures;
- Fit-out of the station box including the installations of services station services, lifts, escalators, structural steelwork, block walls, sandstone and GRC cladding, aluminium wall cladding, platform screen doors, and wall and ceilings.

3.1 Standard construction hours

Construction has been carried out in accordance with outlined hours in CoA E36 as follows:

- 07:00am to 6:00pm Mondays to Fridays;
- 08:00am to 6:00pm Saturdays;
- At no times on Sundays or public holidays.

3.2 Out of Hours construction summary

Construction has been undertaken out of hours under CoA E44 under the approved Out of Hours. Works Applications (OOHWA) listed in Table 3-1.

Table 3-1 - Approved out of hours applications

| OOHWA | Work Description | Approval | Approved Duration |
|------------|--|----------------|-------------------------------------|
| OOWA-002.5 | Station Works | E48(d), E48(e) | October 2022 – December 2022 |
| OOWA-002.6 | Station Works | E48(d) | January 2023 – April 2023 |
| OOHWA-011 | Hickson Road Night Works for Stormwater Installation | E44(f) | 13 November 2022 – 16 December 2022 |
| OOHWA-0012 | Hickson Road Night Works for Stage 1-B HV Installation | E44(f) | 7 February 2023 – 7 April 2023 |
| OOHWA-0013 | Hickson Road Night Works for Crane Pod Delivery | E44(f) | 22 February 2023 – 17 March 2023 |
| OOHWA-0015 | Installation of Pedestrian Walkway Diversion | E44(f) | 12 February 2023 – 17 February 2023 |

3.3 Emergency construction

No emergency works were undertaken this reporting period.

4 Monitoring criteria

4.1 Noise monitoring criteria

The following noise parameters are required to be measured when assessing construction noise levels:

- $L_{A1(1\text{minute})}$ - The typical 'maximum noise level for an event', used in the assessment of potential sleep disturbance during night-time periods. Alternatively, assessment may be conducted using the $L_{A\text{max}}$ or maximum noise level.
- $L_{A\text{eq}(15\text{minute})}$ - The "energy average noise level" evaluated over a 15-minute period. This parameter is used to assess the potential construction noise impacts and to assess compliance with the relevant internal or external NMLs.
- L_{A90} - The "background noise level" or Rating Background Level" (RBL) in the absence of construction activities. This parameter represents the average minimum noise level during the daytime, evening and night-time periods respectively. The $L_{A\text{eq}}$ (15 minute) construction noise management levels (NMLs) are based on the RBLs.
- The subscript "A" indicates that the noise levels are filtered to match normal hearing characteristics (A weighted).

The NSW EPA Interim Construction Noise Guideline (ICNG) requires project specific Noise Management Levels (NMLs) to be established for noise affected receivers. Two site-specific Construction Noise and Vibration Impact Statements (CNVISs) have been prepared in accordance with CoA E33. Each CNVIS was prepared prior to the commencement of construction before noise and vibration impacts commenced and included specific mitigation measures adopted and predict noise impacts to nearby sensitive receivers. One CNVIS has been prepared for above-ground civil and landscaping construction activities (Civil CNVIS) and a second for construction activities taking place within the station box itself (Station CNVIS). In the event construction noise levels are predicted to be above the NMLs, all feasible and reasonable work practices are investigated to minimise noise emissions.

Environmental noise monitoring (excluding spot checks of plant and equipment) have been recorded over 15-minute sample intervals, excluding periods of extraneous noise until a representative sample has been obtained. A representative sample will be determined by the operator, who will be competent, suitability trained and experienced in undertaking noise measurements and familiar with the relevant Australian Standards.

For spot checks of noise intensive plant and equipment, duration of monitoring will depend on the source of noise being monitored. Sources of continuous noise (such as generators or fans), measurements will be monitored over one-to-two-minute intervals. For dynamic plant, such as front-end loaders, spot checks will capture a representative activity, such as one truck-and-trailer load cycle.

Table 4-1 below which is reproduced from Addendum A of Sydney Metro CNVS sets out the internal noise criteria for residential and other sensitive receivers. The Barangaroo Metro station falls within an Identified Precinct in accordance with CoA E37.

Table 4-1 - Internal construction noise criteria levels (Conditions of Approval)

| Area | Receiver Type | Approved Condition | Time Period | Criteria (internal) |
|-----------------------|---------------|--------------------|---------------------------|---|
| Identified Precincts | All | E38 | 7am to 8pm | Noise levels are required to be less than $L_{Aeq (15 \text{ minute})}$ 60 dB(A) for at least 6.5 hours between 7am and 8pm, of which at least 3.25 hours must be below $L_{Aeq (15 \text{ minute})}$ 55 dB(A). Noise equal to or above $L_{Aeq (15 \text{ minute})}$ 60 dB(A) is allowed for the remaining 6.5 hours between 7am and 8pm. |
| Non-residential zones | Residential | E41 | 8pm to 9pm, 9pm to 7am | $L_{Aeq (15 \text{ minute})}$ 60 dB(A) $L_{Aeq (15 \text{ minute})}$ 45 dB(A) |
| Residential Zones | Residential | E42 | 8pm to 7am | $L_{Aeq (15 \text{ minute})}$ 45 dB(A) |
| All | All | E43 | All | $L_{Aeq (8 \text{ hours})}$ 85 dB(A) (external) near the CSSI |

Notes:

1. Identified precincts are provided in CoA E37 and include Crows Nest, Victoria Cross, Barangaroo, Martin Place and Pitt Street
2. These are identified by the applicable Local Environmental Plan land zoning of the receiver
3. Criteria as described in CoA E38
4. A 5 dB penalty shall be applied if rock breaking or any other annoying activity likely to result in ground-borne noise or a perceptible level of vibration is planned

4.2 Vibration monitoring criteria

The following vibration parameters are required to be measured when assessing construction vibration levels:

- Peak Particle Velocity (ppv) in mm/s to assess compliance with the relevant cosmetic damage criteria;
- Root-Mean-Square acceleration (a) in m/s^2 to estimate the Vibration Dose Value (eVDV) and determine compliance with relevant human annoyance management levels (if relevant).

All short term attended vibration monitoring will be recorded over a representative sampling interval where the worst-case vibration levels can be captured. Where unattended vibration monitoring is proposed, monitoring will be undertaken continuously whilst the vibrating plant is operational to capture the worst-case vibration impacting on the structure.

The following vibration screening criteria have been applied:

- Reinforced or frame structures – 25.0mm/s ppv;
- Unreinforced or light framed structures – 7.5mm/s ppv;
- Heritage structures – 2.5mm/s ppv.

Notes:

- 1. If a heritage structure is predicted to be exposed to vibration levels above the conservative vibration screening level of 2.5mm/s, further investigation would be undertaken to determine whether the structure is structurally sound.*
- 2. As stated in Section 3 of the Hickson Rd wall - vibration monitoring plan¹, the relevant vibration criterion for the Hickson Road heritage wall is 25mm/s Peak Particle Velocity (PPV).*

¹ Barangaroo Sydney Metro Station, Hickson Rd wall – Vibration monitoring plan, document reference TM031-06F01 Heritage wall vibration monitoring plan (r1), dated 19 July 2022, revision 1

5 Methodology

The Construction Noise and Vibration Monitoring Program is designed to compare actual performance of construction of the CSSI against predicted performance and to assess the effectiveness of the mitigation measures applied during construction of the Project. The program has been executed in accordance with Appendix E of the CNVMP. The Construction Monitoring Program commenced 16 September 2021 at Construction commencement and will continue for the duration of the project.

5.1 Off-site monitoring locations

The monitors used for the various monitoring completed during the reporting period are outlined in Table 5-1 below. Attended monitors were field calibrated before each field measurement. Calibration certificates are included in Appendix D.

Table 5-1 – Off-site monitoring equipment details

| Equipment Details | Monitoring Type | Location | Serial No. |
|-------------------|---------------------|--------------------------------|---------------|
| Sigicom Infra C22 | Real-time vibration | Hickson Road Wall ¹ | #102479 |
| Sigicom Infra C22 | Real-time vibration | Hickson Road Wall ¹ | #102477 |
| Rion NL-52 | Attended noise | Various | #00553918 |
| NTI-XL2 | Attended noise | Various | #A2A-19156-E0 |
| NTI-XL2 | Attended noise | Various | #A2A-05826-E0 |
| NTI-XL2 | Attended noise | Various | #A2A-13529-E0 |
| B&K Type 4231 | Noise calibrator | Various | #3027924 |
| B&K Type 4231 | Noise calibrator | Various | #2162834 |
| B&K Type 4231 | Noise calibrator | Various | #2545601 |

Notes

1) Advice of a heritage specialist was sought for monitoring on this heritage structure.

In accordance with CoA E31 and 1.3.4 of the N&V monitoring Program, advice of a heritage specialist (Mike Hincks, Senior Historical Heritage Consultant of Ambs Ecology & Heritage) was sought for the installation and location of the vibration monitors on the Hickson Road heritage wall.

The heritage consultant confirmed that the proposed vibration monitoring installation on the Hickson road heritage wall was a *“reasonable approach which will ensure that there is minimal or no impact to the heritage values of the Hickson Road Retaining Wall or Millers Point and Dawes Point Village Precinct of which it is a part.”*

5.2 On-site real-time monitoring locations

Real-time noise and vibration monitors have been established on site as shown in the Construction Noise and Vibration Management Plan (CNVMP). The locations of these noise and vibration monitors are shown below in Figure 5-1 and details are presented in Table 5-2.

Vibration monitoring data for the Barangaroo Metro station has been based on real-time monitoring results as these are considered to best represent the most impacted structure, being 25 Hickson Road, and group of receivers, being the personnel working within 25 Hickson road as this is the closest heritage structure, at risk of cosmetic damage per CoA E29, in the vicinity of the works.

The vibration monitor is located on the ground floor of the building mounted to the wall nearest to where civil construction activities will occur.

Figure 5-1 - Location of on-site real-time noise and vibration monitors

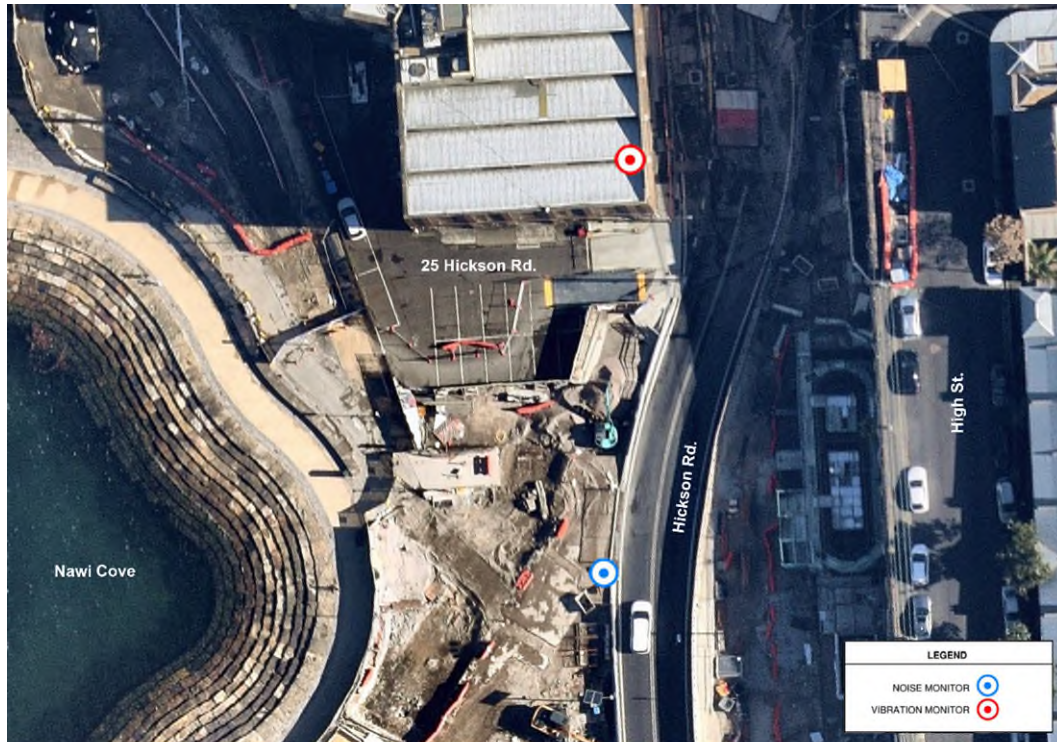


Table 5-2 – On-site monitoring equipment details

| Equipment Details | Monitoring Type | Location | Serial No. |
|----------------------|---|--|------------|
| SiteHive Hexanode 85 | Real-time noise | On site, 40 metres to the south of 25 Hickson Road, Barangaroo | #000053 |
| Sigicom Infra C22 | Real-time vibration | 25 Hickson Road, Barangaroo ¹ | #106847 |
| Notes | Advice of a heritage specialist was sought for monitoring on this heritage structure. | | |

In accordance with CoA E31 and 1.3.4 of the N&V monitoring Program, advice of a heritage specialist (Mike Hincks, Senior Historical Heritage Consultant of Ambs Ecology & Heritage) was sought for the installation and location of the vibration monitors in the heritage building/site office at 25 Hickson Road, Barangaroo.

Heritage advice has also confirmed that the installation of the vibration monitor in the site office has had a negligible impact on significant fabric, and no impact on the heritage significance of the Dalgety's Group of Bond Stores A, B and C nor the Millers Point & Dawes Point Village Precinct.

Figure 5-2 - On site real-time vibration monitor at 25 Hickson Road



6 Monitoring results

6.1 Off-site

6.1.1 Attended vibration monitoring

No attended vibration monitoring occurred during the reporting period.

6.1.2 Hickson Road Wall, Real-time vibration monitoring

Results for the vibration monitoring along Hickson Road Walls can be seen in APPENDIX B.

Vibration monitoring confirmed that vibration levels associated with construction works complied with relevant vibration criteria. As shown in APPENDIX B, although there were events exceeding the relevant vibration criteria, all of these were confirmed by the team on site to be caused by the workers inadvertently bumping the monitor or attaching/de-attaching it from the wall to relocate it as required and not from the works. Therefore, they were not construction related.

6.1.3 Attended noise monitoring

Attended noise monitoring results are summarised in Table 6-1.

Table 6-1 - Attended noise monitoring results

| Location / Receiver | Date | Main Activities | Noise Period | Noise targets | | | Measurements | | dB above | | | Comment |
|-------------------------------------|--|---|---------------|---------------|-----|------------------|------------------------|-------------------|----------|-----|------------------|---|
| | | | | NML | RBL | Predicted levels | L _{Aeq15min} | L _{Amax} | NML | RBL | Predicted levels | |
| 4 High Street, Millers Point | 7/02/2023 09:14pm - 09:29pm (WC) | General construction activities | OOHW Period 1 | 55 | 50 | 57 | 73 | 85 | +18 | +23 | +16 | Exceedance not due to construction work. The dominate noise source was heavy road traffic along High Street. It is noted that Project activities were only sometimes audible. (OOHWA-0012) |
| 10-12 Argyle Pl, Millers Point | 7/02/2023 09:33pm - 09:48pm (WC) | General construction activities | OOHW Period 1 | 55 | 50 | 48 | 54 | 78 | -1 | +4 | +6 | Exceedance not due to construction work. The dominate noise source was "The Lord Nelson" brewery located 30m from the monitoring location. It is noted that Project activities were only sometimes audible. (OOHWA-0012) |
| 4A High Street, Millers Point | 8/02/2023 08:42pm - 08:57pm (WC) | General construction activities and hammering | OOHW Period 1 | 55 | 50 | 64 | 61 (56+5) ¹ | 86 | +6 | +11 | -3 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 10-12 Argyle Pl, Millers Point | 8/02/2023 08:59pm - 09:14pm (WC) | General construction activities and hammering | OOHW Period 1 | 55 | 50 | 82 | 74 (69+5) ¹ | 79 | +19 | +24 | -8 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 1-5 Towns Place, Millers Point | 8/02/2023 09:14pm - 09:29pm (RT) | General construction activities | OOHW Period 1 | 55 | 50 | 70 | 62 | 87 | +7 | +12 | -8 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 66 Bettington street, Millers Point | 8/02/2023 09:17pm - 09:32pm (WC) | General construction activities and hammering | OOHW Period 1 | 55 | 50 | 70 | 61 (56+5) ¹ | 76 | +6 | +11 | -10 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |

| Location / Receiver | Date | Main Activities | Noise Period | Noise targets | | | Measurements | | dB above | | | Comment |
|---------------------------------|---|---|---------------|---------------|-----|------------------|--------------------------|-------------------|----------|-----|------------------|---|
| | | | | NML | RBL | Predicted levels | L _{Aeq15min} | L _{Amax} | NML | RBL | Predicted levels | |
| 2-2A High Street, Millers Point | 8/02/2023 11:42pm - 11:57pm (RT) | General construction activities and hammering | OOHW Period 2 | 45 | 40 | 74 | 65 (60+5) ¹ | 72 | +20 | +25 | -9 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 2-2A High Street, Millers Point | 15/02/2023 07:54pm - 08:09pm (RT) | General construction activities | OOHW Period 1 | 55 | 50 | 58 | 54 | 76 | -1 | +4 | -4 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 1-5 Towns Place, Millers Point | 15/02/2023 08:13pm - 08:28pm (RT) | General construction activities | OOHW Period 1 | 55 | 50 | 70 | 56 | 73 | +1 | +6 | -14 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 4A High Street, Millers Point | 15/02/2023 08:16pm - 08:31pm (WC) | General construction activities | OOHW Period 1 | 55 | 50 | 48 | 53 | 72 | -2 | +3 | +5 | Exceedance not due to construction work. The dominate noise source was road traffic along High Street. It is noted that Project activities were only sometimes audible. (OOHWA-0012) |
| 1-5 Towns Place, Millers Point | 15/02/2023 08:42pm - 08:57pm (RT) | General construction activities and hammering | OOHW Period 1 | 55 | 50 | 86 | 75 (70+5) ¹ | 78 | +20 | +25 | -11 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 4A High Street, Millers Point | 15/02/2023 08:49pm - 09:04pm (WC) | General construction activities and hammering | OOHW Period 1 | 55 | 50 | 64 | 59 (54+5) ¹ | 88 | +4 | +9 | -5 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 2-2A High Street, Millers Point | 15/02/2023 09:03pm - 09:18pm (RT) | General construction activities and hammering | OOHW Period 1 | 55 | 50 | 74 | 64 (59+5) ¹ | 74 | +9 | +14 | -10 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 10 Argyle Pl, Millers Point | 15/02/2023 09:09pm - 09:24pm (WC) | General construction activities and hammering | OOHW Period 1 | 55 | 50 | 73 | 66.0 (61+5) ¹ | 85 | +11 | +16 | -7 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |

| Location / Receiver | Date | Main Activities | Noise Period | Noise targets | | | Measurements | | dB above | | | Comment |
|---------------------------------|--------------------------------------|---|---------------|---------------|-----|------------------|------------------------|-------------------|----------|-----|------------------|---|
| | | | | NML | RBL | Predicted levels | L _{Aeq15min} | L _{Amax} | NML | RBL | Predicted levels | |
| 21A Hickson Road, Millers Point | 15/02/2023 09:29pm - 09:44pm (WC) | General construction activities and hammering | OOHW Period 1 | 55 | 50 | 60 | 62 | 89 | +7 | +12 | +2 | Exceedance not due to construction work. The dominate noise source was heavy pedestrian traffic leaving the "Roslyn Packer Theatre". It is noted that Project activities were inaudible. (OOHWA-0012) |
| 21A Hickson Road, Millers Point | 15/02/2023 10:11pm - 10:26pm (WC) | General construction activities and hammering | OOHW Period 2 | 45 | 40 | 76 | 63 (58+5) ¹ | 93 | +18 | +23 | -13 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 4A High Street, Millers Point | 15/02/2023 10:42pm - 10:57pm (WC) | General construction activities and hammering | OOHW Period 2 | 45 | 40 | 64 | 57 (52+5) ¹ | 75 | +12 | +17 | -7 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 4A High Street, Millers Point | 15/02/2023 11:11pm - 11:26pm (WC) | General construction activities and hammering | OOHW Period 2 | 45 | 40 | 48 | 45 | 75 | 0 | +5 | -3 | Construction activity produced noise levels below the predicted levels It is noted that background noise was higher than predicted level and Project activities inaudible. (OOHWA-0012) |
| 83 Kent Street, Millers Point | 01/03/2023 10:24pm - 10:39pm (WC) | General construction activities and hammering | OOHW Period 2 | 45 | 40 | 60 | 54 (49+5) ¹ | 82 | +9 | +14 | -6 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 2-2A High Street, Millers Point | 02.03.2023 08:38pm - 08:53pm (RT) | General construction activities and hammering | OOHW Period 1 | 55 | 50 | 74 | 61 (56+5) ¹ | 72 | +6 | +11 | -13 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012/OOHWA-0013) |
| 8-8A High Street, Millers Point | 02.03.2023 08:57pm - 09:12pm (RT) | General construction activities | OOHW Period 1 | 55 | 50 | 66 | 57 | 75 | +2 | +7 | -9 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0013) |

| Location / Receiver | Date | Main Activities | Noise Period | Noise targets | | | Measurements | | dB above | | | Comment |
|---------------------------------|---|---|---------------|---------------|-----|------------------|------------------------|-------------------|----------|-----|------------------|--|
| | | | | NML | RBL | Predicted levels | L _{Aeq15min} | L _{Amax} | NML | RBL | Predicted levels | |
| 1-5 Towns Place, Millers Point | 02.03.2023 09:44pm - 09:59pm (RT) | General construction activities and hammering | OOHW Period 1 | 55 | 50 | 86 | 70 (65+5) ¹ | 76 | +15 | +20 | -16 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012/OOHWA-0013) |
| 1-5 Towns Place, Millers Point | 02.03.2023 10:05pm - 10:20pm (RT) | General construction activities and hammering | OOHW Period 2 | 45 | 40 | 86 | 71 (66+5) ¹ | 79 | +26 | +31 | -15 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012/OOHWA-0013) |
| 2-2A High Street, Millers Point | 02.03.2023 10:31pm - 10:46pm (RT) | General construction activities and hammering | OOHW Period 2 | 45 | 40 | 74 | 62 (57+5) ¹ | 71 | +17 | +22 | -12 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012/OOHWA-0013) |
| 8-8A High Street, Millers Point | 02.03.2023 10:47pm - 11:02pm (RT) | General construction activities and hammering | OOHW Period 2 | 45 | 40 | 73 | 63 (58+5) ¹ | 79 | +18 | +23 | -10 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012/OOHWA-0013) |
| 83 Kent Street, Millers Point | 28/03/2023 08:10pm - 08:25pm (WC) | General construction activities | OOHW Period 1 | 55 | 50 | 35 | 52 | 62 | -3 | +2 | +17 | Exceedance not due to construction work. The dominate noise source was road traffic. It was also raining during the measurement. It is noted that Project activities were inaudible. (OOHWA-0012) |
| 10 Argyle Pl, Millers Point | 28/03/2023 08:32pm - 08:47pm (WC) | General construction activities and hammering | OOHW Period 1 | 55 | 50 | 73 | 58 (53+5) ¹ | 74 | +3 | +8 | -15 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 83 Kent Street, Millers Point | 29/03/2023 12:37am - 12:52am (WC) | General construction activities | OOHW Period 2 | 45 | 40 | 35 | 51 | 72 | +6 | +11 | +16 | Exceedance not due to construction work. The dominate noise source was road traffic. It is noted that Project activities were inaudible. (OOHWA-0012) |

| Location / Receiver | Date | Main Activities | Noise Period | Noise targets | | | Measurements | | dB above | | | Comment |
|-------------------------------|--|---------------------------------|------------------|---------------|-----|------------------|-----------------------|-------------------|----------|-----|------------------|---|
| | | | | NML | RBL | Predicted levels | L _{Aeq15min} | L _{Amax} | NML | RBL | Predicted levels | |
| 83 Kent Street, Millers Point | 29/03/2023 01:03am - 01:18am (WC) | General construction activities | OOHW Period 2 | 45 | 40 | 35 | 49 | 59 | +4 | +9 | +14 | Exceedance not due to construction work. The dominate noise source was road traffic. It is noted that Project activities were inaudible. (OOHWA-0012) |
| 4A High Street, Millers Point | 29/03/2023 01:24am - 01:39am (WC) | General construction activities | OOHW Period 2 | 45 | 40 | 57 | 52 | 74 | +7 | +12 | -5 | Construction activity produced noise levels below the predicted levels. It is noted that Project activities were audible. (OOHWA-0012) |
| 83 Kent Street, Millers Point | 29/03/2023 02:00am - 05:15am (WC) | General construction activities | OOHW Period 2 | 45 | 40 | 35 | 50 | 71 | +5 | +10 | +15 | Exceedance not due to construction work. The dominate noise source was road traffic. Additionally, winds reached 18km/hour during the measurement period. It is noted that Project activities were inaudible. (OOHWA-0012) |
| Notes | 1) Penalty of 5dB due to annoying characteristics 2) RT = Measurement conducted by Renzo Tonin 3) WC = Measurement conducted by Ward Civil | | | | | | | | | | | |

As can be noted from Table 6-1, noise measurements from construction activities were below the predicted levels (or marginally above). Exceedances shown in the table above were mainly due to road traffic and pedestrians passing the monitoring location, therefore not construction related.

6.2 On-site

6.2.1 Real-time vibration monitoring

Due to a hardware issue with the vibration monitor, only 7 days of data was recorded for the reporting period. It has been advised that an engineer is to conduct a visual inspection of 25 Hickson Road at the conclusion of the works.

Results for the vibration monitoring within 25 Hickson Road can be seen in APPENDIX C. There were no exceedances of the nominated vibration criteria at 25 Hickson Road throughout the recorded data for the reporting period.

It is noted, during the reporting period which data was lost, rock hammering works were undertaken along Hickson Road under OOHWA-0011 where works were <5m from 25 Hickson Road. During these excavation works, real time vibration monitoring was undertaken by Ward Civil (the contractor responsible for the works) on 13/11/2022. The results of monitoring indicated that the rock hammering works were within the vibration limits for 25 Hickson Road.

Vibration intense works (such as occurring during OOHWA-006) were also undertaken during the April to September 2022 period (which were documented in the April 2022 – September 2022 Noise and Vibration Monitoring Report). The vibration records from the real time monitor within 25 Hickson Road indicate that no exceedance of the criteria occurred.

Based on the above it is concluded that while the vibration monitor was not recording/uploading data correctly the likelihood of a vibration exceedance occurring during the reporting period is assessed as low.

6.2.2 Real-time noise monitoring

CoA E37 requires that receivers be identified who are likely to experience internal noise levels greater than $L_{Aeq,15min}$ 60 dB(A) inclusive of a 5 dB penalty, if rock breaking or any other annoying activity likely to result in regenerated (ground-borne) noise or a perceptible level of vibration is planned, between 7am – 8pm at Barangaroo. These receivers are listed in the CNVIS for above ground Civil Works in Appendix D.2 of the CNVIS

CoA E38 requires that between the hours of 7am and 8pm, the following internal noise criteria apply:

- Criteria 1a - Noise levels be less than $L_{Aeq,15min}$ 60 dB(A) for at least 6.5 hours;
- Criteria 1b - Noise levels be less than $L_{Aeq,15min}$ 55 dB(A) for 3.25 hours;
- Criteria 2 – Noise level can be above $L_{Aeq,15min}$ 60 dB(A) for 6.5 hours.

The condition also requires that consultation be undertaken with the receivers identified in CoA E37 with the objective of determining appropriate hours of respite so that construction noise (including ground-borne noise, does not exceed the internal noise levels described above.

Consultation in relation to CoA E38 has been undertaken and documented in the CNVMP and Civil CNVIS in Appendix D. Consultation with receivers is documented in Section 4.1.2. BESIX Watpac have carried out consultation with the following community organisations, to agree respite periods:

- The Millers Point Residents Action Group;
- The Walsh Bay Precinct association;
- KU Lance Children's Centre, Miller's Point;
- The Langham Hotel, Miller's Point.

It has been agreed with the above groups that the same respite periods as were adopted by the preceding TSE Contractor, who carried out the excavation of the station box, be adopted by the BR Contractor. These respite periods are between 09.30am to 10.30am and 12.30pm to 1.30pm Monday to Friday.

To monitor compliance with CoA E38 and the requirement that noise levels between 7am and 8pm be less than $L_{Aeq,15min}$ 55 dB(A) for 3.25 hours (Criteria 1b) the following should be considered:

- The hours worked on site are between 7am and 6pm Monday to Friday so each day there are at least 2 hours (6pm to 8pm) where no construction activities take place and the noise levels generated by default are less than $L_{Aeq,15min}$ 55 dB(A).
- From 30th June 2022, the hours worked on site are between 7am and 6pm on Saturdays so each Saturday there are at least 2 hours (6pm to 8pm) where no construction activities take place and the noise levels generated by default are less than $L_{Aeq,15min}$ 55 dB(A).
- No works take place on Sundays, or public holidays.
- The BR Contractor implements a noise respite period each day (Mon – Fri) between 09.30am to 10.30am and 12.30pm to 1.30pm meaning that for 2 hours during the day noise levels generated on site are less than $L_{Aeq,15min}$ 55 dB(A).

In total, the noise levels generated by construction activities between 7am and 8pm occurring on site will be less than $L_{Aeq,15min}$ 55 dB(A) for at least 4 hours between Monday to Friday, 8 hours on Saturdays and 13 hours on Sundays and Public Holidays due to the construction hours worked and respite periods implemented.

To verify this and to monitor compliance with Criteria 1a (that noise levels be less than $L_{Aeq,15min}$ 60 dB(A) for at least 6.5 hours) and Criteria 1b (that noise levels be less than $L_{Aeq,15min}$ 55 dB(A) for 3.25 hours), the number of 15 minute periods between 7am and 8pm that internal noise levels were observed to be above 60dBa ($L_{Aeq,15min}$) and below 55dBA, respectively have been counted. Within these periods works are allowed to generate noise levels above 60dBA for 6.5 hours (26 x 15-minute periods) and must be below 55dBA for at least 3.25 hours (13 x 15-minute periods).

The real-time noise monitor is located externally so a conservative 20dB(A) noise reduction has been applied to compare the measured noise levels at the real-time monitor with internal E38 noise levels. This reduction contemplates a 10dB reduction for façade loss (open window), a 5dB reduction for the screening provided by the Hickson Road Wall and a 5dB reduction for distance difference between

location of the monitor and the nearest residential receivers. In addition, 5dB penalty was added to noise measurements from plant and equipment with annoying characteristics (i.e. rockhammers).

The results of the daily real-time noise monitoring carried out for the reporting period show that Criteria 1a and Criteria 1b requirements were not observed to have been exceeded during the reporting period demonstrating compliance with CoA E38.

Real-time monitoring results for October 2022 to March 2023 are included in APPENDIX A.

7 Conclusion

Measured noise and vibration levels are generally in accordance with, or below, the predictions presented in the Construction Noise and Vibrations Impact Statements (CNVIS), or in noise impact assessments prepared for Out of Hours Works applications (OOHWA).

Based on the monitoring results and site investigations, noise and vibration associated with the construction activities being undertaken at the BR COP was compliant with the project approvals and requirements during the monitoring period.

APPENDIX A Real-time monitoring results

| OCTOBER 2022 - Daily Monitoring Results | | | | |
|---|----------------|--|------------------------------|---|
| Date | Classification | Total 15 minute intervals (07.00 to 20.00) | Total Hours (07.00 to 20.00) | LAeq(15min) < 55dBA for at least 3.25 hours. LAeq(15min) > 60dBA not more than 6.5 hours |
| 1/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 1/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 2/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 2/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 3/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 3/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 4/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 4/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 5/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 5/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 6/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 6/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 7/10/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 7/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 8/10/2022 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 8/10/2022 | Above 60dBA | 1 | 0.25 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 9/10/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 9/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 10/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 10/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 11/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 11/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 12/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 12/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 13/10/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 13/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 14/10/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 14/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 15/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 15/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 16/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 16/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 17/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 17/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 18/10/2022 | Below 55dBA | 48 | 12 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 18/10/2022 | Above 60dBA | 1 | 0.25 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 19/10/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 19/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 20/10/2022 | Below 55dBA | 49 | 12.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |

| | | | | |
|------------|-------------|----|-------|--|
| 20/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 21/10/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 21/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 22/10/2022 | Below 55dBA | 33 | 8.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 22/10/2022 | Above 60dBA | 9 | 2.25 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 23/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 23/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 24/10/2022 | Below 55dBA | 48 | 12 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 24/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 25/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 25/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 26/10/2022 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 26/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 27/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 27/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 28/10/2022 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 28/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 29/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 29/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 30/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 30/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 31/10/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 31/10/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |

| NOVEMBER 2022 - Daily Monitoring Results | | | | |
|--|----------------|--|------------------------------|--|
| Date | Classification | Total 15 minute intervals (07.00 to 20.00) | Total Hours (07.00 to 20.00) | LAeq(15min) < 55dBA for at least 3.25 hours. LAeq(15min) > 60dBA not more than 6.5 hours |
| 1/11/2022 | Below 55dBA | 48 | 12 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 1/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 2/11/2022 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 2/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 3/11/2022 | Below 55dBA | 37 | 9.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 3/11/2022 | Above 60dBA | 8 | 2 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 4/11/2022 | Below 55dBA | 48 | 12 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 4/11/2022 | Above 60dBA | 4 | 1 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 5/11/2022 | Below 55dBA | 38 | 9.5 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 5/11/2022 | Above 60dBA | 2 | 0.5 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 6/11/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 6/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 7/11/2022 | Below 55dBA | 33 | 8.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 7/11/2022 | Above 60dBA | 3 | 0.75 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 8/11/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 8/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 9/11/2022 | Below 55dBA | 41 | 10.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 9/11/2022 | Above 60dBA | 4 | 1 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 10/11/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 10/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 11/11/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 11/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 12/11/2022 | Below 55dBA | 50 | 12.5 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 12/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 13/11/2022 | Below 55dBA | 39 | 9.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 13/11/2022 | Above 60dBA | 1 | 0.25 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 14/11/2022 | Below 55dBA | 46 | 11.5 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 14/11/2022 | Above 60dBA | 1 | 0.25 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 15/11/2022 | Below 55dBA | 47 | 11.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 15/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 16/11/2022 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 16/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 17/11/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 17/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 18/11/2022 | Below 55dBA | 49 | 12.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 18/11/2022 | Above 60dBA | 3 | 0.75 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 19/11/2022 | Below 55dBA | 49 | 12.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 19/11/2022 | Above 60dBA | 2 | 0.5 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 20/11/2022 | Below 55dBA | 35 | 8.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |

| | | | | |
|------------|-------------|----|-------|--|
| 20/11/2022 | Above 60dBA | 6 | 1.5 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 21/11/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 21/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 22/11/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 22/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 23/11/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 23/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 24/11/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 24/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 25/11/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 25/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 26/11/2022 | Below 55dBA | 45 | 11.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 26/11/2022 | Above 60dBA | 1 | 0.25 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 27/11/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 27/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 28/11/2022 | Below 55dBA | 40 | 10 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 28/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 29/11/2022 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 29/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 30/11/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 30/11/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |

| DECEMBER 2022 - Daily Monitoring Results | | | | |
|--|----------------|--|------------------------------|---|
| Date | Classification | Total 15 minute intervals (07.00 to 20.00) | Total Hours (07.00 to 20.00) | LAeq(15min) < 55dBA for at least 3.25 hours. LAeq(15min) > 60dBA not more than 6.5 hours |
| 1/12/2022 | Below 55dBA | 48 | 12 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 1/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 2/12/2022 | Below 55dBA | 50 | 12.5 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 2/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 3/12/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 3/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 4/12/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 4/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 5/12/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 5/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 6/12/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 6/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 7/12/2022 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 7/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 8/12/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 8/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 9/12/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 9/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 10/12/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 10/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 11/12/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 11/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 12/12/2022 | Below 55dBA | 43 | 10.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 12/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 13/12/2022 | Below 55dBA | 45 | 11.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 13/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 14/12/2022 | Below 55dBA | 48 | 12 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 14/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 15/12/2022 | Below 55dBA | 47 | 11.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 15/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 16/12/2022 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 16/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 17/12/2022 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 17/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 18/12/2022 | Below 55dBA | 50 | 12.5 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 18/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 19/12/2022 | Below 55dBA | 50 | 12.5 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 19/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 20/12/2022 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 20/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |

| | | | | |
|------------|-------------|----|-------|--|
| 21/12/2022 | Below 55dBA | 50 | 12.5 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 21/12/2022 | Above 60dBA | 1 | 0.25 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 22/12/2022 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 22/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 23/12/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 23/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 24/12/2022 | Below 55dBA | 46 | 11.5 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 24/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 25/12/2022 | Below 55dBA | 48 | 12 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 25/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 26/12/2022 | Below 55dBA | 49 | 12.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 26/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 27/12/2022 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 27/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 28/12/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 28/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 29/12/2022 | Below 55dBA | 47 | 11.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 29/12/2022 | Above 60dBA | 1 | 0.25 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 30/12/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 30/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 31/12/2022 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 31/12/2022 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |

| JANUARY 2023 - Daily Monitoring Results | | | | | |
|---|----------------|--|------------------------------|--|-----------|
| Date | Classification | Total 15 minute intervals (07.00 to 20.00) | Total Hours (07.00 to 20.00) | LAeq(15min) < 55dBA for at least 3.25 hours. LAeq(15min) > 60dBA not more than 6.5 hours | Comments |
| 1/01/2023 | Below 55dBA | 47 | 11.75 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 1/01/2023 | Above 60 dBA | 4 | 1 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 2/01/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 2/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 3/01/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 3/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 4/01/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 4/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 5/01/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 5/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 6/01/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 6/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 7/01/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 7/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 8/01/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 8/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 9/01/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 9/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 10/01/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 10/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 11/01/2023 | Below 55dBA | 49 | 12.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 11/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 12/01/2023 | Below 55dBA | 49 | 12.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 12/01/2023 | Above 60dBA | 1 | 0.25 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 13/01/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 13/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 14/01/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 14/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 15/01/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 15/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 16/01/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 16/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 17/01/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 17/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 18/01/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 18/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 19/01/2023 | Below 55dBA | 47 | 11.75 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 19/01/2023 | Above 60dBA | 1 | 0.25 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 20/01/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 20/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 21/01/2023 | Below 55dBA | 44 | 11 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 21/01/2023 | Above 60dBA | 3 | 0.75 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 22/01/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 22/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 23/01/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 23/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 24/01/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 24/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 25/01/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 25/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 26/01/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |

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|------------|-------------|----|-------|---|-----------|
| 26/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 27/01/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 27/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 28/01/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 28/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 29/01/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 29/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 30/01/2023 | Below 55dBA | 44 | 11 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 30/01/2023 | Above 60dBA | 2 | 0.5 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |
| 31/01/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dBA criteria | Compliant |
| 31/01/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dBA" criteria | Compliant |

| FEBRUARY 2023 - Daily Monitoring Results | | | | |
|--|----------------|--|------------------------------|---|
| Date | Classification | Total 15 minute intervals (07.00 to 20.00) | Total Hours (07.00 to 20.00) | LAeq(15min) < 55dBA for at least 3.25 hours. LAeq(15min) > 60dBA not more than 6.5 hours |
| 1/02/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 1/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 2/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 2/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 3/02/2023 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 3/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 4/02/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 4/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 5/02/2023 | Below 55dBA | 46 | 11.5 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 5/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 6/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 6/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 7/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 7/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 8/02/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 8/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 9/02/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 9/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 10/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 10/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 11/02/2023 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 11/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 12/02/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 12/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 13/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 13/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 14/02/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 14/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 15/02/2023 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 15/02/2023 | Above 60dBA | 2 | 0.5 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 16/02/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 16/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 17/02/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 17/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 18/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 18/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 19/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 19/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 20/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 20/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 21/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 21/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |

| | | | | |
|------------|-------------|----|-------|--|
| 22/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 22/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 23/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 23/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 24/02/2023 | Below 55dBA | 49 | 12.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 24/02/2023 | Above 60dBA | 1 | 0.25 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 25/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 25/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 26/02/2023 | Below 55dBA | 49 | 12.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 26/02/2023 | Above 60dBA | 1 | 0.25 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 27/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 27/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 28/02/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 28/02/2023 | Above 60dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |

| MARCH 2023 - Daily Monitoring Results | | | | |
|---------------------------------------|----------------|--|------------------------------|--|
| Date | Classification | Total 15 minute intervals (07.00 to 20.00) | Total Hours (07.00 to 20.00) | LAeq(15min) < 55dBA for at least 3.25 hours. LAeq(15min) > 60dBA not more than 6.5 hours |
| 1/03/2023 | Below 55dBA | 41 | 10.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 1/03/2023 | Above 60 dBA | 8 | 2 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 2/03/2023 | Below 55dBA | 43 | 10.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 2/03/2023 | Above 60 dBA | 9 | 2.25 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 3/03/2023 | Below 55dBA | 44 | 11 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 3/03/2023 | Above 60 dBA | 3 | 0.75 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 4/03/2023 | Below 55dBA | 50 | 12.5 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 4/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 5/03/2023 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 5/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 6/03/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 6/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 7/03/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 7/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 8/03/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 8/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 9/03/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 9/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 10/03/2023 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 10/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 11/03/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 11/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 12/03/2023 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 12/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 13/03/2023 | Below 55dBA | 47 | 11.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 13/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 14/03/2023 | Below 55dBA | 26 | 6.5 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 14/03/2023 | Above 60 dBA | 13 | 3.25 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 15/03/2023 | Below 55dBA | 49 | 12.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 15/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 16/03/2023 | Below 55dBA | 46 | 11.5 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 16/03/2023 | Above 60 dBA | 6 | 1.5 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 17/03/2023 | Below 55dBA | 43 | 10.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 17/03/2023 | Above 60 dBA | 3 | 0.75 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 18/03/2023 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 18/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 19/03/2023 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 19/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 20/03/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |

| | | | | |
|------------|--------------|----|-------|--|
| 20/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 21/03/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 21/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 22/03/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 22/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 23/03/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 23/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 24/03/2023 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 24/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 25/03/2023 | Below 55dBA | 52 | 13 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 25/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 26/03/2023 | Below 55dBA | 46 | 11.5 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 26/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 27/03/2023 | Below 55dBA | 53 | 13.25 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 27/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 28/03/2023 | Below 55dBA | 24 | 6 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 28/03/2023 | Above 60 dBA | 13 | 3.25 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 29/03/2023 | Below 55dBA | 43 | 10.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 29/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 30/03/2023 | Below 55dBA | 43 | 10.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 30/03/2023 | Above 60 dBA | 3 | 0.75 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |
| 31/03/2023 | Below 55dBA | 51 | 12.75 | Compliant - fits the at least 3.25 hours below 55dB criteria |
| 31/03/2023 | Above 60 dBA | 0 | 0 | Compliant - fits the "less than 6.5 hours above 60dB" criteria |

APPENDIX B Off-site real-time vibration monitoring results

Figure 7-1 - Real-time vibration monitoring results at the Hickson Road wall, October 2022 (Monitor 1)

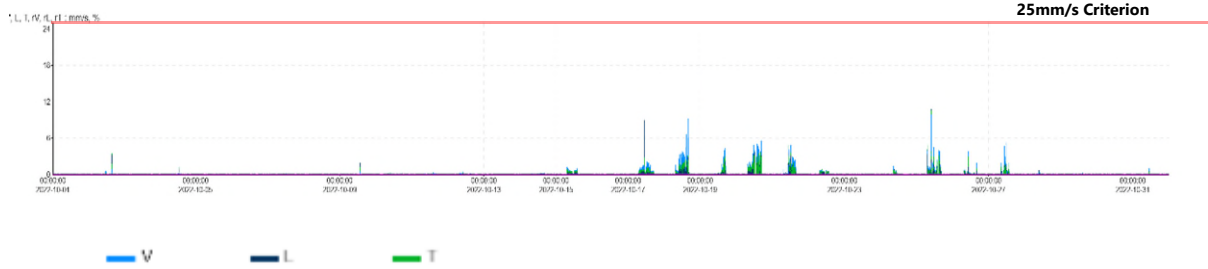


Figure 7-2 - Real-time vibration monitoring results at the Hickson Road wall, November 2022 (Monitor 1)



Figure 7-3 - Real-time vibration monitoring results at the Hickson Road wall, January 2023 (Monitor 1)

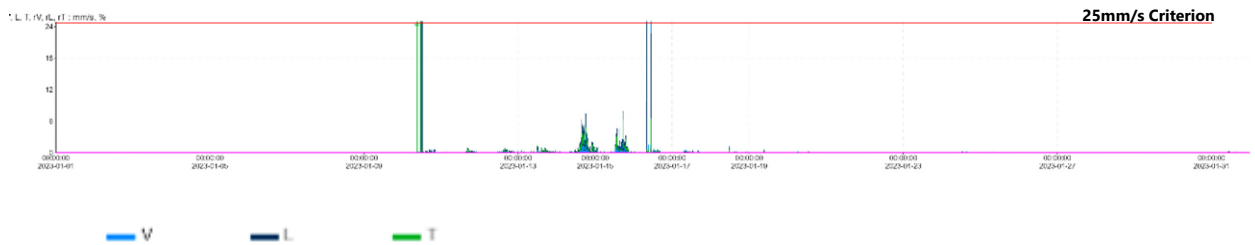
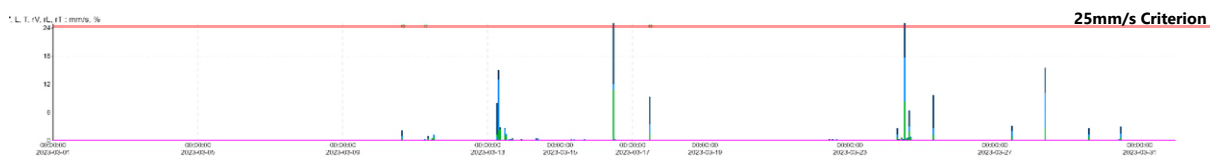


Figure 7-4 - Real-time vibration monitoring results at the Hickson Road wall, February 2023 (Monitor 1)

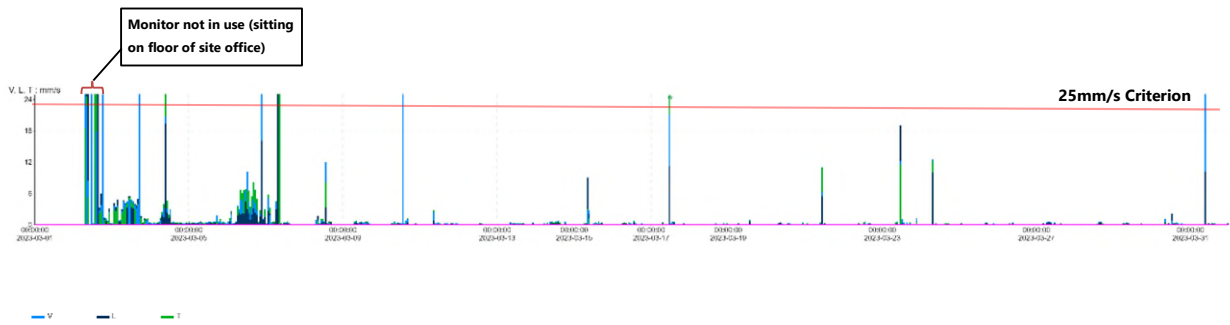


Figure 7-5 - Real-time vibration monitoring results at the Hickson Road wall, March 2023 (Monitor 1)



V L T

Figure 7-6 - Real-time vibration monitoring results at the Hickson Road wall, March 2023 (Monitor 2)

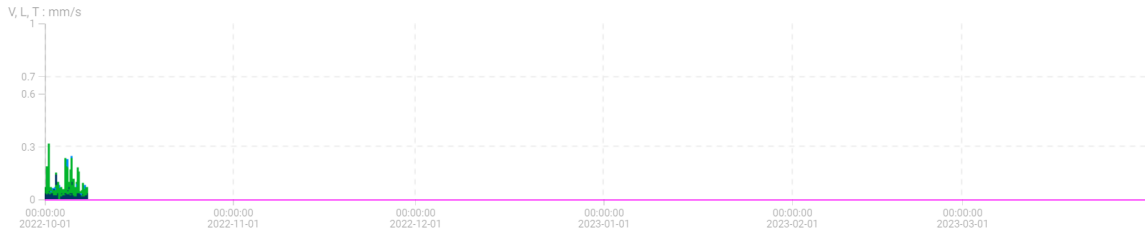


Notes:

- 1) All exceedances, after confirming with staff on site were found to be caused by a worker inadvertently bumping the monitor or attaching/detaching the monitor to the Hickson Road wall and not by construction activity (see Section 6.2).
- 2) No data was recorded for the month of December 2022 due to the monitor not having sufficient battery.

APPENDIX C On-site real-time vibration monitoring results

Figure 7-7 – On-site real-time vibration monitoring results, 25 Hickson Road



Notes:

- 1) Due to a hardware issue with the vibration monitor, only 7 days of data was recorded for the reporting period. It has been advised that an engineer is to conduct a visual inspection of 25 Hickson Road at the conclusion of the works.

APPENDIX D Calibration Certificates

Hexanode Calibration Certificate

21 Jul 2022

Thank you for choosing SiteHive for your realtime environmental management. This calibration certificate is valid for the device noted below.

Noise

The Hexanode sound level meter has been pressure calibrated by SiteHive using a NATA Certified (IEC 60942: Sound calibrators) Sound Level Calibrator, at 2 Foveaux Street, Surry Hills, NSW, 2010.

| Serial Number | Calibration Date | Calibration Value |
|---------------|------------------|-------------------|
| HEX-000053 | 11 May 2022 | 3.160758 |

| | |
|--------------------------|--|
| Accuracy: | Complies with precision requirements of IEC 61672 for Class 2 |
| Acoustic overload point: | 135 dB SPL |
| Frequency Range: | 20 Hz ~ 12.5 kHz |
| Frequency Rating: | Z, A and C weighting |
| Parameters (dB): | Frequency & time weighted integrations, statistical levels, and more |
| Direction of Arrival: | Device angle & cartesian angle (0°-360°) of dominant noise source |

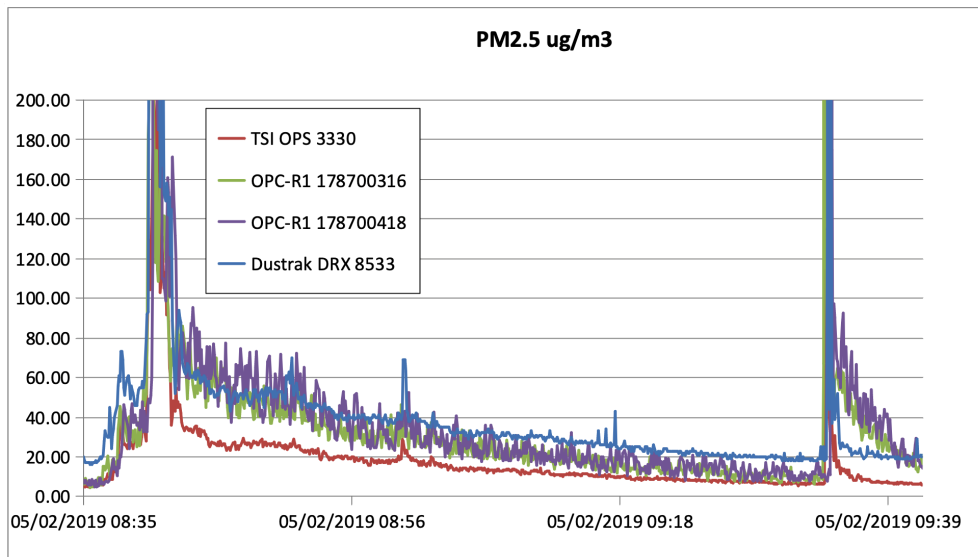
The SiteHive Hexanode uses innovative digital MEMS microphones, and as such cannot achieve full pattern approval in line with international standard IEC 61672, which is written for analogue condenser microphones. However, the SiteHive Hexanode sound level meter has been rigorously tested by the [National Measurement Institute \(NMI\)](#), the division of the Australian Federal Government Department of Industry, Science, Energy & Resources responsible for providing world-class measurement services to support a fair, safe, healthy and competitive Australia. The National Measurement Institute's (NMI) [acoustic, ultrasound and vibration measurement services](#) are the most accurate in Australia, and include providing the certification for NATA (National Association of Testing Authorities) testing facilities, who provide class certification for noise meters. NMI undertook all of the possible tests outlined in IEC 61672-2, with the Hexanode passing all precision requirements within the criteria of a class 2 device.

Dust

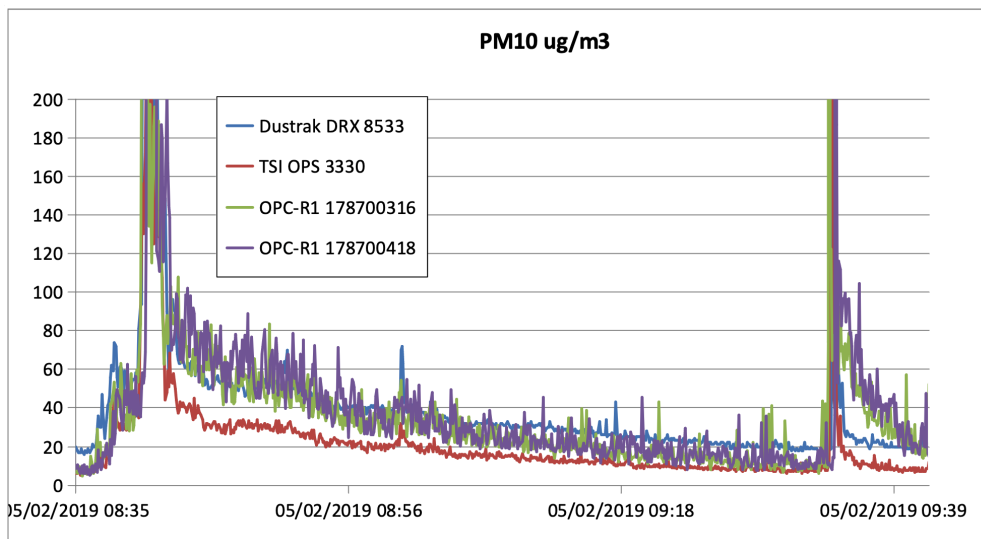
The Hexanode utilises the Alphasense R2 Optical Particle Sensor, to provide real-time dust measurements. Whilst the R2 does not have any gravimetric sampling capabilities, measurements can be adjusted using a K-Factor if one is available. SiteHive software will also provide measurements from the nearest Government air quality station for reference. The full data sheet for the Alphasense R2 is available [here](#).

| | | |
|-----------------------------|---|--------------|
| Particle range | µm spherical equivalent size (based on RI of 1.5) | 0.30 to 12.4 |
| Size categorisation | Number of software bins | 16 |
| Sampling interval | Histogram period (seconds) | 2 to 30 |
| Total flow rate | L/min (typical) | 0.24 |
| Max particle count rate | particles/second | 10,000 |
| Max coincidence probability | % concentration at 10 ⁶ particles/L | 0.7 |

Prior to deployment, the R2 is tested against [TSI Optical Particle Sizer 3330](#) and [DustTrak instruments](#).



Left: Comparison of PM2.5 monitoring by OPC-R2 sensor and TSI OPS 3330 and DustTrak instruments. All are set at 5s averaging and are sampling the ambient air of a workshop, the raw 3330 data has been used to calculate a PM figure.



Left: Comparison of PM10 monitoring by OPC-R2 sensor and TSI OPS 3330 and DustTrak instruments. All are set at 5s averaging and are sampling the ambient air of a workshop, the raw 3330 data has been used to calculate a PM figure.



CALIBRATION DOCUMENT

| Document No: | Print Date: | Location of Calibration: | Page No: |
|--------------|--------------|--------------------------|----------|
| Cal 83877 | 2021 -06 -01 | Älvsjö, Sweden | 1 / 1 |

Customer: Osterman

Device under Test: INFRA C22 Triaxial Vibration Monitor
 SN: **106847**
 Software Version: 2.5.0

Date of Calibration: 2021-06-01

Ambient Conditions: 23° C ± 2° C (73.4° F ± 3.6° F)

Method of Measurement: C311xB.
 (Reference frequency: 80Hz (16Hz), frequency sweep: 1-1000 Hz)

Equipment:
 Climate Sensor: Comet T7510 #12963113
 Reference Accelerometer: B&K 4381 #30964
 Reference Amplifier: B&K 2525 #1899363
 Climate Sensor: Comet T7510 #16962473
 Signal Generator: Keysight 33521B #MY52703295
 Digital Multimeter: Keysight 34465A #MY57505160
 Vibration System: Modal Shop K2075E040 #753
 Vibration System: Modal Shop K2075E-HT #638
 Signal Generator: Keysight 33521B #MY57700911
 Digital Multimeter: Agilent 34411A #MY48003408
 Reference Amplifier: B&K 2525 #2837570
 Reference Accelerometer: B&K 4381 #30849

Traceability: Reference equipment is calibrated at accredited laboratories, traceable to NIST, PTB or other National Metrology Laboratory.

Result of Measurement: Results are within specification limits of the method, which includes the hardest demands of all standards available in the geophone.

Recommended Interval of Calibration: 12 months.

Calibration performed by: Elanthi Tharma

Signature:

Elanthi Tharma



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 Accelerometer / Vibration Monitor

Calibration Date 2/05/2022

Operator AH

Client Name RENZO TONIN & ASSOCIATES (NSW) PTY LTD

Client Address LEVEL 1, 418A, ELIZABETH ST, SURRY HILLS, NSW, 2010

Test Item

Manufacturer Sigicom

Serial No #102479

Instrument Model Infra c22

Applicable Work Instruction:
WiTC-100 Sigicom Calibration

Reference Standards:

International Standard ISO8041:2005 Human response to vibration -Measuring instrumentation
International Standard ISO 16063-1:1998 Methods for the calibration of vibration and shock transducers - Part 1: Basic concepts
International Standard ISO 16063-21:2003 Methods for the calibration of vibration and shock transducers - Part 21: Vibration calibration by comparison to a reference transducer

Laboratory Equipment :

Electrodynamic shaker - Ground Zero GZNW 18XSPL
Power Amplifier – Behringer Model NU3000DSP
Signal generator
DT 9837A 4-channel data acquisition card
SpectraPLUS software
Reference accelerometer

Traceability:

The results of the tests and measurements included in this document are traceable via the test methods described in the applicable work instruction which references the listed international standards.
And by the use of the above lab equipment, which has been calibrated where required using reference equipment 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.

Calibration Notes:

Sensitivity of reference accelerometer and measurement chain was verified using a BK 4294 field accelerometer. The measured rms vibration level was within 0.1 dB of the reference level at 1000 rad/s.

Calibration Checked and Approved:

Print Name: Ariel Michael

Date: 2/05/2022





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A division of Renzo Tonin & Associates (NSW) Pty Ltd ABN 29 117 462 861

Certificate of Calibration Sound Level Meter

| | | | | | |
|------------------|--|--------|-------|----------|----|
| Calibration Date | 15/02/2022 | Job No | RB946 | 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 | Serial No | #A2A-05826-E0 #RTA06-016 |
| Microphone Make | GRAS | Model | 40AE | Serial No | #165479 |
| Preamplifier Make | NTI | Model | MA220 | Serial No | #2388 |
| Ext'n Cable Make | N/A | Model | N/A | Serial No | N/A |
| Accessories | Nil | | | Firmware | V4.20 |

| | |
|---------------|---|
| SLM Type | 1 |
| Filters Class | 1 |

| Environmental Conditions | Measured | |
|--------------------------|----------|-------|
| | Start | End |
| Air Temp. (°C) | 23.7 | 23.5 |
| Rel. Humidity (%) | 61.0 | 59.6 |
| Air Pressure (kPa) | 101.9 | 101.8 |

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 Accredited Laboratory Number
14966

Accredited for compliance with
ISO/IEC 17025 - Calibration

WORLD RECOGNISED
ACCREDITATION

Authorized Signatory:



Print Name: Ariel Michael Date: 15/02/2022

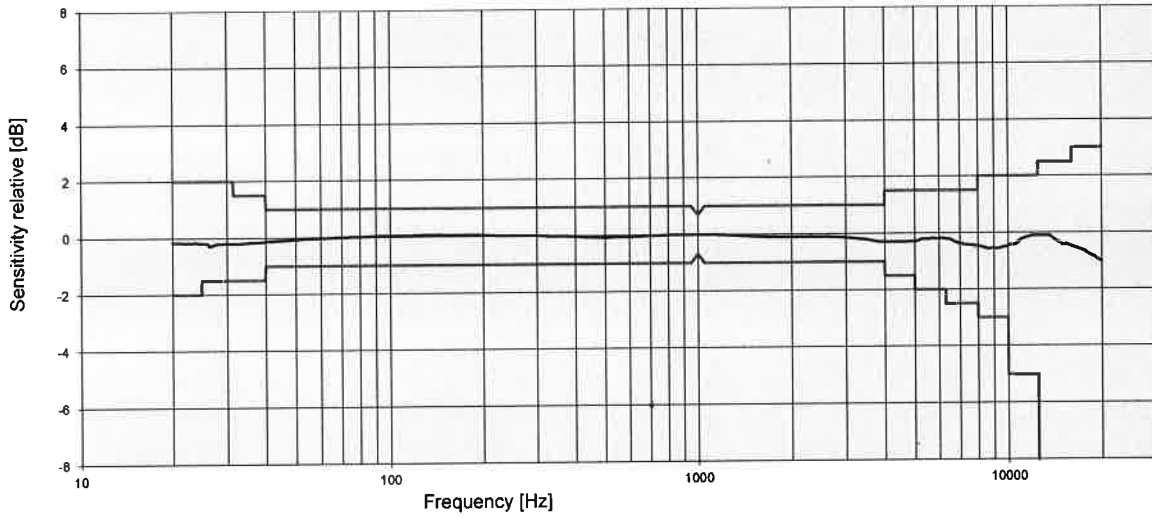
Template Document Name: RQT-05 SLM IEC61672 Verification (r75)





Frequency Response

Measurement Microphone **M2230** consisting of **MA220 PreAmplifier** S.No. **10617**
MC230A Capsule S.No. **A21889**



Sensitivity @ 1 kHz = 45.0 mV/Pa



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Certificate of Calibration Sound Level Meter

| | | | | | |
|------------------|--|--------|-------|----------|----|
| Calibration Date | 9/2/2022 | Job No | RB938 | 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-13529-E0 #RTA07-021 |
| Microphone Make | NTI | Model | MC230A | Serial No | #A14698 |
| Preamplifier Make | NTI | Model | MA220 | Serial No | #7064 |
| Ext'n Cable Make | NTI | Model | N/A | Serial No | N/A |
| Accessories | Nil | | | Firmware | 4.40 |

| | |
|---------------|---|
| SLM Type | 1 |
| Filters Class | 1 |

| Environmental Conditions | Measured | |
|--------------------------|----------|-------|
| | Start | End |
| Air Temp. (°C) | 23.3 | 24.7 |
| Rel. Humidity (%) | 58.0 | 58.3 |
| Air Pressure (kPa) | 100.5 | 100.5 |

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 Accredited Laboratory Number
14966

Accredited for compliance with
ISO/IEC 17025 - Calibration

WORLD RECOGNISED
ACCREDITATION

Authorized Signatory:



Print Name: Ariel Michael Date: 9/2/2022

Template Document Name: RQT-05 SLM IEC61672 Verification (r75)



The performance characteristics listed below were tested. The tests are based on the relevant clauses of IEC 61672-3:2013

| Tests Performed: | <i>Clause</i> | <i>Result</i> |
|--|---------------|---------------|
| <i>Absolute Calibration</i> | 10 | Pass |
| <i>Acoustical Frequency Weighting</i> | 12 | Pass |
| <i>Self-Generated Noise</i> | 11.1 | Observed |
| <i>Electrical Noise</i> | 11.2 | Observed |
| <i>Long Term Stability</i> | 15 | Pass |
| <i>Electrical Frequency Weightings</i> | 13 | Pass |
| <i>Frequency and Time Weightings</i> | 14 | Pass |
| <i>Reference Level Linearity</i> | 16 | Pass |
| <i>Range Level Linearity</i> | 17 | Not Available |
| <i>Toneburst</i> | 18 | Pass |
| <i>Peak C Sound Level</i> | 19 | Pass |
| <i>Overload Indicator</i> | 20 | Pass |
| <i>High Level Stability</i> | 21 | Pass |

Statement of Compliance: The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent organization responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC61672-1:2013.

A full technical report is available on request.



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Acoustic Calibration & Testing Laboratory

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A division of Renzo Tonin & Associates (NSW) Pty Ltd ABN 29 117 462 861

Certificate of Calibration Sound Level Calibrator

Calibration Date 2/06/2023 Job No RC077 Operator AM / KW
Client Name RENZO TONIN & ASSOCIATES (NSW) PTY LTD
Client Address LEVEL 1 418A ELIZABETH ST SURRY HILLS 2010

Test Item

Calibrator Make B&K Model 4231 Serial No #3027924 #XL2-C
Accessories N/A

Class (1 or 2) 1

| Environmental Conditions | Measured | |
|--------------------------|----------|--------|
| | Start | End |
| Temperature (degC) | 23.9 | 24.2 |
| Rel. Humidity (%) | 56.7 | 56.4 |
| Air Pressure (kPa) | 101.75 | 101.76 |

Applicable Standards:
IEC 60942:2017 "Electroacoustics - Sound calibrators"

Applicable Work Instruction:
RWI-08 SLM & Calibrator Verification

Laboratory Equipment :
GRAS Power Module type 12AK SN 1551616
GRAS 1/2" Pressure Microphone 40AD SN 252620 and preamplifier SN 292045
B&K4226 Multifunction Acoustic Calibrator SN 2288472
Agilent Digital Multimeter Model 34401A SN MY41004386
Vittrins Analyser Multi Instrument Pro V3.9 software
Behringer UCA222 USB Audio Interface U-Control

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 through an unbroken chain of calibrations, is ultimately traceable to the International System of Units (SI). 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 Calibrator 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 2.04.

Calibration Statement:
The sound calibrator has been shown to conform to the class 1 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. However, as public evidence was not available, from a testing organization responsible for pattern approval, to demonstrate that the model of sound calibrator conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2017, no general statement or conclusion can be made about conformance of the sound calibrator to the requirements of IEC 60942:2017.



NATA Accredited Laboratory
Number 14966

Accredited for compliance with
ISO/IEC 17025 - Calibration

Authorized Signatory:

Print Name: Ariel Michael

Date: 02/06/2023

Template Document Name: RQT-03 (rev 70) Calibrator 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 Calibrator

Calibration Date 11/01/2023 **Job No** RC035 **Operator** AM
Client Name RENZO TONIN & ASSOCIATES (NSW) PTY LTD
Client Address LEVEL 1 418A ELIZABETH ST SURRY HILLS 2010

Test Item

Calibrator Make B&K **Model** 4231 **Serial No** #2162834 #SB1
Accessories N/A

Class (1 or 2) 1

| Environmental Conditions | Measured | |
|--------------------------|----------|--------|
| | Start | End |
| Temperature (degC) | 23.5 | 24 |
| Rel. Humidity (%) | 55.2 | 54.6 |
| Air Pressure (kPa) | 100.76 | 100.76 |

Applicable Standards:
IEC 60942:2017 "Electroacoustics - Sound calibrators"

Applicable Work Instruction:
RWi-08 SLM & Calibrator Verification

Laboratory Equipment :
GRAS Power Module type 12AK SN 1551616
GRAS 1/2" Pressure Microphone 40AD SN 252620 and preamplifier SN 292045
B&K4226 Multifunction Acoustic Calibrator SN 2288472
Agilent Digital Multimeter Model 34401A SN MY41004386
Audio Tester AUDT30 v3.0 software
Behringer UCA222 USB Audio Interface U-Control

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 Calibrator Verification - Summary of Tests" page for an itemised list of results for each test.

Uncertainty:

Calibration Statement:
The sound calibrator has been shown to conform to the class 1 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. However, as public evidence was not available, from a testing organization responsible for pattern approval, to demonstrate that the model of sound calibrator conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2017, no general statement or conclusion can be made about conformance of the sound calibrator to the requirements of IEC 60942:2017.



NATA Accredited Laboratory
Number 14966

Accredited for compliance with
ISO/IEC 17025 - Calibration

Authorized Signatory:

Print Name: Ariel Michael

Date: 11/01/2023

Template Document Name: RQT-03 (rev 70) Calibrator Verification





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A division of Renzo Tonin & Associates (NSW) Pty Ltd ABN 29 117 462 861

Certificate of Calibration Sound Level Calibrator

Calibration Date 11/01/2023 **Job No** RC035 **Operator** AM EF
Client Name RENZO TONIN & ASSOCIATES (NSW) PTY LTD
Client Address LEVEL 1 418A ELIZABETH ST SURRY HILLS 2010

Test Item

Calibrator Make B&K **Model** 4231 **Serial No** 2545601
Accessories N/A

Class (1 or 2) 1

| Environmental Conditions | Measured | |
|--------------------------|----------|-------|
| | Start | End |
| Temperature (degC) | 23.4 | 23.4 |
| Rel. Humidity (%) | 53.9 | 52.1 |
| Air Pressure (kPa) | 100.8 | 100.8 |

Applicable Standards:
IEC 60942:2017 "Electroacoustics - Sound calibrators"

Applicable Work Instruction:
RWi-08 SLM & Calibrator Verification

Laboratory Equipment :
GRAS Power Module type 12AK SN 1551616
GRAS 1/2" Pressure Microphone 40AD SN 252620 and preamplifier SN 292045
B&K4226 Multifunction Acoustic Calibrator SN 2288472
Agilent Digital Multimeter Model 34401A SN MY41004386
Audio Tester AUDT30 v3.0 software
Behringer UCA222 USB Audio Interface U-Control

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 Calibrator Verification - Summary of Tests" page for an itemised list of results for each test.

Uncertainty:

Calibration Statement:
The sound calibrator has been shown to conform to the class 1 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. However, as public evidence was not available, from a testing organization responsible for pattern approval, to demonstrate that the model of sound calibrator conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2017, no general statement or conclusion can be made about conformance of the sound calibrator to the requirements of IEC 60942:2017.



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