



# Noise and Vibration Construction Monitoring Report August 2025 to January 2026

SMWSASSM-PLD-1NL-NL000-NV-RPT-000005

Parklife Metro D&C

## Document Approval

Revision	Author	Date	Comments	Reviewed by	Approved by
00	[REDACTED]	08/05/2026	Final	[REDACTED] [REDACTED]	[REDACTED]
<b>Signature</b>	[REDACTED]			[REDACTED]	[REDACTED]

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## Glossary/Abbreviations

Abbreviation	Expanded Text
<b>BRD</b>	Bradfield Station
<b>CEMF</b>	Construction Environmental Management Framework
<b>CNVS</b>	Sydney Metro Construction Noise and Vibration Standard
<b>Condition</b>	Planning Minister's Condition of Approval
<b>Construction</b>	Includes all work required to construct the CSSI as described in the documents listed in Conditions A1, including commissioning trials of equipment and temporary use of any part of the CSSI, but excluding Low Impact Work.
<b>dB(A)</b>	A-weighted decibels is an expression of the relative loudness of sounds in the air as perceived by the human ear.
<b>DNVIS</b>	Detailed Noise and Vibration Impact Statement
<b>EPA</b>	NSW Environmental Protection Authority – The Appropriate Regulatory Authority for project activities on NSW land (off-airport land), as defined in Section 6(2)(c) of the POEO Act 1997
<b>EPL</b>	Environmental Protection Licence
<b>ER</b>	Independent Environmental Representative
<b>LA<sub>eq</sub></b>	Equivalent Continuous Sound Level
<b>LDN</b>	Luddenham Station
<b>LP or SPL</b>	Sound Pressure Level
<b>LW or SWL</b>	Sound Power Level
<b>LWD</b>	Linewide
<b>NCA</b>	Noise Catchment Area
<b>NML</b>	Noise Management Level
<b>NVCMR</b>	Noise and Vibration Construction Monitoring Report
<b>NVMP</b>	Noise and Vibration Monitoring Program
<b>OHE</b>	Orchard Hills Station
<b>OOHW</b>	Out of Hours Works
<b>Parklife Metro (PLM)</b>	Consortium comprising entities of Plenary, Siemens, RATP Dev and Webuild as the Applicant for the Sydney Metro Western Sydney Airport SSTOM Package.
<b>Parklife Metro D&amp;C</b>	Parklife Metro Design and Construct. Consists of Webuild S.P.A, Siemens Mobility Pty Ltd and Richard Crookes Constructions Pty Ltd. Responsible for the construction of SSTOM Works
<b>RBL</b>	Rating Background Noise Level
<b>SMF</b>	Stabling and maintenance facility
<b>SMWSA</b>	Sydney Metro Western Sydney Airport
<b>SPL</b>	Sound Pressure Level
<b>SSTOM</b>	Stations, Systems, Trains, Operations and Maintenance
<b>STM</b>	St Marys Station
<b>SWL</b>	Sound Power Level
<b>the Project</b>	Sydney Metro Western Sydney Airport

# 1 Introduction

## 1.1 Background

Sydney Metro is Australia's biggest public transport program comprising four main packages of work including Metro North-West Line, Sydney Metro City and Southwest, Sydney Metro West, and Sydney Metro Western Sydney Airport (SMWSA, the Project). The SMWSA will become the transport spine for Greater Western Sydney, connecting communities and travellers with the new Western Sydney International (Nancy-Bird Walton) Airport and the growing region.

The Project involves the construction and operation of a new metro railway line around 23km in length to connect Western Sydney suburbs from Bradfield in the south with St Marys in the north. The alignment includes a combination of tunnel, surface, bridges and viaduct sections, and comprises of six new metro stations between St Marys and Bradfield Station, as well as a stabling and maintenance facility and operational control centre to support the operation of the new metro railway line (refer to Figure 1).

Parklife Metro D&C (PLM) has been engaged to deliver the Stations, Systems, Trains, Operations and Maintenance (SSTOM) works. The scope of the SSTOM package comprises:

- construction of six new stations
- installation of tracks, signalling, mechanical and electrical systems
- supplying new driverless trains
- construction of stabling and maintenance facility at Orchard Hills
- operation and maintenance of the line and its assets, and
- handback of operations and maintenance at the end of term.

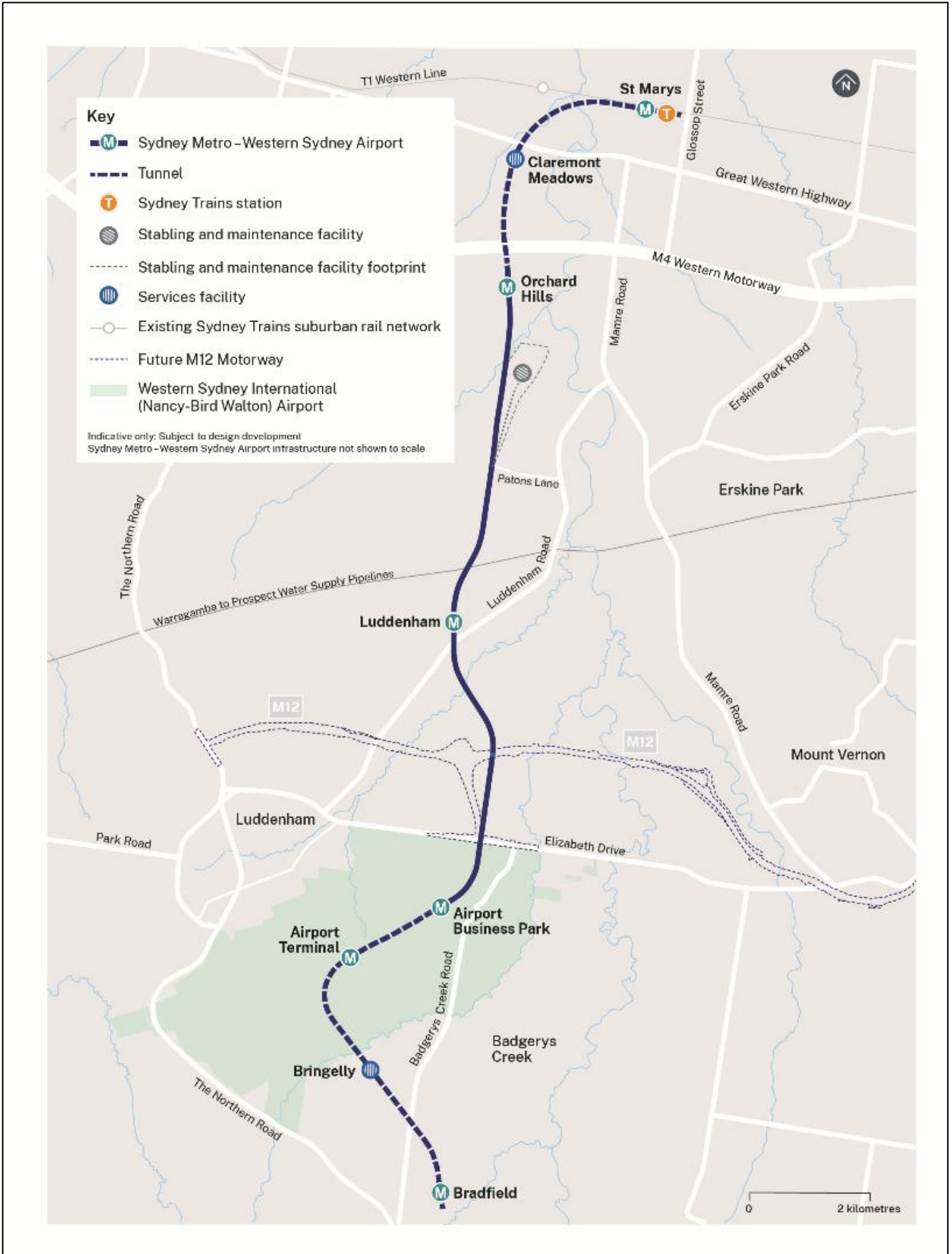


FIGURE 1 OVERVIEW OF SMWSA PROJECT

### 1.1.1 Scope of report

This Noise and Vibration Construction Monitoring Report (NVCMR) has been prepared for works approved under the Infrastructure Approval Critical State Significant Infrastructure (CSSI) -10051 associated with the delivery of the off-airport portion of the SMWSA SSTOM Works. This report provides the results of noise and vibration monitoring undertaken as part of the Noise and Vibration Monitoring Program (NVMP) during the reporting period from 1 August 2025 to 31 January 2026. This noise and vibration construction monitoring report is the fifth issue since PLM construction works commenced in 2023.

The result of the monitoring is readily available in this report to the construction team, the proponent and Independent Environmental Representative (ER) and is provided to the Planning Secretary and Environment Protection Authority EPA upon request as per Condition C15 of CSSI 10051. This monitoring report will be submitted to the Planning Secretary, ER and relevant regulatory agencies in accordance with Condition C22 of CSSI 10051.

TABLE 1 REQUIREMENTS RELEVANT TO NOISE AND VIBRATION MONITORING REPORT

Condition	Requirement
C14	<p>Each Construction Monitoring Program must provide:</p> <ul style="list-style-type: none"> <li>(a) details of baseline data available including the period of baseline monitoring;</li> <li>(b) details of baseline data to be obtained and when;</li> <li>(c) details of all monitoring of the project to be undertaken;</li> <li>(d) the parameters of the project to be monitored;</li> <li>(e) the frequency of monitoring to be undertaken;</li> <li>(f) the location of monitoring;</li> <li>(g) the reporting of monitoring results and analysis results against relevant criteria;</li> <li>(h) details of the methods that will be used to analyse the monitoring data;</li> <li>(i) procedures to identify and implement additional mitigation measures where the results of the monitoring indicated unacceptable project impacts;</li> <li>(j) a consideration of SMART principles;</li> <li>(k) any consultation to be undertaken in relation to the monitoring programs; and</li> <li>(l) any specific requirements as required by Conditions C15 to C16.</li> </ul>
C15	<p>The Noise and Vibration Construction Monitoring Program must include:</p> <ul style="list-style-type: none"> <li>(a) noise and vibration monitoring at representative residential and other locations (including at the worst- affected residences), subject to property owner approval, to confirm construction noise and vibration levels;</li> <li>(b) monitoring undertaken during the day, evening and night-time periods throughout the construction period and cover the range of activities being undertaken;</li> <li>(c) method and frequency for reporting monitoring results; and</li> <li>(d) a process to undertake real time noise and vibration monitoring.</li> </ul> <p>The results of the monitoring must be readily available to the construction team, the Proponent and ER. The Planning Secretary and EPA must be provided with access to the results on request.</p>
C22	<p>The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, ER and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program.</p>
E38	<p>Work must only be undertaken during the following hours:</p> <ul style="list-style-type: none"> <li>(a) 7:00am to 6:00pm Mondays to Fridays, inclusive;</li> <li>(b) 8:00am to 1:00pm Saturdays; and (c) at no time on Sundays or public holidays.</li> <li>(c) at no time on Sundays or public holidays.</li> </ul>

E43	<p>Mitigation measures must be implemented with the aim of achieving the following construction noise management levels and vibration criteria:</p> <p>(a) construction ‘Noise affected’ noise management levels established using the Interim Construction Noise Guideline (DECC, 2009);</p> <p>(b) preferred vibration criteria established using the Assessing vibration: a technical guideline (DEC, 2006) (for human exposure);</p> <p>(c) Australian Standard AS 2187.2 - 2006 “Explosives - Storage and Use - Use of Explosives” (for human exposure);</p> <p>(d) BS 7385 Part 2-1993 “Evaluation and measurement for vibration in buildings Part 2” as they are “applicable to Australian conditions”; and</p> <p>(e) the vibration limits set out in the German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures (for structural damage).</p> <p>Any work identified as exceeding the noise management levels and / or vibration criteria must be managed in accordance with the Noise and Vibration CEMP Sub-plan.</p>
E44	<p>All reasonable and feasible mitigation measures must be applied when the following residential ground-borne noise levels are exceeded:</p> <p>(a) evening (6:00 pm to 10:00 pm) — internal LAeq(15 minute): 40 dB(A); and</p> <p>(b) night (10:00 pm to 7:00 am) — internal LAeq(15 minute): 35 dB(A).</p> <p>The mitigation measures must be outlined in the Noise and Vibration CEMP Sub-plan, including in any Out-of-Hours Work Protocol, required by Condition E42.</p>
E47	<p>Detailed Noise and Vibration Impact Statements (DNVIS) must be prepared for any work that may exceed the NMLs, vibration criteria and / or ground-borne noise levels specified in Conditions E43 and E44 at any residence outside construction hours identified in Condition E38, or where receivers will be highly noise affected or subject to vibration levels above those otherwise determined as appropriate by a suitably qualified structural engineer under Condition E87. The DNVIS must include specific mitigation measures identified through consultation with affected sensitive land user(s) and the mitigation measures must be implemented for the duration of the works. A copy of the DNVIS must be provided to the ER before the commencement of the associated works. The Planning Secretary and the EPA may request a copy (ies) of the DNVIS.</p>
CEMF 3.16a	<p>Issue specific environmental monitoring will be undertaken as required or as additionally required by any approval, permit or licence conditions.</p>
CNVS 6.1	<p>Measurements of sound power level.</p>
CNVS 6.2	<p>Monitoring to be undertaken where a DNVIS predicts NMLs will be exceeded.</p>
CNVS 5.1	<p>Where it has been identified that specific construction activities are likely to exceed the relevant noise or vibration goals, noise or vibration monitoring may be conducted at the affected receiver(s) or a nominated representative location (typically the nearest receiver where more than one receiver have been identified). Monitoring can be in the form of either unattended logging or operator attended surveys. The purpose of monitoring is to inform the relevant personnel when the noise or vibration goal has been exceeded so that additional management measures may be implemented.</p>
<b>EPL - 21807</b>	
L3.1	<p>The licensee must minimise noise and vibration impacts at residences and other sensitive land uses. To meet the requirements of this condition the licensee must:</p> <p>a) implement the guidance in the Interim Construction Noise Guideline (DEC, 2009) and the Assessing Vibration: a technical guideline (DEC, 2006);</p> <p>b) implement all reasonable and feasible measures to minimise noise impacts in accordance with the Interim Construction Noise Guideline (DEC, 2009); and</p> <p>c) implement vibration mitigation in accordance with the Assessing Vibration: a Technical Guideline (DEC, 2006).</p> <p>In this condition, ‘reasonable’ and ‘feasible’, in relation to noise management, have the same meaning as defined in the Interim Construction Noise Guideline (DEC, 2009).</p>

## 2 Monitoring

This section provides a summary of the monitoring completed in the six-month reporting period from the start of August 2025 to the end of January 2026.

PLM construction activities subject to noise monitoring within the reporting period included deliveries, concrete pouring, earth works, batch plant operations, railway track construction, steel fixing, ventilation fans and crane lifting associated with tunnel and underground station fitout. Construction activities undertaken during the reporting period are summarised in Table 2.

Detailed monitoring results for each program are presented in the Appendix A.

TABLE 2 CONSTRUCTION ACTIVITIES DURING THIS REPORTING PERIOD

Site	Construction Activities
St Marys Station	<ul style="list-style-type: none"> <li>• General operation of ancillary facility*</li> <li>• Station Box – Formwork Reinforced Steel Pour (FRP)*</li> <li>• Station Box fitout*</li> <li>• Tunnel fitout*</li> <li>• Precast beams and installations*</li> <li>• Crane lifts*</li> <li>• Water treatment plant operation*</li> </ul>
Claremont Meadows	<ul style="list-style-type: none"> <li>• Tunnel fitout*</li> <li>• Water treatment plant operation*</li> <li>• Ventilation operations*</li> </ul>
Orchard Hills Station	<ul style="list-style-type: none"> <li>• General operation of ancillary facility</li> <li>• Station Box – FRP*</li> <li>• Batch plant operation*</li> <li>• Precast beam delivery and installation*</li> <li>• Rail activities*</li> <li>• Tunnel fitout*</li> <li>• Deliveries*</li> <li>• Crane lifts*</li> <li>• Escalator Install*</li> <li>• Services building works</li> <li>• Mechanical, electrical and plumbing (MEP) services installation</li> <li>• Concrete crushing</li> </ul>

Stabling Maintenance Facility	<ul style="list-style-type: none"> <li>• General operation of ancillary facility*</li> <li>• Bulk earthworks</li> <li>• Basin excavation</li> <li>• Power supply installation*</li> <li>• In-ground utility installation*</li> <li>• FRP*</li> <li>• Structural building</li> <li>• Track and rail construction</li> <li>• Internal building fitout</li> <li>• Deliveries</li> </ul>
Luddenham Station	<ul style="list-style-type: none"> <li>• General operation of ancillary facility</li> <li>• Bulk earthworks</li> <li>• In-ground utility installation</li> <li>• Station structures FRP</li> <li>• Precinct works</li> <li>• Delivery of Equipment*</li> </ul>
Bradfield Station	<ul style="list-style-type: none"> <li>• General operation of ancillary facility*</li> <li>• Station Box – FRP*</li> <li>• Precast beam delivery and installation*</li> <li>• Tunnel and underground station box fitout*</li> <li>• Deliveries</li> <li>• Bulk Earthworks</li> <li>• In-ground utility installation</li> </ul>
Bringelly Service Facility	<ul style="list-style-type: none"> <li>• General operations of service facility*</li> <li>• Tunnel support service and fitout works*</li> <li>• Operation of ventilation fans*</li> </ul>
Linewide	<ul style="list-style-type: none"> <li>• In-ground utility installation</li> <li>• Active Transport Corridor - road and bridge construction</li> <li>• Galvanised steel troughing (GST) install</li> <li>• FRP works*</li> <li>• Track and rail installation*</li> </ul>

NOTE \* REFERS TO WORKS UNDERTAKEN OUT OUTSIDE OF STANDARD CONSTRUCTION HOURS

## 2.1 Attended Noise Monitoring

Attended noise monitoring is required to validate noise predictions, including Noise Management Level (NML) compliant works, as well as measure the effectiveness of mitigation measures outlined in the management plans and detailed noise and vibration impact statement (DNVIS). It is undertaken at the first opportunity of starting a new OOH activity, where a change of construction methods or techniques is anticipated to result in increased noise and as required by the EPL or a DNVIS. Noise monitoring may also be conducted in response to complaints. Ten (10) noise complaints were received for this project during the reporting period. No noise monitoring requests were made by the EPA during the reporting period.

All noise monitoring conducted both during standard construction hours and out of hours (OOH), demonstrated compliance with DNVIS predicted noise levels within the reporting period. All exceedances in LAeq 15 minute attended noise monitoring results were confirmed to be derived from external sources, unrelated to PLM construction. All complaint-triggered monitoring was completed and confirmed that PLM's works were compliant with DNVIS predictions. Out of the ten (10) complaints, two (2) of the complaints triggered additional noise monitoring to verify that works were not exceeding predictions due to unattended monitoring being unavailable at these locations. The attended monitoring verified that the works were compliant with predicted levels. Ample monitoring data from attended and unattended monitoring was already available for all other complaints to verify compliance with DNVIS predictions.

One non-compliance occurred when rail pulling at SMF was done without an OOH permit due to a project team misunderstanding. The works, about 410 m from the nearest residence with tree coverage, were below NML based on unattended monitoring data. All other out of standard construction hours works were completed under an out of hours permit which outlines the additional noise mitigation measures triggered for that construction activity. During inspections all reasonable and feasible methods to mitigate noise impacts were implemented as required by the DNVIS and NVMP.

High impact works that occurred during the reporting period included concrete crushing at Orchard Hills North and road sawing as part of utilities investigations works at St Marys. Attended monitoring was conducted to verify the noise impacts and the results confirmed that these high impact work activities were measured below the Highly Noise Affected (HNA) level at the noise monitoring locations. All monitoring locations are selected so that noise levels measured are representative of at receiver levels.

Summary results of all attended noise monitoring conducted by PLM in the reporting period are provided in Appendix A (Attended activity-specific noise monitoring).

All monitoring locations are presented in Appendix B and the latest NATA accredited noise calibration certificates are provided in Appendix D, earlier calibration certificates are available within previous reports.

## 2.2 Unattended noise monitoring

The unattended loggers are in targeted areas based on risk assessments to stakeholders from the planned works with indicative locations identified within the relevant DNVIS. The unattended noise monitoring devices collect audio and a photo of the potential noise exceedance. This is evaluated to determine the source and cause.

Within the reporting period, PLM set up unattended noise monitors at Linewide Portion 1 North and Portion 1 South, based on these sites undertaking the most work outside of standard construction hours. Whilst data can be used for targeted unattended noise monitoring, PLM conducted all targeted monitoring via attended measurements. Unattended noise monitoring summary is provided in Appendix A (Unattended site monitoring data).

As shown in Appendix A, based on the LAeq measurement averages were all below NML during this monitoring period. The occasional elevated noise levels (exceeding predictions by greater than 2dB) were investigated during the reporting period with all attributable to external sources, including animal activity, aircraft movements, non-PLM human activity, and rainfall in the surrounding area.

## 2.3 Plant/Equipment Verification

Verification spot checks are performed for noise-intensive plant where it is required in the NVMP to check noise levels against the manufacturer's specifications. These checks are conducted on significant noise generating items of plant and would be monitored at first opportunity. Summary of sound power level (SWL) checks for plant and equipment are listed in Table 3. In many instances, distances greater than 7m were required due to safety restrictions and the maximum allowable levels were adjusted accordingly in these instances.

During this reporting period, sound power level checks indicated no exceedance of maximum allowable  $LA_{eq}$  for the equipment listed in Table 3.

TABLE 3 SUMMARY OF PLANT/EQUIPMENT NOISE VERIFICATION AGAINST APPROVED MAXIMUM SOUND POWER LEVELS

Date	Machinery	Activity location	Recorded SWL (dBA)	Maximum SWL (dBA) <sup>1</sup>	Exceedance of Predicted (dBA)	Comments
2/10/2025	Crawler Crane <300 tonne	Bringelly	94	101	No	Crawler crane is compliant. Measurement was taken from 10m away due to safety considerations. Monitoring was completed from a safe and compliant distance.
10/11/2025	Concrete Truck and Concrete Mixer Truck	Claremont Meadows	101	108	No	Concrete truck and agi are compliant. Measurement was taken from 10m away due to safety considerations. Monitoring was completed from a safe and compliant distance.
7/11/2025	Concrete Truck	Luddenham	98	109	No	Concrete truck is compliant. Measurement was taken from 7m away. Monitoring was completed from a safe and compliant distance.
7/11/2025	Pile Boring Rig < 800 mm diameter	Luddenham	110	112	No	Piling rig is compliant. Measurement was taken from 10m away due to safety considerations. Monitoring was completed from a safe and compliant distance.
28/11/2025	Concrete crusher	Orchard Hills	114	123	No	Concrete crusher is compliant. Measurement was taken from 10m away due to safety considerations. Monitoring was completed from a safe and compliant distance.
11/12/2025	Small Generator	Luddenham	98	103	No	Generator is compliant. Measurement was taken from 7m away. Monitoring was completed from a safe and compliant distance.
11/12/2025	Rotary Hammer	Luddenham	98	99	No	Rotary hammer is compliant. Measurement was taken from 7m away. Monitoring was completed from a safe and compliant distance.

1. MAXIMUM ALLOWABLE SOUND POWER LEVELS AS LISTED IN THE NOISE AND VIBRATION MANAGEMENT PLAN.

## 2.4 Vibration monitoring

Vibration monitoring is required whenever construction activities such as vibration compaction, rock breaking or work involving vibration intensive plant have the potential to adversely impact human comfort or compromise nearby structures, sensitive buildings, or critical infrastructure. Monitoring is also required to be undertaken in response to

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specific triggers such as complaints, exceedances of established criteria, or as identified through the project's detailed vibration impact assessments.

No unattended or structural vibration monitoring has been triggered in the DNVIS approved at the time of this report. During this reporting period, there was no human comfort trigger to conduct vibration monitoring required for the construction activities nearest receivers.

## 2.5 Detailed Noise and Vibration Impact Statement (DNVIS)

DNVIS are required for any works that may exceed the NMLs, vibration criteria and / or ground-borne noise levels in Condition E43 and E44 at any residence outside construction hours specified in condition E38 or where receivers will be highly noise affected or subject to vibration levels above those determined by a suitably qualified structural engineer. The DNVIS includes specific mitigation measures identified through consultation with affected sensitive land user(s) and mitigation measures that must be implemented for the duration of works in accordance with the Interim Construction Noise Guideline (DEC, 2009).

DNVIS are required for approvals where different construction hours are permitted or required under an EPL in force in respect of the CSSI 10051 Conditions of Approval.

Noise or vibration monitoring is conducted at the affected receivers or nominated representative locations (typically the nearest receiver where one or more receivers are affected that are identified). Monitoring is usually in the form of attended monitoring but can be in the form of unattended logging. PLM uses noise monitoring data to indicate when additional noise management measures are required.

A summary for DNVIS applicable to this reporting period is provided listed in Table 4. They give an indication of potential works that may exceed NML, vibration criteria and/or ground-borne noise levels.

TABLE 4 DNVIS APPLICABLE DURING THE REPORTING PERIOD

Title	Revision	Approval Date	Site	Scope of work
<b>St Marys Station – Concrete and Utility Works</b>	03	26/11/2025	St Marys	Predominantly concrete work, utilities work, crane operations
<b>Claremont Meadows Services Facility – OOH Works</b>	01	13/10/2025	Claremont Meadows	Tunnel fit-out and supporting surface works, deliveries and ventilation
<b>Orchard Hills Station – OHE Batch Plant and Concrete OOH</b>	05	8/04/2025	Orchard Hills	DNVIS updated to include tunnel fitout and supporting surface works, precast beam installation, and station precinct activities.
<b>Stabling and Maintenance Facility</b>	03	19/12/2025	SMF	Concrete works, utility and bulk power supply installation
<b>Linewide</b>	00	31/01/2024	Linewide Off-Airport	DNVIS approved for track work.
<b>Bringelly Services Facility</b>	01	22/12/2025	Bringelly	Tunnel fit-out, update of plant operating on site, deliveries and ventilation
<b>Bradfield Station – Concrete Works OOH</b>	04	7/11/2024	Bradfield	Predominantly concrete works and crane operations

## 2.6 Conclusion

Summary results of attended and unattended noise monitoring conducted by PLM during the reporting period (Appendix A), demonstrates no confirmed PLM-attributable noise or vibration exceedances were identified during the reporting period.

## 2.7 Correction Log

It is possible from time to time for incorrect data to get published in good faith. As soon as practicable after the licensee becomes aware that the published noise monitoring data is incorrect or misleading, licensees must then publish a correction log to correct this data that is incorrect or misleading.

There are no matters included in the correction log for this reporting period.

# Appendices

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Noise and Vibration Construction Monitoring Report August 2025 to January 2026

# Appendix A Noise Monitoring Results

## Attended activity-specific noise monitoring

Full field notes for attended noise monitoring including weather records are retained on file with the key data being summarised in the table below.

Date	Time	Time Period	Construction Activity <sup>2</sup>	Site Location	Monitoring Location/Address/DNVIS ID	Monitoring trigger	NCA <sup>1</sup>	NML dB(A)	Predicted LAeq(15min) dB(A)	Recorded LAeq(15min) dB(A)	LAmx dB(A)	LA10	LA90	PLM Works Compliant with PNL	Comments
13/08/2025	21:28	OOH-Evening	Steel Fixing	OHE	40 Lansdowne Road, Orchard Hills	Routine monthly	8	49	53	53.1	76.3	55.2	42.1	Yes	Construction noise audible and below predicted levels. Attended monitoring LAeq 15 minute attended noise monitoring results exceeded the predicted DNVIS levels however these noise sources were confirmed to be from background steady traffic flow along Kent Road and Lansdowne Road. Elevated spikes in noise levels were from heavy vehicle traffic along Kent Road passing through periodically and not related to PLM works. PLM works were noted to be compliant with the DNVIS prediction ranging between 43-50 dB during breaks in traffic and the L90 result reflects this.
13/08/2025	22:04	OOH-Night	Track Construction / CSR	LWD / SMF	9 Bordeaux Place, Orchard Hills	Routine	8	45	55	38	47.9	39.2	36.6	Yes	Construction noise inaudible and below predicted levels, residential ambience was dominant noise source. PLM works compliant.
13/08/2025	22:53	OOH-Night	Concrete pouring	BRD	145 Badgerys Creek Road, Bradfield	Routine monthly	12	39	47	44.4	68.7	46	41	Yes	Construction noise faintly audible and below predicted levels, residential ambience was dominant noise source. PLM works compliant.
15/08/2025	22:43	OOH-Night	Ventilation fans	BSF	38 Derwent Road, Bringelly	First opportunity	12	39	53	45.3	65.2	45.8	44.6	Yes	Construction noise faintly audible and below predicted levels. PLM works compliant.
27/08/2025	6:14	OOH-Night	Concrete Batch Plant	OHE	40 Lansdowne Road, Orchard Hills	Routine monthly	8	45	45	59.4	85.6	57.2	46.1	Yes	Construction noise faintly audible but was noted to be below background ambient noise sources and below predicted levels during three short breaks in traffic, ranging between 35 and 40 dB. Birds and steady traffic flow along Kent Road and Lansdowne Road was dominant noise sources. The elevated L90 level is reflective of the shoulder period traffic during and bird noise dominance throughout the noise measurement.
27/08/2025	6:43	OOH-Night	Concrete pouring	STM	4 Chesham Street, St Marys	Routine monthly	3	41	53	48.9	63.8	50.6	45.8	Yes	Construction noise audible and below predicted levels, traffic was dominant noise source. PLM works compliant.
2/09/2025	21:00	OOH-Evening	Steel Fixing	OHE	40 Lansdowne Road, Orchard Hills	Routine monthly	8	49	53	47.4	67.1	49.3	38.4	Yes	Construction noise audible and below predicted levels, traffic was dominant noise source. PLM works compliant.
2/09/2025	21:38	OOH-Evening	Rail Alignment	LDN / LWD	654 Luddenham Road, Luddenham	First opportunity	10	35	51.8	57.8	81.5	55.5	41.3	Yes	Construction noise audible and below predicted levels ranging between 40-42dB as determined during breaks in traffic. Steady traffic flow along Luddenham Road was dominant noise source as reflected by LAeq and L90. PLM works compliant.
2/09/2025	22:00	OOH-Night	Rail Alignment	LDN / LWD	654 Luddenham Road, Luddenham	First opportunity	10	35	51.8	57.4	84.6	53.8	42.1	Yes	Construction noise inaudible as determined during breaks in traffic. Steady traffic flow along Luddenham Road was dominant noise source as reflected by LAeq and L90. PLM works compliant.
10/09/2025	2:20	OOH-Night	Pre-cast Install	OHE	40 Lansdowne Road, Orchard Hills	First opportunity	8	45	46	41.7	67.8	39	29.5	Yes	Construction noise inaudible and below predicted levels, traffic was dominant noise source. PLM works compliant.
16/09/2025	22:24	OOH-Night	Ventilation fans	CMSF	9 Dolphin Close, Claremont Meadows	First opportunity	6	36	40	60.5	74.7	65.4	45.2	Yes	Construction noise inaudible and below predicted levels as determined during breaks in traffic. Traffic and consistent noise from crickets in the surrounding area was dominant noise source and reason for the elevated L90. PLM works compliant.
25/09/2025	6:33	OOH-Night	Boral batch plant	OHE	40 Lansdowne Road, Orchard Hills	Routine monthly	8	45	45	56.6	78	57.9	44.4	Yes	Construction noise faintly audible and below predicted levels ranging between 43-45 dB as determined during breaks in traffic and reflective by the L90 result. Steady traffic flow along Kent Road and Lansdowne Road was dominant noise source. PLM works compliant.
2/10/2025	21:24	OOH-Evening	Pre-cast Install	BRD	145 Badgerys Creek Road, Bradfield	Routine monthly	12	40	39	35.2	44.4	37.2	32.3	Yes	Construction noise faintly audible and below predicted levels, traffic was dominant noise source. PLM works compliant.
2/10/2025	23:31	OOH-Night	Steel Fixing	OHE	40 Lansdowne Road, Orchard Hills	Routine monthly	8	45	53	46.4	72.2	39.5	31	Yes	Construction noise faintly audible and below predicted levels, traffic was dominant noise source. PLM works compliant.
3/10/2025	0:32	OOH-Night	Pre-cast Install	STM	4 Chesham Street, St Marys	Routine monthly	3	41	51	42.3	53.9	45.2	36.6	Yes	Construction noise faintly audible and below predicted levels, traffic was dominant noise source. PLM works compliant.
3/10/2025	0:58	OOH-Night	Ventilation fans	CMSF	9 Dolphin Close, Claremont Meadows	First opportunity	6	36	42	37.7	50.4	39.8	34.5	Yes	Construction noise faintly audible and below predicted levels, traffic was dominant noise source. PLM works compliant. Attended monitoring was undertaken in response to noise complaint received.
8/10/2025	6:25	OOH-Night	Concrete Pour	SMF	12 Bordeaux Place, Orchard Hills	Routine monthly	8	45	50	47.2	66.1	47.9	39.3	Yes	Construction noise faintly audible and below predicted levels, traffic was dominant noise source. PLM works compliant.
8/10/2025	6:45	OOH-Night	Concrete Pour	SMF	10 Bordeaux Place, Orchard Hills	Routine monthly	8	45	51	42.8	64.3	42.3	38.2	Yes	Construction noise faintly audible and below predicted levels, traffic was dominant noise source. PLM works compliant.
23/09/2025	19:14	OOH-Evening	Concrete Pour	BRD	145 Badgerys Creek Road, Bradfield	Routine monthly	12	40	47	44.9	59	45.9	43.7	Yes	Construction noise faintly audible and below predicted levels. PLM works compliant.
16/10/2025	22:21	OOH-Night	Tunnel fitout	OHE	65 Doncaster Ave, Claremont Meadows	In response to noise complaint	6	36	36	43.5	55.7	46.1	39.8	Yes	Construction noise inaudible and below predicted levels as determined during breaks in traffic. Steady traffic from M4 Motorway and Gipps Road was the dominant noise source. PLM works compliant. Attended monitoring was undertaken in response to noise complaint received.
24/10/2025	6:11	OOH-Night	Boral batch plant	OHE	40 Lansdowne Road, Orchard Hills	Routine monthly	8	45	45	71.1	101.9	65.8	50.3	Yes	Construction noise faintly audible and below predicted levels ranging between 35 and 40 dB as determined during breaks in traffic. The traffic on Kent Road and Lansdowne Road was the dominant noise source during the shoulder period. Elevated spikes in noise levels occurred from heavy vehicle traffic along Kent Road. PLM works compliant as reflected by the L90 result.
24/10/2025	6:40	OOH-Night	Concrete pour	STM	4 Chesham Street, St Marys	Routine monthly	3	41	53	56.7	69.6	57.8	52.1	Yes	Construction noise audible and below predicted levels ranging between 45 and 50 dB as determined by breaks in traffic. Steady traffic flow along Glossop Street was dominant noise source as reflected by LAeq and L90 results. PLM works compliant.
23/10/2025	6:43	OOH-Night	Roofing/Cladding Installation	SMF	43a Luddenham Road, Orchard Hills	First opportunity	9	39	44	47.5	71.4	48.1	43.3	Yes	Construction noise was audible and below predicted levels ranging between 40 and 43 dB as determined during brief breaks in traffic. High frequency crickets/insect noise was constant and the dominant noise source. PLM works compliant as reflected by the L90 result.
30/11/2025	22:52	OOH-Night	Ventilation fans	BSF	38 Derwent Road, Bringelly	First opportunity	12	39	53	44.5	65.5	44.4	43.1	Yes	Construction noise audible and below predicted levels, residential ambience and traffic along the Northern Road was dominant noise source. PLM works compliant.
30/11/2025	00:09	OOH-Night	Pre-cast Install	STM	4 Chesham Street, St Marys	Routine monthly	3	41	59	50.8	73	50.2	44.1	Yes	Construction noise faintly audible intermittently and below predicted levels, residential ambience and traffic along Glossop Street was dominant noise source. PLM works compliant.
18/11/2025	00:20	OOH-Night	Pre-cast Install	STM	4 Chesham Street, St Marys	Routine monthly	3	41	59	54.7	70.5	57	45.5	Yes	Construction noise intermittently audible and below predicted levels, traffic ambience along with crickets, birds and train movements was dominant noise source. PLM works compliant.
19/11/2025	00:41	OOH-Night	Precast Beam Installation	BRD	145 Badgerys Creek Road, Bradfield	Routine monthly	12	39	39	39.7	66.4	40.4	36.4	Yes	Construction noise was audible and remained below predicted levels ranging between 38-39 dB. External noise sources, including residential activity and a passing aircraft, contributed to elevated measured noise levels above predicted construction noise levels. PLM works were compliant.
25/11/2025	5:20	OOH-Night	Concrete crusher delivery	OHE	77 Kent Road, Orchard Hills	First opportunity	8	45	55	69.6	87.7	73.3	50.7	Yes	Construction noise faintly audible and below predicted levels ranging between 45 and 52dB, as determined during breaks in traffic. Steady traffic flow from Kent Road was the dominant noise source. The L90 result indicates compliance with predicted levels. PLM works compliant.
28/11/2025	5:23	OOH-Night	Boral batch plant	OHE	40 Lansdowne Road, Orchard Hills	Routine monthly	8	45	45	65	87.7	64.7	48.4	Yes	Construction noise faintly audible and below predicted levels ranging between 43-45 dB as determined during brief breaks in traffic. Steady traffic flow from Kent Road and Lansdowne Road was the dominant noise source during the shoulder period as shown in LAeq and L90 results. PLM works compliant.
2/12/2025	8:09	Standard Hours	Concrete Crusher	OHE	51 Kent Road, Orchard Hills	First opportunity	8	54	69	65	83.5	69	53.5	Yes	Construction noise faintly audible and below predicted levels, traffic from Kent Road was the dominant noise source. PLM works compliant.
2/12/2025	14:08	Standard Hours	Concrete Crusher	OHE	50 Doncaster Avenue, Claremont Meadows	First opportunity	6	47	68	47.1	66.3	48.2	42.3	Yes	Construction noise faintly audible and below predicted levels, traffic ambience from M4 Motorway was the dominant noise source. PLM works compliant.

Date	Time	Time Period	Construction Activity <sup>2</sup>	Site Location	Monitoring Location/Address/DNVIS ID	Monitoring trigger	NCA <sup>1</sup>	NML dB(A)	Predicted LAeq(15min) dB(A)	Recorded LAeq(15min) dB(A)	LAmx dB(A)	LA10	LA90	PLM Works Compliant with PNL	Comments
2/12/2025	23:11	OOH-Night	Utility Investigation	STM	34 Phillips Street, St Marys	First opportunity	3	41	71	55.8	75.3	59.3	42.4	Yes	Construction noise faintly audible and below predicted levels, traffic along Phillips Street was the dominant noise source. PLM works compliant.
10/12/2025	20:01	OOH-Evening	Concrete Pour	BRD	145 Badgerys Creek Road, Bradfield	Routine monthly	12	40	47	42.9	70.3	45.2	36	Yes	Construction noise audible and below predicted levels. PLM works compliant.
10/12/2025	22:30	OOH-Night	FRP	OHE	40 Lansdowne Road, Orchard Hills	Routine monthly	8	45	53	47.7	67.4	48.3	37.6	Yes	Construction noise audible during breaks in traffic and below predicted levels, residential and traffic ambience along with birds and crickets was dominant noise source. PLM works compliant.
10/12/2025	23:06	OOH-Night	CSR	SMF	8 Cabernet Circuit, Orchard Hills	In response to noise complaint	8	45	55	37.3	52.3	40.1	33.8	Yes	Construction noise audible and below predicted levels, additional noise sources included residential and traffic ambience along with birds and crickets. PLM works compliant.
11/12/2025	0:02	OOH-Night	Pre-cast Install	STM	4 Chesham Street, St Marys	Routine monthly	3	41	59	47.2	70.6	47.3	37.9	Yes	Construction noise audible and below predicted levels, additional noise sources included residential and traffic ambience along with birds. PLM works compliant.
13/12/2025	13:23	OOH-Day	Utility Investigation	STM	34 Phillips Street, St Marys	First opportunity	3	42	71	63.8	83.3	66.7	53.8	Yes	Construction noise inaudible and below predicted levels, traffic and Non-PLM construction was dominant noise source. PLM works compliant.
18/12/2025	22:30	OOH-Night	Escalator Install	OHE	40 Lansdowne Road, Orchard Hills	Routine monthly	8	45	49	45.5	59.6	48.4	42.2	Yes	Construction noise audible during breaks in traffic and below predicted levels, residential and traffic ambience along with birds and crickets was dominant noise source. PLM works compliant.
16/12/2025	20:25	OOH-Evening	Station box fitout	BRD	145 Badgerys Creek Road, Bradfield	First opportunity	12	40	42	39.2	67.3	39	36.6	Yes	Construction noise audible and below predicted levels. PLM works compliant.
17/12/2025	21:46	OOH-Evening	Station box fitout	BRD	145 Badgerys Creek Road, Bradfield	Second opportunity	12	40	42	41.8	49.6	42.7	40.8	Yes	Construction noise intermittently audible and below predicted levels. PLM works compliant.
22/12/2025	6:18	OOH-Night	Boral batch plant	OHE	40 Lansdowne Road, Orchard Hills	Routine monthly	8	45	45	56.4	80.4	57.8	45.6	Yes	Construction noise intermittently audible during breaks in traffic and measured between 36 to 41 dB, below predicted levels. Shoulder period traffic on Kent and Lansdowne Roads was the dominant noise source as reflected by LAeq and L90 results. PLM works compliant.
19/01/2026	6:28	OOH-Night	Concrete Pour	STM	4 Chesham Street, St Marys	Routine monthly	3	41	53	51.9	74.4	53.6	45.9	Yes	Construction noise audible and below predicted levels, additional noise sources included residential and traffic along Chesham Street and Glossop Street. PLM works compliant.
19/01/2026	13:11	Standard Hours	Utility Investigation	STM	4 Chesham Street, St Marys	First opportunity	3	47	83	64.5	77.2	70.8	51.6	Yes	Construction noise audible and below predicted levels, PLM works compliant.
23/01/2026	6:18	OOH-Night	Package for Additional Construction and Extension (PACE)	SMF	12 Bordeaux Place, Orchard Hills	First opportunity	8	45	56	48.3	67.3	49.9	36.2	Yes	Construction noise inaudible and below predicted levels, traffic and Non-PLM construction was dominant noise source. PLM works compliant.
23/01/2026	6:43	OOH-Night	PACE	SMF	43a Luddenham Road, Orchard Hills	First opportunity	9	39	55	47.6	57.1	49.7	44.5	Yes	Construction noise audible and below predicted levels, additional noise sources included residential and traffic ambience along with birds. PLM works compliant.
28/01/2026	6:15	OOH-Night	Boral Batch Plant	OHE	40 Lansdowne Road, Orchard Hills	Routine monthly	8	45	45	62.3	87.6	61.2	47.7	Yes	Construction noise audible during breaks in traffic between 38 and 43 dB and therefore below predicted levels. Residential background noise and steady traffic flow from Kent Road and Lansdowne Road during shoulder period were the dominant noise sources as reflected by elevated LAeq and L90 results. PLM works compliant.
28/01/2026	6:43	OOH-Night	PACE	SMF	7 Bordeaux Place, Orchard Hills	Second opportunity	8	45	57	57.8	76	61.9	44.2	Yes	Construction noise inaudible and below predicted levels, traffic ambience along M4 Motorway and birds were dominant noise sources. PLM works compliant.
29/01/2026	22:57	OOH-Night	Pre-cast Install	STM	4 Chesham Street, St Marys	Routine monthly	3	41	59	52.3	74.6	53.2	45.2	Yes	Construction noise intermittently audible and below predicted levels, additional noise sources included traffic ambience along with crickets, birds and train movements was dominant noise source. PLM works compliant.
29/01/2026	23:20	OOH-Night	Escalator Install	STM	4 Chesham Street, St Marys	First opportunity	3	41	60	50.9	73.6	54.9	44.1	Yes	Construction noise audible and below predicted levels, additional noise sources included traffic along Glossop Street and train movements. PLM works compliant.

1. REFER TO APPENDIX C FOR NCA MAPS

2. PLANT AND EQUIPMENT FOR CONSTRUCTION ACTIVITY CAN BE REVIEWED WITHIN THE RELEVANT DNVIS (REFER TO TABLE 4)

### Unattended Site Monitoring Data

Unattended noise monitoring data is provided as an average LAeq for each 15 minute period over the representative period, during the date range of monitoring, and provides noise data during the various construction periods.

Date	Construction Activities	Activity Location	Monitoring Location	NML (dBA)			Recorded Day (7am to 6pm) Avg LAeq15min	Recorded Evening (6pm to 10pm) Avg LAeq 15min	Recorded Night (10pm to 7am) Avg LAeq 15min	Comments
				Day	Evening	Night				
01/08/2025 – 31/01/2026	Earthworks, drainage, track construction, services	SSTOM Portion 1 North	Linewide Portion 1 – North-East Site (NCA08)	54	49	45	46	44	42	Real time noise averages (LAeq) captured within the reporting period. Dominant noise source was from the natural environment.
01/08/2025 – 31/01/2026	Earthworks, drainage, track construction, services	SSTOM Portion 1 South	Linewide Portion 1 – South-West site (NCA08)	54	49	45	51	48	45	Real time noise averages (LAeq) captured within the reporting period. Dominant noise source was from the natural environment.

## Appendix B Monitoring Locations

Attended monitoring was conducted at the nearest safe and accessible locations, considering noise barriers, property access, and traffic safety.

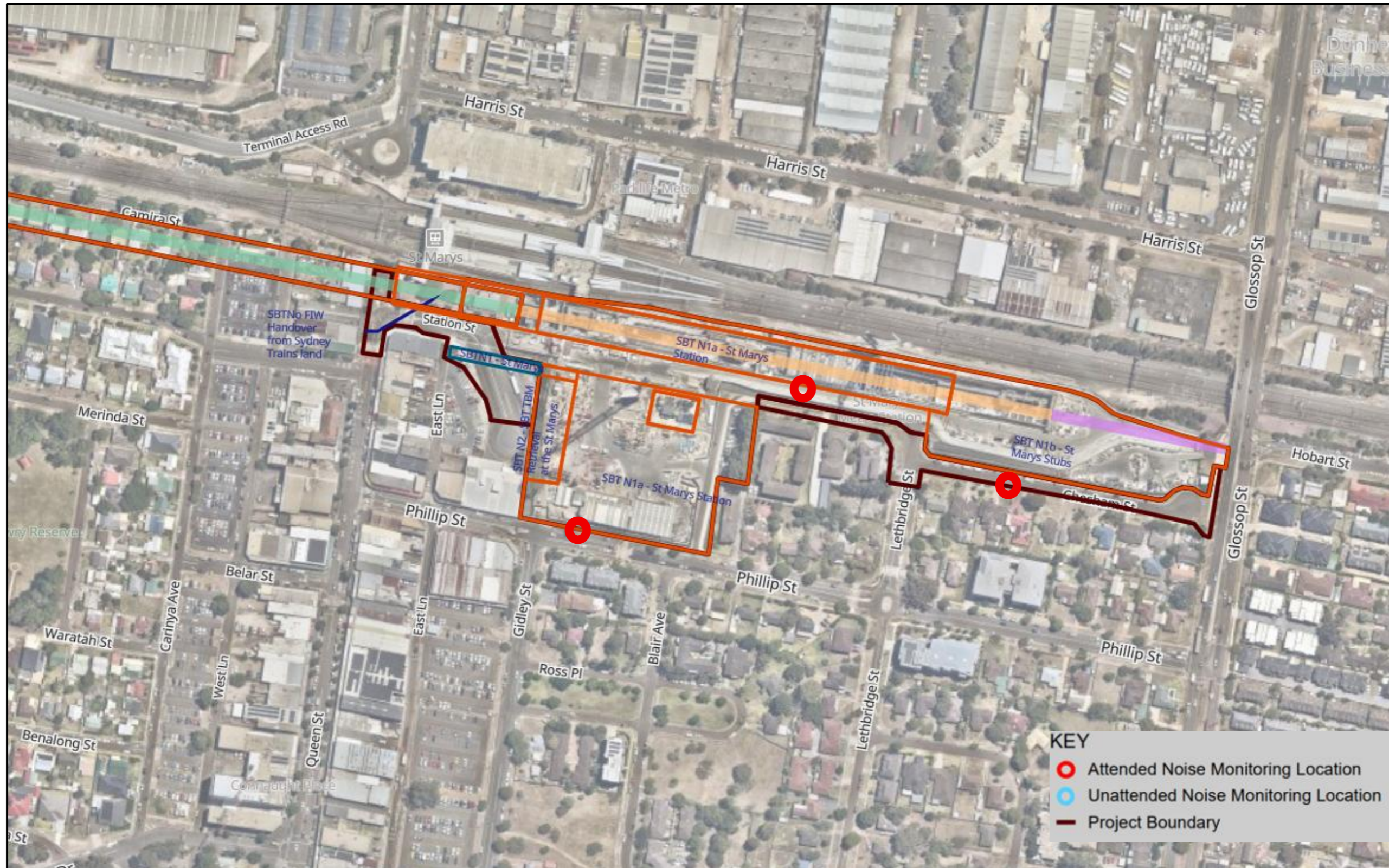


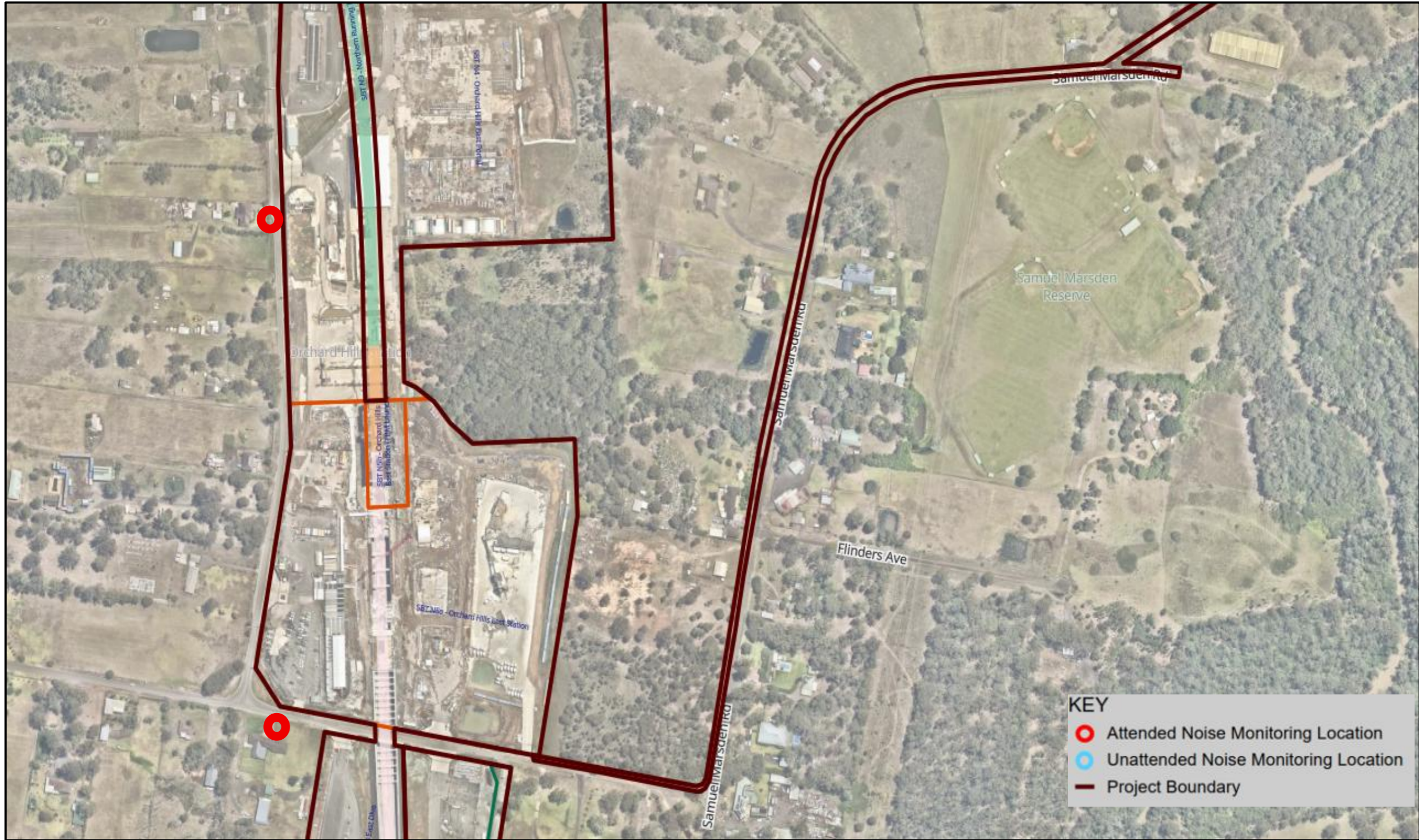
FIGURE 2 LOCATIONS OF NOISE MONITORING UNDERTAKEN DURING THIS REPORTING PERIOD (ST MARYS)



FIGURE 3 LOCATIONS OF NOISE MONITORING UNDERTAKEN DURING THIS REPORTING PERIOD (CLAREMONT MEADOWS SHAFT FACILITY)



FIGURE 4 LOCATIONS OF NOISE MONITORING UNDERTAKEN DURING THIS REPORTING PERIOD (ORCHARD HILLS N)



**KEY**

- Attended Noise Monitoring Location
- Unattended Noise Monitoring Location
- Project Boundary

FIGURE 5 LOCATIONS OF NOISE MONITORING UNDERTAKEN DURING THIS REPORTING PERIOD (ORCHARD HILLS)



FIGURE 6 LOCATIONS OF NOISE MONITORING UNDERTAKEN DURING THIS REPORTING PERIOD (LINEWIDE PORTION 1)



FIGURE 7 LOCATIONS OF NOISE MONITORING UNDERTAKEN DURING THIS REPORTING PERIOD (STABLING AND MAINTENANCE FACILITY AND LINWIDE)



FIGURE 8 LOCATIONS OF NOISE MONITORING UNDERTAKEN DURING THIS REPORTING PERIOD (LINEWIDE)

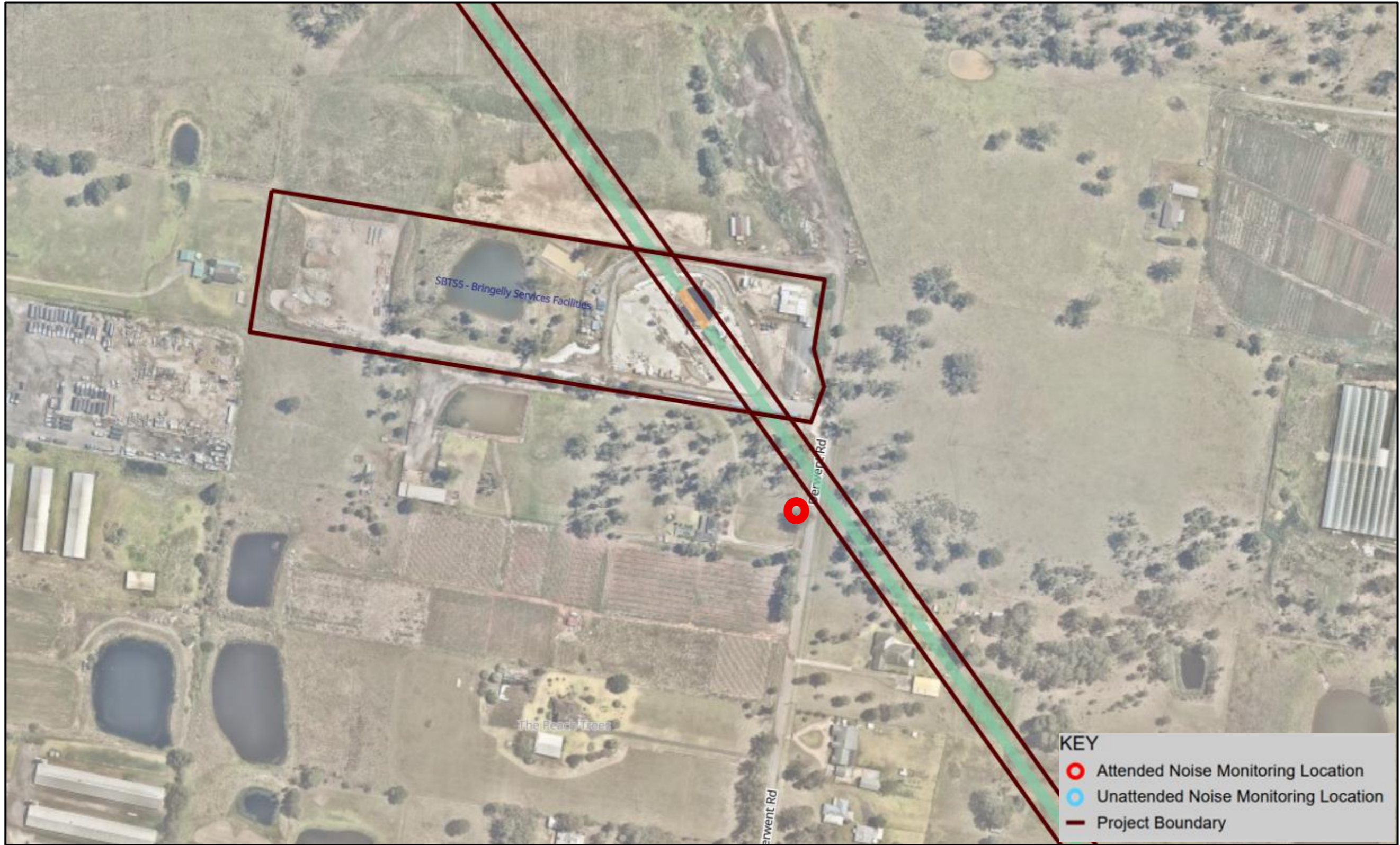


FIGURE 9 LOCATIONS OF NOISE MONITORING UNDERTAKEN DURING THIS REPORTING PERIOD (BRINGELLY)

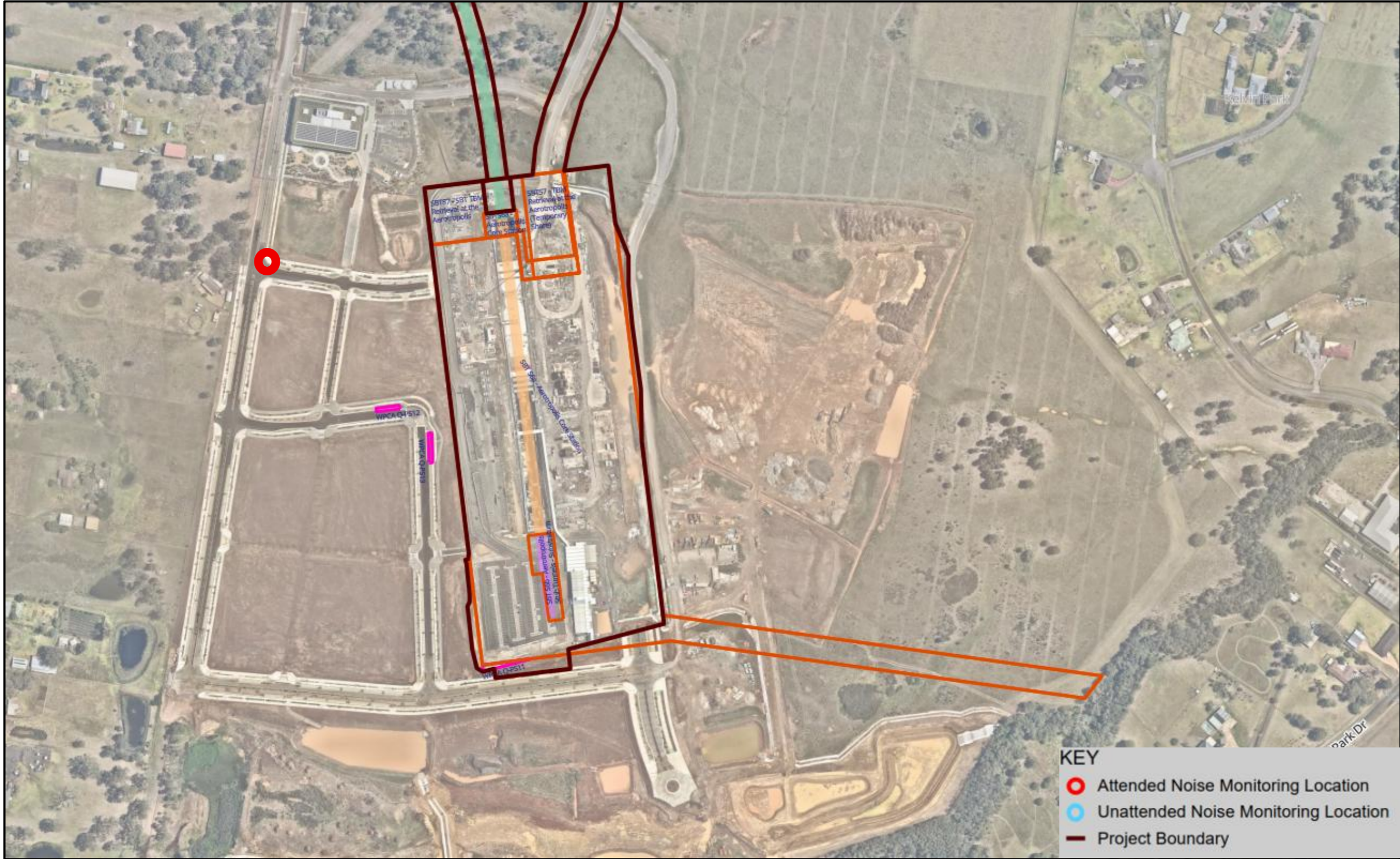
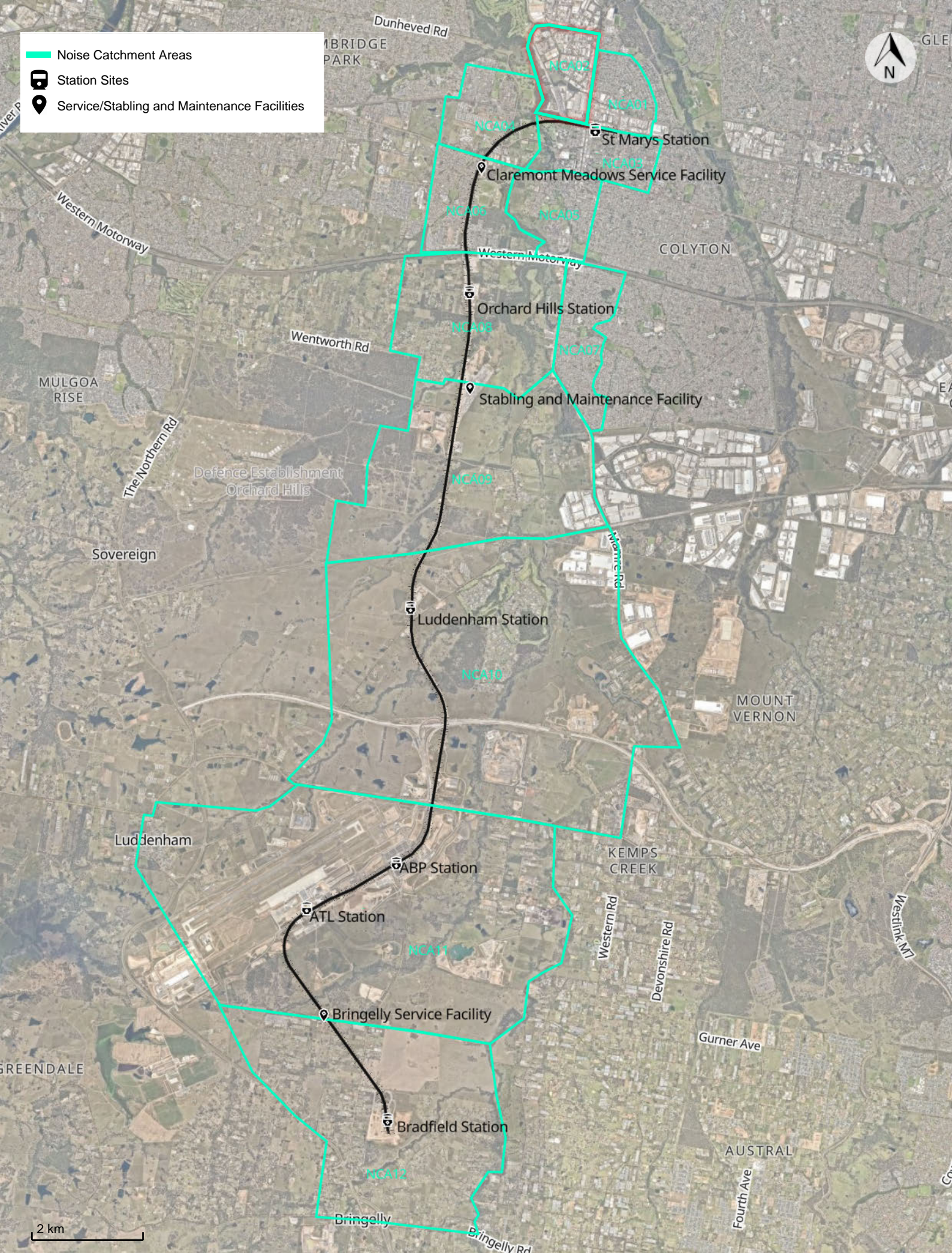


FIGURE 10 LOCATIONS OF NOISE MONITORING UNDERTAKEN DURING THIS REPORTING PERIOD (BRADFIELD)

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## Appendix C Noise Catchment Areas



- █ Noise Catchment Areas
- Station Sites
- Service/Stabling and Maintenance Facilities

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## Appendix D Certificate of Calibration



**Acoustic  
Research  
Labs Pty Ltd**

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

## Sound Calibrator

IEC 60942:2017

# Calibration Certificate

Calibration Number C25631-V1

**Client Details** Parklife Metro D&C  
Level 7, 175 Liverpool Street  
Sydney NSW 2000

Equipment Tested :	Manufacturer	Model	Serial
<b>Instrument :</b>	Rion	NC-75	34745923

### Atmospheric Conditions

**Ambient Temperature :** 20.8 °C  
**Relative Humidity :** 47.9 %  
**Barometric Pressure :** 100.71 kPa

**Calibration Technician :** Shaheen Boaz  
**Calibration Date :** 22-Sep-2025  
**Secondary Check:** Rhys Gravelle  
**Report Issue Date :** 22-Sep-2025

**Approved Signatory :**

Juan Agüero

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

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.07	1000.00

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..

### Uncertainties of Measurement -

Specific Tests		Environmental Conditions	
Generated SPL	±0.10 dB	Temperature	±0.1 °C
Frequency	±0.07 %	Relative Humidity	±1.9 %
Distortion	±0.20 %	Barometric Pressure	±0.019 kPa

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



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

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

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

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



## Sound Calibrator IEC 60942:2017 Calibration Test Report

Calibration Number C25631-V1

<b>Client Details</b>	Parklife Metro D&C Level 7, 175 Liverpool Street Sydney NSW 2000
-----------------------	--

<b>Equipment Tested :</b>	<i>Manufacturer</i>	<i>Model</i>	<i>Serial</i>
<b>Instrument :</b>	Rion	NC-75	34745923

<b>Atmospheric Conditions</b>	
<b>Ambient Temperature :</b>	20.8 °C
<b>Relative Humidity :</b>	47.9 %
<b>Barometric Pressure :</b>	100.71 kPa

<b>Calibration Technician :</b>	Shaheen Boaz	<b>Secondary Check:</b>	Rhys Gravelle
<b>Calibration Date :</b>	22-Sep-2025	<b>Report Issue Date :</b>	22-Sep-2025

**Approved Signatory :**

Juan Agüero

<b>Characteristic Tested</b>	<b>Result</b>
Generated Sound Pressure Level	<i>Pass</i>
Frequency Generated	<i>Pass</i>
Total Distortion	<i>Pass</i>

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..

Uncertainties of Measurement -			
Specific Tests		Environmental Conditions	
<i>Generated SPL</i>	$\pm 0.10$ dB	<i>Temperature</i>	$\pm 0.1$ °C
<i>Frequency</i>	$\pm 0.07$ %	<i>Relative Humidity</i>	$\pm 1.9$ %
<i>Distortion</i>	$\pm 0.20$ %	<i>Barometric Pressure</i>	$\pm 0.019$ kPa

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

This report applies only to the item tested and shall only be reproduced in full, unless approved in writing by Acoustic Research Labs.



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Research  
Labs Pty Ltd**

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

## Sound Calibrator

IEC 60942:2017

# Calibration Certificate

Calibration Number C25632-V1

**Client Details** Parklife Metro D&C  
Level 7, 175 Liverpool Street  
Sydney NSW 2000

Equipment Tested :	Manufacturer	Model	Serial
<b>Instrument :</b>	Rion	NC-75	34645808

### Atmospheric Conditions

**Ambient Temperature :** 21.3 °C  
**Relative Humidity :** 46.9 %  
**Barometric Pressure :** 100.7 kPa

**Calibration Technician :** Shaheen Boaz  
**Calibration Date :** 22-Sep-2025  
**Secondary Check:** Rhys Gravelle  
**Report Issue Date :** 22-Sep-2025

**Approved Signatory :**

Juan Aguero

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

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.12	1000.00

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..

### Uncertainties of Measurement -

Specific Tests		Environmental Conditions	
Generated SPL	±0.10 dB	Temperature	±0.1 °C
Frequency	±0.07 %	Relative Humidity	±1.9 %
Distortion	±0.20 %	Barometric Pressure	±0.019 kPa

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



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

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## Sound Calibrator IEC 60942:2017 Calibration Test Report

Calibration Number C25632-V1

<b>Client Details</b>	Parklife Metro D&C Level 7, 175 Liverpool Street Sydney NSW 2000
-----------------------	--

<b>Equipment Tested :</b>	<i>Manufacturer</i>	<i>Model</i>	<i>Serial</i>
<b>Instrument :</b>	Rion	NC-75	34645808

<b>Atmospheric Conditions</b>	
<b>Ambient Temperature :</b>	21.3 °C
<b>Relative Humidity :</b>	46.9 %
<b>Barometric Pressure :</b>	100.7 kPa

<b>Calibration Technician :</b> Shaheen Boaz	<b>Secondary Check:</b> Rhys Gravelle
<b>Calibration Date :</b> 22-Sep-2025	<b>Report Issue Date :</b> 22-Sep-2025

**Approved Signatory :**

Juan Agüero

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

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..

Uncertainties of Measurement -			
Specific Tests	Environmental Conditions		
<i>Generated SPL</i>	$\pm 0.10$ dB	<i>Temperature</i>	$\pm 0.1$ °C
<i>Frequency</i>	$\pm 0.07$ %	<i>Relative Humidity</i>	$\pm 1.9$ %
<i>Distortion</i>	$\pm 0.20$ %	<i>Barometric Pressure</i>	$\pm 0.019$ kPa

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

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Research  
Labs Pty Ltd**

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

## Sound Calibrator

IEC 60942:2017

# Calibration Certificate

Calibration Number C25633-V1

**Client Details** Parklife Metro D&C  
Level 7, 175 Liverpool Street  
Sydney NSW 2000

Equipment Tested :	Manufacturer	Model	Serial
<b>Instrument :</b>	Rion	NC-75	34645809

### Atmospheric Conditions

**Ambient Temperature :** 21.5 °C  
**Relative Humidity :** 46.9 %  
**Barometric Pressure :** 100.71 kPa

**Calibration Technician :** Shaheen Boaz  
**Calibration Date :** 22-Sep-2025  
**Secondary Check:** Rhys Gravelle  
**Report Issue Date :** 22-Sep-2025

**Approved Signatory :**

Juan Aguero

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

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	93.91	1000.00

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..

### Uncertainties of Measurement -

Specific Tests	Environmental Conditions
Generated SPL	Temperature
Frequency	Relative Humidity
Distortion	Barometric Pressure

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



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

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

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

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



## Sound Calibrator IEC 60942:2017 Calibration Test Report

Calibration Number C25633-V1

<b>Client Details</b>	Parklife Metro D&C Level 7, 175 Liverpool Street Sydney NSW 2000
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<b>Equipment Tested :</b>	<i>Manufacturer</i>	<i>Model</i>	<i>Serial</i>
<b>Instrument :</b>	Rion	NC-75	34645809

<b>Atmospheric Conditions</b>	
<b>Ambient Temperature :</b>	21.5 °C
<b>Relative Humidity :</b>	46.9 %
<b>Barometric Pressure :</b>	100.71 kPa

<b>Calibration Technician :</b> Shaheen Boaz	<b>Secondary Check:</b> Rhys Gravelle
<b>Calibration Date :</b> 22-Sep-2025	<b>Report Issue Date :</b> 22-Sep-2025

**Approved Signatory :**

Juan Agüero

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

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..

Uncertainties of Measurement -			
Specific Tests	Environmental Conditions		
<i>Generated SPL</i>	$\pm 0.10$ dB	<i>Temperature</i>	$\pm 0.1$ °C
<i>Frequency</i>	$\pm 0.07$ %	<i>Relative Humidity</i>	$\pm 1.9$ %
<i>Distortion</i>	$\pm 0.20$ %	<i>Barometric Pressure</i>	$\pm 0.019$ kPa

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



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## Sound Level Meter

IEC 61672-3:2013

# Calibration Certificate


Calibration Number C25752-V1

<b>Client Details</b>	Parklife Metro D&C Level 7, 175 Liverpool Street Sydney, NSW, 2000
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<b>Equipment Tested :</b>	<i>Manufacturer</i>	<i>Model</i>	<i>Serial</i>
<b>Instrument :</b>	Rion	NL-53	00630296
<b>Microphone :</b>	Rion	UC-59	27362
<b>Pre-amplifier :</b>	Rion	NH-25	33121
<b>Firmware Version :</b>	01.00		

<b>Pre-Test Atmospheric Conditions</b>	<b>Post-Test Atmospheric Conditions</b>
<b>Ambient Temperature :</b> 24.7 °C	<b>Ambient Temperature :</b> 23 °C
<b>Relative Humidity :</b> 34.5 %	<b>Relative Humidity :</b> 34.9 %
<b>Barometric Pressure :</b> 99.15 kPa	<b>Barometric Pressure :</b> 99.11 kPa

<b>Calibration Technician :</b> Shaheen Boaz	<b>Secondary Check:</b> Rhys Gravelle
<b>Calibration Date :</b> 17-Nov-2025	<b>Report Issue Date :</b> 19-Nov-2025

**Approved Signatory :** 

Ken Williams

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

The sound level meter submitted for testing has successfully completed the class 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 testing organisation responsible for approving the results of pattern evaluation test 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 IEC 61672-1:2013.

Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
125Hz	±0.13 dB	Temperature	±0.1 °C
1kHz	±0.13 dB	Relative Humidity	±1.9 %
8kHz	±0.14 dB	Barometric Pressure	±0.019 kPa
Electrical Tests	±0.13 dB		

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



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

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Accredited for compliance with ISO/IEC 17025 - Calibration.

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

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## Sound Level Meter IEC 61672-3:2013 Calibration Test Report

Calibration Number **C25752-V1**

<b>Client Details</b>	Parklife Metro D&C Level 7, 175 Liverpool Street Sydney, NSW, 2000
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Equipment Tested :	<i>Manufacturer</i>	<i>Model</i>	<i>Serial</i>
<b>Instrument Serial Number :</b>	Rion	NL-53	00630296
<b>Microphone Serial Number :</b>	Rion	UC-59	27362
<b>Pre-amplifier Serial Number :</b>	Rion	NH-25	33121
<b>Firmware Version :</b>	01.00		

Pre-Test Atmospheric Conditions	Post-Test Atmospheric Conditions
<b>Ambient Temperature :</b> 24.7 °C	<b>Ambient Temperature :</b> 23 °C
<b>Relative Humidity :</b> 34.5 %	<b>Relative Humidity :</b> 34.9 %
<b>Barometric Pressure :</b> 99.15 kPa	<b>Barometric Pressure :</b> 99.11 kPa

<b>Calibration Technician :</b> Shaheen Boaz	<b>Secondary Check:</b> Rhys Gravelle
<b>Calibration Date :</b> 17-Nov-2025	<b>Report Issue Date :</b> 19-Nov-2025

**Approved Signatory :**

Ken Williams

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

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 testing organisation responsible for approving the results of pattern evaluation test 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 IEC 61672-1:2013.

Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
<i>125Hz</i>	$\pm 0.13$ dB	<i>Temperature</i>	$\pm 0.1$ °C
<i>1kHz</i>	$\pm 0.13$ dB	<i>Relative Humidity</i>	$\pm 1.9$ %
<i>8kHz</i>	$\pm 0.14$ dB	<i>Barometric Pressure</i>	$\pm 0.019$ kPa
Electrical Tests	$\pm 0.13$ dB		

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



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Accredited for compliance with ISO/IEC 17025 - Calibration.

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# Hexanode Calibration Certificate



27 Nov 2025

## Noise

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

The Hexanode sound level meter has been pressure calibrated by SiteHive using a NATA Certified (IEC 60942: Sound calibrators) Sound Level Calibrator, at 104 Commonwealth Street, Surry Hills, NSW, 2010.

NATA Certificates of Calibration that comply with the Class 2 performance requirements of IEC 61672.3 are available on request.

Serial Number	Noiseboard ID	Calibration Value	Calibration Date	Calibration Due
HEX-000641	4273865-006-0924000020	2.779169	25 Jun 2025	25 Jun 2027

Accuracy:	Complies with precision requirements of IEC 61672 for Class 2
Acoustic overload point:	135 dBSPL
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
Reference Sound Level Calibrator:	Lutron SC-941
Calibration Reference Level:	94dB
Calibration Reference Frequency:	1 KHz
Environmental Conditions:	The environmental conditions remained within the acceptable limits as defined in IEC 61672.3

# Hexanode Calibration Certificate



27 Nov 2025

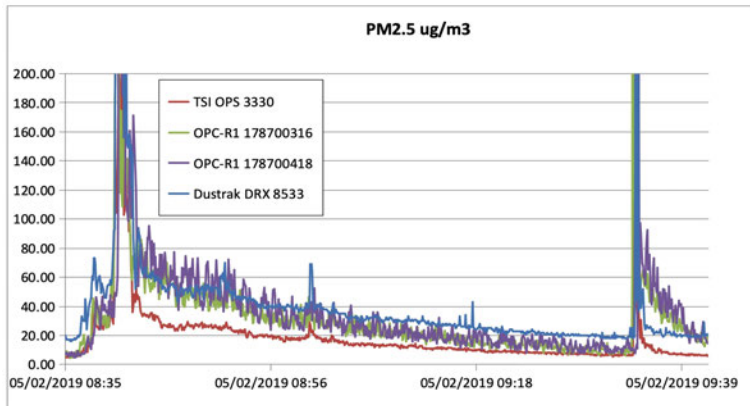
## Dust

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

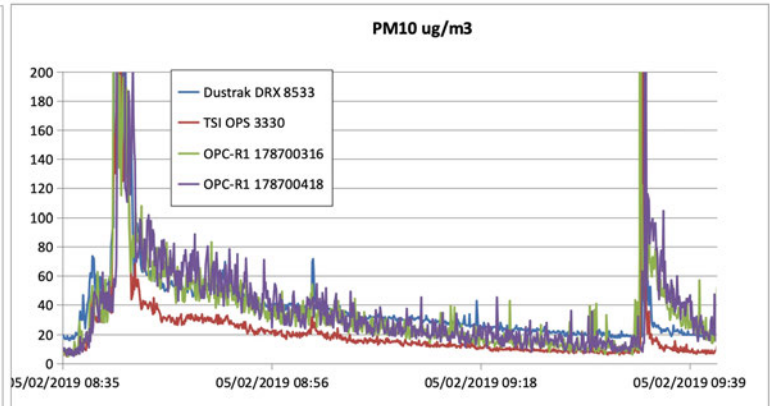
The Hexanode Multi device utilises the Alphasense OPC-R2 particle monitor to provide real-time dust measurements. These sensors are calibrated at manufacture by Alphasense. Whilst the R2 does not have any gravimetric sampling capabilities, measurements can be adjusted using a K-Factor if one is available. 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 106 particles/L	0.7

Prior to deployment, the R2 is tested against TSI Optical Particle Sizer 3330 and DustTrak instruments.



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.



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.

# Hexanode Calibration Certificate



17 Dec 2025

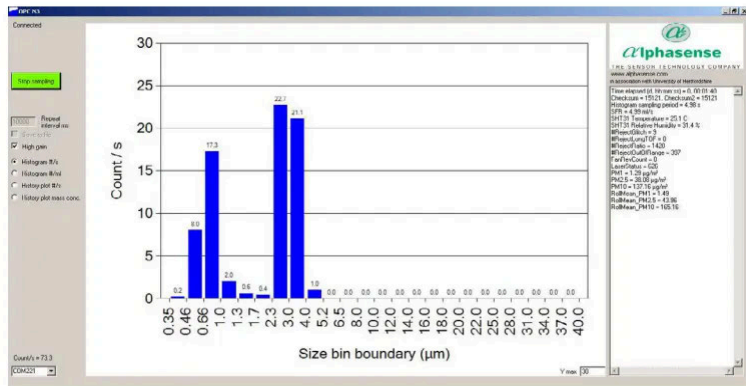
## Dust

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

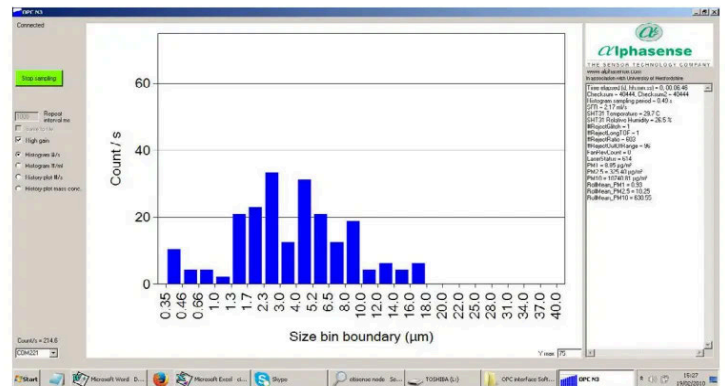
The Hexanode utilises the Alphasense N3 Optical Particle Sensor to provide real-time dust measurements. Whilst the N3 does not have any gravimetric sampling capabilities, measurements can be adjusted using a K-Factor if one is available. SiteHive software will also provide measurements from the nearest Government air quality station for reference. The full data sheet for the Alphasense N3 is available here.

Particle range	Particle range* $\mu\text{m}$ spherical equivalent size (based on RI of 1.5)	0.35 to 40
Size categorisation	Number of software bins	24
Sampling interval	Histogram period (seconds)	1 to 30
Total flow rate (typical)	L/min	5.5
Sample flow rate (typical)	mL/min	280
Max particle count rate	Particles/second	10,000
Max coincidence probability	%concentration at 106 particles/L	0.84
Max coincidence probability	%concentration at 500 particles/L	0.24

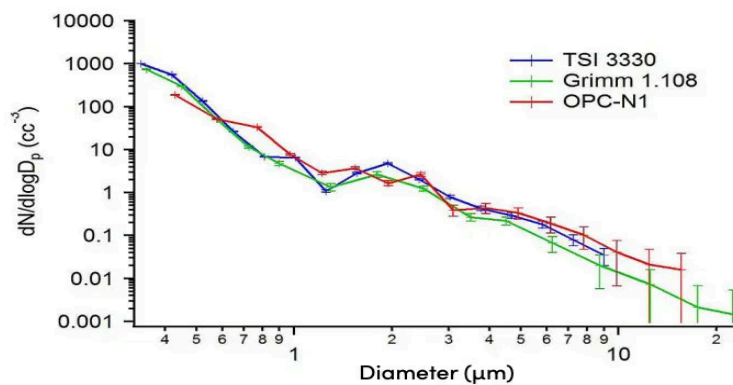
OPC-N3 response to 0.75 and 3  $\mu\text{m}$  PSL calibration standards



OPC-N3 response to a broad size range test dust



Particle Size Derivative Comparison



The OPC-N3 uses the same algorithms for 0.3 - 17 $\mu\text{m}$  as the OPC-N1.

# Hexanode Calibration Certificate



17 Dec 2025

## Noise

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

The Hexanode sound level meter has been pressure calibrated by SiteHive using a NATA Certified (IEC 60942: Sound calibrators) Sound Level Calibrator, at 104 Commonwealth Street, Surry Hills, NSW, 2010.

NATA Certificates of Calibration that comply with the Class 2 performance requirements of IEC 61672.3 are available on request.

Serial Number	Noiseboard ID	Calibration Value	Calibration Date	Calibration Due
HEX-001093	4273865-010-0825000091	5.763226	24 Nov 2025	24 Nov 2027

Accuracy:	Complies with precision requirements of IEC 61672 for Class 2
Acoustic overload point:	135 dBSPL
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
Reference Sound Level Calibrator:	Lutron SC-941
Calibration Reference Level:	94dB
Calibration Reference Frequency:	1 KHz
Environmental Conditions:	The environmental conditions remained within the acceptable limits as defined in IEC 61672.3