Noise and Vibration Construction Monitoring Report

Moorebank Avenue Realignment Works

September 2025 to March 2026

121-2118

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0.1	29/06/2026	Initial report	[redacted]	[redacted]

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Glossary

Term	Definition
dB(A)	Decibels using the A-weighted scale which is accepted as being representative of the frequency L response of the human ear.
CNVIS	Construction Noise and Vibration Impact Statement
CNVMP	Construction Noise and Vibration Management Plan
CMR	Construction Monitoring Program
NVMP	Construction Noise and Vibration Monitoring Program
NVMR	Noise and Vibration Construction Monitoring Report
DPE	Department of Planning and Environment
CoA	NSW Minister for Planning's Conditions of Approval
EPA	NSW Environment Protection Authority
EPL	Environment Protection License
EIS	Environmental Impact Statement
LAeq (15min)	The A-weighted equivalent continuous (energy average) A-weighted sound pressure level of the construction works under consideration over a 15-minute period and excludes other noise sources such as from industry, road, rail, and the community.
LA (max)	The A-weighted maximum noise level only from the construction works under consideration, measured using the fast time weighting on a sound level meter.
MARW	Moorebank Realignment Work
MPE	Moorebank Precinct East
MPW	Moorebank Precinct West
NCA	Noise Catchment Area
NML	Noise Management Level
NVIA	Noise and Vibration Impact Assessment
NVMP	Noise and Vibration Monitoring Program
OOH	Out of Hours
PPV	Peak Particle Velocity (PPV) is the peak vector vibration velocity used to assess the risk of damage to structures from ground borne vibration. This is generally evaluated at the building footings.
RBL	Rating Background Level (RBL) is the overall single figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours).

1. Introduction

Background

The Moorebank Avenue Realignment Works (MARW) comprise the realignment of an existing two-kilometre section of Moorebank Avenue, extending from approximately 130 metres south of the current Anzac Road/Moorebank Avenue intersection to a point immediately north of the East Hills Railway (refer to Figure 1).

The Project includes approximately three kilometres of new road infrastructure that connects with the existing Moorebank Avenue at its northern and southern ends. From the northern tie-in point, the realigned Moorebank Avenue runs along the northern boundary of Moorebank Precinct East (MPE), before continuing south along the precinct's eastern boundary. This section of the road corridor will consist of four lanes two lanes in each direction.

At the south-western corner of MPE, the upgraded road narrows to a two-lane configuration (one lane in each direction) and continues southwest, crossing Anzac Creek before reconnecting with the existing Moorebank Avenue alignment near the East Hills Railway.

Upon completion and commissioning of the upgraded alignment, all public through-traffic currently using Moorebank Avenue will be redirected onto the new section of road. The existing alignment will then be decommissioned and repurposed to provide restricted access to the Moorebank Logistics Park (MLP).

1.1 Project Overview

Project Start: 15 Nov 2024

Project Completion: 11 Nov 2026

Figure 1: Moorebank Ave Realignment Location

1.2 Purpose of Report

This Noise and Vibration Construction Monitoring Report (NVMR) has been prepared to:

- validate the impacts of noise and vibration predicted for the project
- measure the effectiveness of environmental controls and implementation of the CEMP, specifically the Construction Noise and Vibration Management Plan (CNVMP) and the Noise and Vibration Monitoring Program (NVMP)
- address approval requirements in accordance with SSI 10053 CoA C17.
- Meet any relevant legal and other requirements for the Project.

In accordance with the NVMP (Appendix E of the Construction Noise and Vibration Management Plan (CNVMP)), monitoring reports are to be prepared on a bi-annual basis (every 6 months) in response to noise and vibration monitoring undertaken during the reporting period and will capture the following details:

- The date(s) and time at which the monitoring was undertaken
- The locations and description of monitoring undertaken
- The name of the person who undertook the monitoring
- Tabulations of monitoring data
- Compliance monitoring results with the criteria identified in Section 3 of the CNVMP Section 6.1 Monitoring Program
- Identification of exceedances of the nominated criteria and descriptions of the causes of these exceedances
- Details of any alteration to the Monitoring Program
- Summary of any complaints received regarding noise and vibration

This NVMP covers documents the noise and vibration monitoring results recorded during the reporting period on MARW from 27th September 2025 to 27th March 2026.

Monitoring was undertaken in accordance with the Noise and Vibration Monitoring Program (NVMP) required under CoA C16 to monitor noise and vibration levels during construction.

Table 1: Relevant Conditions of Approval

CoA No.	Requirement	Reference
C16	The Construction Noise and Vibration Monitoring Program, including any minor amendments approved by the ER must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Planning Secretary, whichever is the greater.	Appendix E of the CNVMP
C17	The results of construction noise and vibration monitoring must be included in a Construction Noise Monitoring Report. The report must also include a summary of the monitoring results against the relevant noise criteria identified in the Construction Noise and Vibration Monitoring Program and be published on the Proponent's website in accordance with the reporting frequency specified in the monitoring program.	This document

2. Construction Activities During Reporting Period

Activities undertaken at MARW throughout the reporting period are as follows:

- Bulk Earthworks
- Structure Construction including piling, streel fixing, form, reo, pour (FRP) works and concrete pours.
- Environmental control installation and management.
- Drainage installation

3. Noise level and monitoring requirements.

The Noise and Vibration Impact Assessment (NVIA) modelled a conservative worst-case construction scenario for road construction activities. This scenario assumes the concurrent operation of up to 50 per cent of the total plant and equipment fleet.

Daytime noise modelling undertaken as part of the NVIA indicates that, under this worst-case scenario, the Noise Management Levels (NMLs) are predicted to be exceeded at the assessed residential reference locations.

Table 7.1 of the Construction Noise and Vibration Management Plan (CNVMP) presents the NVIA Project's predicted worst-case construction noise levels at residential receivers, while Table 7.2 presents the predicted worst-case noise levels at non-residential receivers. These predicted worst-case noise levels have been considered in the CNVMP and should define the noise monitoring target for the Project and when determining if additional management and mitigation measures may be required. Therefore, the worst case noise levels are the criteria for construction noise monitoring and compliance assessment during standard construction hours.

Condition E19 of the State Significant Infrastructure (SSI) approval permits works to be undertaken outside of standard hours where such works are authorised by an Environment Protection Licence (EPL). In March 2025, the Project was granted EPL 21972 for the scheduled activity of road construction (≥50,000 tonnes and road length

<10 km). The EPL establishes requirements for works undertaken outside standard hours (OOHW), including applicable noise limits at the nearest sensitive receivers.

Under EPL Condition L5.3, out-of-hours works (OOHW) may be undertaken where the LAeq (15-minute) noise levels exceed the respective day, evening, or night Rating Background Level (RBL) by no more than 5 dB. Where works are undertaken in accordance with Conditions L5.6 or L5.7 of EPL 21972, construction noise must not exceed the noise levels modelled in the associated NVIA for each OOHW. The EPL also includes its own requirements for noise monitoring and compliance reporting.

4. Monitoring Results and Management Response

Noise monitoring was undertaken during the reporting period at identified sensitive receivers to assess compliance with the Project's noise criteria. Monitoring was attended and carried out either by the onsite environmental team or by an external acoustic consultant.

Out-of-hours works were conducted in accordance with the requirements of the Project's Environmental Protection Licence (EPL-21972), including all associated monitoring obligations. The Project undertook minimal night-time OOHW during the period, all of which were classified as low-impact activities, generating noise levels less than or equal to RBL + 5 dB(A).

Coordination of night-time activities with adjacent projects, specifically Moorebank Precinct West (MPW) and Moorebank Precinct East Stage 2 (MPE Stage 2), was undertaken to minimise cumulative impacts and avoid simultaneous disruption to the same sensitive receivers.

4.1 Noise Monitoring

During the reporting period, a total of 29 noise monitoring events were undertaken across the Project. A summary of these events is provided in Appendix A. Monitoring was conducted for the following purposes:

- Monitoring and validation of noise levels during Out-of-Hours Works
- Routine noise monitoring during standard construction hours
- Sound Power assessments for site equipment

The loudest noise sources detected during monitoring were unrelated to Project activities and typically included bird calls, traffic from nearby roads, and general residential noise. In many instances, Project works were not audible at the sensitive receiver locations during monitoring.

All monitoring results were assessed against the relevant noise management levels and predicted criteria to determine compliance. There was a single standard work hours model validation reading 1dBa above the expected model. The noise was retest and complaint with the model. The variation was attributable to factors including variability in plant utilisation, intermittent operation of equipment (e.g. vibrators), and short-term fluctuations in

activity intensity. It was determined that there was a close agreement between measured and predicted noise levels and that the sound power levels adopted for concrete pour activities are appropriate and representative of actual site operations. All other noise monitoring results were compliant with the applicable criteria, and no additional noise mitigation measures were required during the reporting period.

The sound power readings were assessed against the Sound Power Level detailed in EIS Table 5.2 which used in the CNVMP noise models or the Department of Transport Noise estimator source list. All plant monitored were either equal to or below the expected Sound Power Level.

4.2 Vibration Monitoring

The requirement for ground-borne vibration monitoring is determined by the nature of construction activities and their proximity to off-site sensitive receivers. During the reporting period, the Project did not undertake any works that triggered the need for vibration monitoring, as no activities were of a type or magnitude likely to generate ground-borne vibration impacts at off-site sensitive receivers.

5. Alteration to the Monitoring Program

During the reporting period, the Project did not implement any changes to the approved Monitoring Program. Furthermore, there are no proposed amendments to the Monitoring Program at this time.

6. Summary of Complaints

During the reporting period, the Project did not receive any complaints relating to noise or vibration associated with construction activities.

Appendix A- Noise Monitoring Results

Date	Time (24hr)	Work Activity	Monitor	Montioring Type	Monitoring Location	Peroid	Criteria (LAeq-	Measured Laeq 15 minute	Est MARW Contribution Laeq	Compliant	Observations
6/11/2025		D6 Dozer	Octave Acoustics [redacted]	Sound Power	Onsite	Standard	N/A	69	N/A	N/A	SPL measured 106 re 10^-12 W, Leq dB(A)
6/11/2025		18t Excavator	Octave Acoustics [redacted]	Sound Power	Onsite	Standard	N/A	68	N/A	N/A	SPL measured 103 re 10^-12 W, Leq dB(A)
6/11/2025		30t Excavator	Octave Acoustics [redacted]	Sound Power	Onsite	Standard	N/A	72	N/A	N/A	SPL measured 106 re 10^-12 W, Leq dB(A)
6/11/2025		Padfoot Roller	Octave Acoustics [redacted]	Sound Power	Onsite	Standard	N/A	71	N/A	N/A	SPL measured 106 re 10^-12 W, Leq dB(A)
6/11/2025		Concrete Agitator Truck	Octave Acoustics [redacted]	Sound Power	Onsite	Standard	N/A	71	N/A	N/A	SPL measured 106 re 10^-12 W, Leq dB(A)
6/11/2025		Concrete Pump	Octave Acoustics [redacted]	Sound Power	Onsite	Standard	N/A	79	N/A	N/A	SPL measured 105 re 10^-12 W, Leq dB(A)
6/11/2025		Grader	Octave Acoustics [redacted]	Sound Power	Onsite	Standard	N/A		N/A	N/A	SPL measured 105 re 10^-12 W, Leq dB(A)
8/01/2026	5:52	Retaining wall preparation	Octave Acoustics [redacted]	Compliance	26 Brickendon Court (NCA-02)	Night	36	52	0	Yes, project noise not audible	Construction not heard
8/01/2026	6:00	Retaining wall preparation	Octave Acoustics [redacted]	Compliance	27 Brickendon Court (NCA-02)	Night	36	53	0	Yes, project noise not audible	Construction not heard
8/01/2026	6:15	Retaining wall preparation	Octave Acoustics [redacted]	Compliance	28 Brickendon Court (NCA-02)	Night	36	54	0	Yes, project noise not audible	Construction not heard
8/01/2026	6:30	Retaining wall preparation	Octave Acoustics [redacted]	Compliance	29 Brickendon Court (NCA-02)	Night	36	49	0	Yes, project noise not audible	Construction not heard
8/01/2026	6:45	Retaining wall preparation	Octave Acoustics [redacted]	Compliance	30 Brickendon Court (NCA-02)	Night	36	51	0	Yes, project noise not audible	Construction not heard
8/01/2026		Manitou telehander	Octave Acoustics [redacted]	Sound Power	Onsite	Night	69	94	N/A	N/A	SPL measured 94 re 10^-12 W, Leq dB(A)
9/01/2026	5:20	Retaining wall preparation	Octave Acoustics [redacted]	Routine	30 Brickendon Court (NCA-02)	Night	36	47	0	Yes, project noise not audible	Construction not heard
9/01/2026	5:30	Retaining wall preparation	Octave Acoustics [redacted]	Routine	30 Brickendon Court (NCA-02)	Night	36	50	0	Yes, project noise not audible	Construction not heard
9/01/2026	6:45	Retaining wall preparation	Octave Acoustics [redacted]	Routine	30 Brickendon Court (NCA-02)	Night	36	52	0	Yes, project noise not audible	Construction not heard
9/01/2026	6:02	Retaining wall preparation	Octave Acoustics [redacted]	Compliance	30 Brickendon Court (NCA-02)	Night	36	53	0	Yes, project noise not audible	Construction not heard
9/01/2026	6:15	Retaining wall preparation	Octave Acoustics [redacted]	Compliance	30 Brickendon Court (NCA-02)	Night	36	54	0	Yes, project noise not audible	Construction not heard
9/01/2026	6:30	Retaining wall preparation	Octave Acoustics [redacted]	Compliance	30 Brickendon Court (NCA-02)	Night	36	51	0	Yes, project noise not audible	Construction not heard
9/01/2026	6:45	Retaining wall preparation	Octave Acoustics [redacted]	Compliance	30 Brickendon Court (NCA-02)	Night	36	56	0	Yes, project noise not audible	Construction not heard
13/03/2026	11:18	Retaining wall preparation	Octave Acoustics [redacted]	Compliance	25 Yallum Court (NCA-04)	Standard	55	48	0	Yes, project noise not audible	Construction not heard
13/03/2026	7:45	Onsite - Concrete Pour	Octave Acoustics [redacted]	Validation	Onsite		74	71	71	Yes	Reduced equipment (vibrators)
13/03/2026	8:00	Onsite - Concrete Pour	Octave Acoustics [redacted]	Validation	Onsite		74	73	73	Yes	Reduced equipment (vibrators)
13/03/2026	8:15	Onsite - Concrete Pour	Octave Acoustics [redacted]	Validation	Onsite		75	76	76	Above model	1 dBA above model prediction due to minor variations in intensity, utilisation and intermittent operation of equipment.
13/03/2026	8:30	Onsite - Concrete Pour	Octave Acoustics [redacted]	Validation	Onsite		75	75	75	Yes	Noise below model same location and equipment as above
13/03/2026		Onsite - 30t Excavator	Octave Acoustics [redacted]	Sound Power	Onsite	Standard	N/A	68	N/A	N/A	SPL measured 100 re 10^-12 W, Leq dB(A)
13/03/2026		Onsite - 20t Excavator	Octave Acoustics [redacted]	Sound Power	Onsite	Standard	N/A	69	N/A	N/A	SPL measured 103 re 10^-12 W, Leq dB(A)
13/03/2026		Onsite - Wheeled Excavotor (driving)	Octave Acoustics [redacted]	Sound Power	Onsite	Standard	N/A	73	N/A	N/A	SPL measured 103 re 10^-12 W, Leq dB(A)
13/03/2026		Onsite - Material Placement	Octave Acoustics [redacted]	Sound Power	Onsite	Standard	N/A	68	N/A	N/A	Activity sound power

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