Prepared for
National Ceramic Industries Australia
ABN: 83100467267

Noise Compliance Monitoring Report - 2026

29-Jul-2026

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Noise Compliance Monitoring Report - 2026

Client: National Ceramic Industries Australia

ABN: 83100467267

Prepared by

AECOM Australia Pty Ltd
Awabakal and Worimi Country, Level 8, 6 Stewart Avenue, Newcastle West NSW 2302, PO Box 73, Hunter Region MC NSW 2310, Australia
T +61 1800 868 654 www.aecom.com
ABN 20 093 846 925

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1.0 Introduction

1.1 Background

National Ceramic Industries Australia Pty Ltd (NCIA or the Site) has engaged AECOM Australia Pty Ltd (AECOM) to conduct compliance noise monitoring to satisfy the requirements of the Project Approval (09_0006, 19 January 2012) and the sites Environmental Protection Licence (EPL 11956).

Acoustic terminology used in this report is defined in **Appendix A**.

1.2 Site

The site is located at 175 Racecourse Rd, Rutherford NSW and is bounded by industrial facilities to the west, vacant land immediately to the south, a golf driving range to the east and an RSPCA facility and Racecourse Rd to the north.

Site noise is generally characterised as continual general process noise, with automated process machinery, conveyors and air emissions stacks and associated fans being the dominant sources. Some heavy vehicle traffic as well as a loader and forklifts that operate intermittently add very minimal noise to the site baseline noise.

Traffic is predominantly limited to the daytime and evening period with trucks only permitted between 7am and 10pm. Occasional sporadic process noise was also observed, but again this is relatively insignificant compared to the continuous baseline.

The site is operational 24 hours a day, seven days a week however as stated there are limitations on truck deliveries to between 7am and 10pm.

2.0 Regulatory Conditions

The site is required to satisfy the conditions and noise limits outlined both in the Project Approval (09_0006) and EPL (no. 11956). The requirements of these documents are outlined below.

2.1 Project Approval Requirements

Project Approval reference 09_0006 issued 19 January 2012 states the following in regard to Noise Limits:

26. The Proponent shall ensure that noise generated from the project does not exceed the noise limits presented in Table 5. Noise generated by the project is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy.

Table 5: Project Noise Limits dB(A)

Location	***Day***	***Evening***	***Night***	
	L_{Aeq} *(15 minutes)*	L_{Aeq} *(15 minutes)*	L_{Aeq} *(15 minutes)*	L_{AMax}
Kenvil Close	*35*	*35*	*35*	*45*
Wollombi Road	*35*	*35*	*35*	*45*

2.2 EPL Requirements

The noise limits defined in EPL 11956 are shown in **Table 1**, with the noise from the premises not to exceed these limits.

Table 1 EPL Noise limits

	Day (7am – 6pm)	Evening (6pm – 10pm)	Other Times (Night)
Noise Limit (dB(A))	41	39	35

Other EPL conditions relating to noise are:

L5.2 Noise from the premises is to be measured at the most affected point on or within the receptor site boundary to determine compliance with this condition.

L5.3 Noise from the premises shall not exceed the LA1 (1 minute) noise level of 45 dB(A) at the nearest residential receiver most affected by noise from activities at the premises. The noise limit applies 1 metre from the dwelling façade and shall apply during the night period only.

L5.4 The noise emission limits specified above apply under all meteorological conditions except:

a) During rain and wind speeds greater than 3 m/s; and

b) From 6pm to 7am during intense inversions, which are indicated by cloud cover less than 40per cent and wind speeds less than 1.0 m/s.

With the exception of the L_{A1} monitoring location defined as the 'nearest residential receiver' in Condition L5.3, the EPL does not define monitoring locations (receptors). With the exception of the LA1 location, EPL receptors are assumed to be those outlined by the Project Approval. As the Project Approval stipulates either lower or equivalent L_{Aeq} values to the EPL, the Project Approval noise limits have been applied as a conservative approach to assessing the noise impact of the facility on the receiver locations.

3.0 Methodology

The influence of extraneous noise, i.e. road and rail traffic as well as other community noise, makes it difficult to determine the site's noise contribution at the receptors in isolation, and therefore difficult to determine compliance with Project Approval and EPL limits.

Where direct measurement of noise contribution from an industrial facility is not possible due to persistent extraneous noise sources, the Environment Protection Authority's Noise Policy for Industry (NPfI) makes an allowance for assessment by other methods.

Section 7.1.1 Options for noise monitoring of the NPfI states:

Direct measurement at alternative or intermediate location/s

Where direct measurement of noise at a compliance location is not practical because of poor signal-to-noise ratios (that is, extraneous noise is louder than the noise under investigation), or where access to the location has been denied or is unavailable, measurements at intermediate locations between the source and the receiver location, where signal-to-noise ratios are higher, may be a viable option. For this approach to be effective there needs to be well-established theoretical and/or empirical relationships between the intermediate location and the receiver location in terms of noise exposure. Noise modelling may be one option to establish this relationship. The techniques under the above section 'Direct measurement at a receiver location' would also be relevant in terms of quantifying the level of noise from the source at the intermediate location(s). Where this technique is relied upon, it is the responsibility of the proponent to demonstrate a robust acoustic relationship between the compliance location and the intermediate location.

Section 7.1.1 goes on to discuss assessment through the use of computer noise modelling. It states:

"The use of intermediate means of model validation or calibration can be a useful technique"

Determining compliance by prediction from onsite noise levels is therefore deemed to be appropriate in this instance.

3.1 On-site Source Monitoring

Compliance with Project Approval and EPL noise limits at the nominated receiver locations is difficult to determine through direct measurement due to the influence of extraneous noise sources during the day, evening and night periods. Therefore, in order to determine the noise contribution of the facility at the receiver locations, an alternative method of determining compliance, in accordance with the NPfI was considered appropriate.

In this case noise measurements conducted within the site were used to predict noise impacts at each receiver location.

3.2 Instrumentation

Noise monitoring was carried out at two monitoring locations on the eastern and southern sides of the NCIA site in order to predict the noise levels at the Project Approval and EPL monitoring locations in the absence of external noise sources. The southern measurement location was approximately 35 metres to the south of the site building; the eastern measurement location was 125 metres to the east of the site building. Instrumentation

Attended measurements were conducted using a Larson Davis SoundTrack LxT. This instrument has Class 1 characteristics as defined in AS IEC 61672.1-2004 “Electroacoustics - Sound Level Meters”. Measurements were conducted over 15-minute intervals.

Calibration of the instrument was confirmed with a Larson Davis CAL150 Sound Level Calibrator prior to, and at the completion of monitoring with all calibration checks returning results within 0.1dB of the expected value. All equipment used for the monitoring has current calibration certificates (i.e. calibrated in the last year).

The sound level meter was set to ‘fast’ time weighting and programmed to store $L_{10(15\ min)}$, $L_{Aeq(15\ min)}$ and $L_{A90(15\ min)}$ noise levels during each measurement period.

4.0 Monitoring

4.1 Attended Monitoring

Attended measurements were conducted by an AECOM technician on 29 April 2026 at the locations considered representative of the receivers listed in **Section 2.0** during daytime (0700 – 1800), evening (1800 – 2200) and nighttime (2200 - 0700) periods with measurements conducted at a height of approximately 1.5m above ground level. Monitoring was also performed at the onsite location as detailed in **Section 3.1** with monitoring locations shown in **Figure 1** below.

During the April attended onsite noise measurements, it was identified that a recently commissioned replacement fan and baghouse associated with the Selection Line process was resulting in a marginal increase above the measured 2025 levels.

Following consultation with NCIA, the speed of the Selection Line baghouse fan motor was reduced to lower Site noise levels. To determine if noise levels following the reduction of the Selection Line Baghouse fan were within the relevant noise criteria, additional noise monitoring performed 27 July at the Site.

4.1.1 Weather Conditions

Weather conditions during the 29 April daytime sampling were cloudy skies with light winds (2.0 m/s to 2.4 m/s). Evening and Night periods are noted to be clear with minimal wind.

Conditions for the 27 July monitoring were clear with light winds (approximately 1.5 m/s). Wind speed and direction data from the onsite NCIA meteorological station is provided in **Table 2** and **Table 3**.

Table 2 NCIA Meteorological Data, 29 April 2026

Monitoring Period	Time	Wind Speed (m/s)	Wind Direction (°)
Day	13:00	2.0	112
	14:00	2.3	116
	15:00	2.4	117
Evening	21:00	<0.1	179
	22:00	<0.1	215
Night	23:00	<0.1	204
	0:00	<0.1	228

Table 3 NCIA Meteorological Data, 27 July 2026

Monitoring Period	Time	Wind Speed (m/s)	Wind Direction (°)
Day	14:00	1.5	99
	15:00	1.6	118
	16:00	1.2	124

4.1.2 Site Operations

On both 29 April 2026 and 27 July 2026, the NCIA facility was operating under normal conditions. Noise emission characteristics of the site are outlined in **Section 1.2**.

4.2 Monitoring Locations

The two measurement locations considered representative of the Project Approval receivers are:

- 3 Kenvil Close, Rutherford
- 20 Loane Circuit, Farley

The Wollombi Road location was relocated to 20 Loane Circuit, adjacent to Wollombi Road, to reduce the impact of road traffic noise on the busy Wollombi Road. The Loane Circuit address is an equivalent distance from the site as the 292 Wollombi Road residence used in previous years and is considered a suitable location for this assessment.

While the EPL does not specifically define monitoring locations, it does require compliance at the nearest residential receiver for assessment of nighttime noise only. This location is deemed to be:

- 26 Fairway Street, Rutherford.

These monitoring locations are shown in **Figure 1** along with the site source monitoring location.

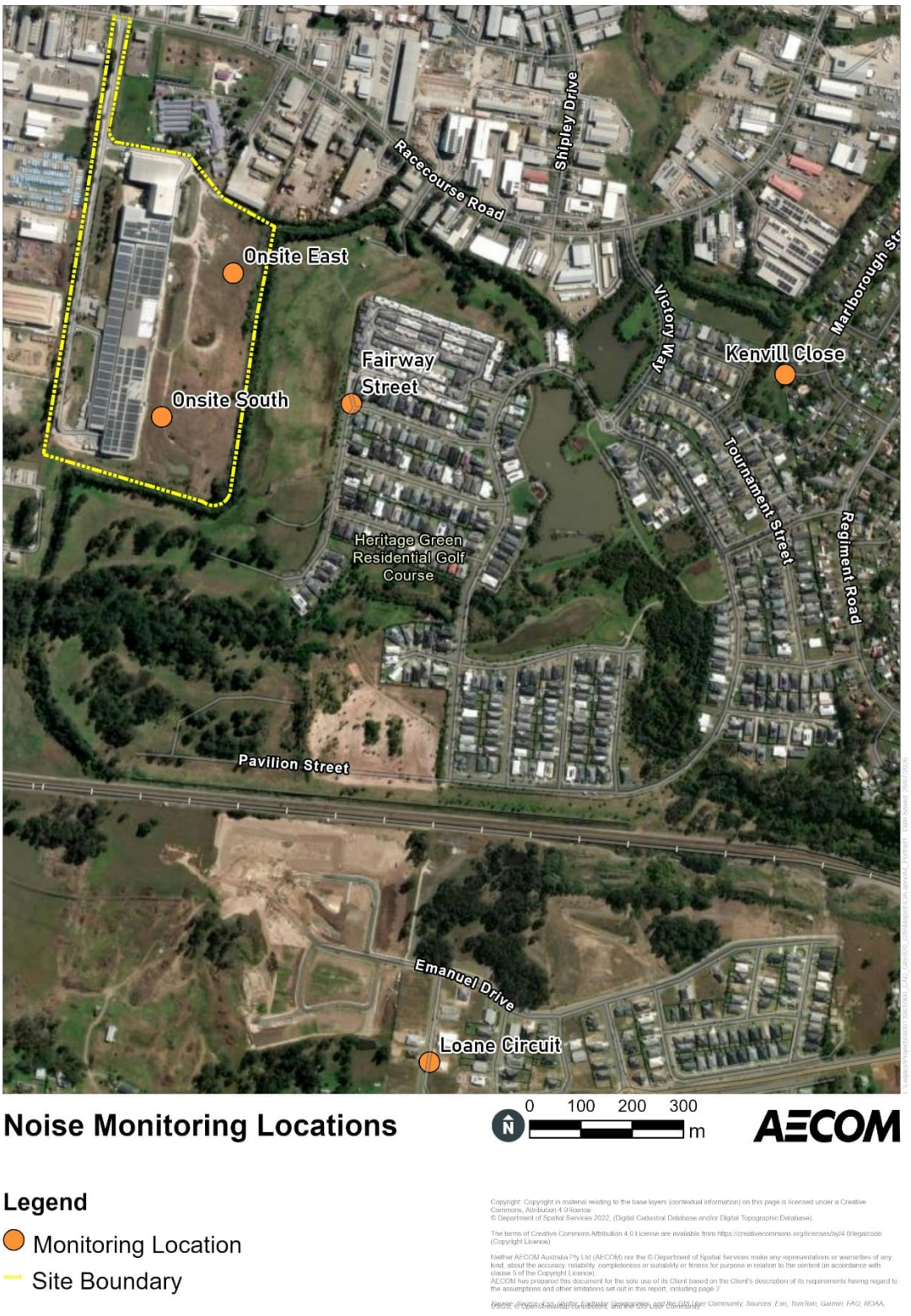

Figure 1 Site and Receiver Monitoring Locations

Due to external noise sources often dominating at the EPL monitoring locations, attended noise measurements were also conducted at the site, at representative locations to quantify site noise emissions for the prediction of the noise level at each of the required receiver locations, in the absence of extraneous noise.

5.0 Results

5.1 Receiver Location Monitoring

Attended noise measurements were conducted at the two representative receiver locations defined in the Project Approval Requirements during the day, evening and nighttime periods on 27 April 2026. The results in the form of the $L_{Aeq\ (15min)}$ (the equivalent continuous sound level) and the $L_{A90\ (15min)}$ (the sound pressure level exceeded for 90% of the measurement period) are provided in **Table 4**.

Table 4 April 2026 Attended Noise Monitoring Results Summary

Location	Date / Time	Project Approval $L_{Aeq(15mins)}$ dB(A)	Measured Noise Level, dB(A)		Description of Noise Environment
			L_{Aeq} (15 min)	L_{A90} (15 min)	
Day (7:00 am – 18:00 pm)					
3 Kenvil Close, Rutherford	29/4/26 14:29	35	**47**	41	• Site inaudible • Minimal local traffic • Birds, trees rustling • Some aircraft noise • Minimal residential noise
20 Loane Circuit, Farley	29/4/26 13:56	35	**53**	41	• Site inaudible • Traffic on Wollombi Rd dominant • Birds, leaves rustling • Aircraft noise • Minimal local residential noise • Paused for passing trains
Evening (18:00 pm – 22:00 pm)					
3 Kenvil Close, Rutherford	29/4/26 21:30	35	**41**	39	• Site faintly audible • Insects (crickets) • Highway and local traffic • occasional dog barking
20 Loane Circuit, Farley	29/4/26 21:01	35	**44**	39	• Site faintly audible • Traffic along Wollombi Rd dominant source • Crickets/insects • Paused for passing trains
Night (22:00 pm – 7:00 am)					
3 Kenvil Close, Rutherford	29/4/26 10:47	35	**42**	40	• Site audible • Crickets • Bats / flying foxes • Some traffic noise • Minimal residential noise
20 Loane Circuit, Farley	29/4/26 11:15	35	**41**	37	• Site audible • Occasional traffic on Wollombi Rd • Insects and birds • Paused for passing trains

Bold values indicate measured noise level above Project Approval criteria

The results in **Table 4** show that the measured $L_{Aeq(15\ min)}$ noise levels at 3 Kenvil Close, Rutherford and 20 Loane Circuit, Farley measurement locations are above the 35 dB(A) Project Approval limit for each of the three time periods.

At 3 Kenvil Close, Rutherford and 20 Loane Circuit, Farley, the site was noted to be inaudible during the day period, faintly audible in the evening and audible at night. During all periods extraneous noise sources dominated the measurements, with the site contribution deemed to be minimal even when audible during the evening and night.

Following the Selection Line fan speed being reduced, daytime measurements at the receiver locations were repeated on 27 July, with results provided in **Table 5** comparable to those in measured in April. It is likely that any reduction in the below results compared to those in April is due to less noise proximal to the receiver locations rather than the marginal reduction in site noise.

Table 5 July 2026 Attended Noise Monitoring Results Summary

Location	Date / Time	Project Approval $L_{Aeq(15mins)}$ dB(A)	Measured Noise Level, dB(A)		Description of Noise Environment
			L_{Aeq} (15 min)	L_{A90} (15 min)	
Day (7:00 am – 18:00 pm)					
3 Kenvil Close, Rutherford	27/7/26 15:22	35	**47**	39	• Site inaudible • Local traffic, louder vehicles on highway • Birds, trees rustling • Occasional power tool in distance • Some residential noise
20 Loane Circuit, Farley	27/7/26 15:50	35	**49**	42	• Site inaudible • Traffic on Wollombi Rd dominant • Some building noise in the area • Paused for passing trains and nearby building activity

Road traffic was noted to be a significant noise source at both receiver locations.

In order to determine the noise contribution from the facility alone at the receiver locations, an alternative method of determining compliance, in accordance with the NPfI was considered appropriate. In this case site source measurements were used to predict noise impacts for each receiver location.

5.2 On-Site Monitoring

Historically Site noise measurements have been conducted at a single location deemed to be representative of the site. Following the replacement Selection Line baghouse being identified as a considerable on-site noise source located towards the southern boundary of the site, a southern boundary measurement location was considered appropriate.

Initial on-site measurements conducted on 29 April indicated that noise levels were within 2 dB of achieving compliance. To demonstrate compliance with the Project criteria, measurements were repeated onsite on 27 July, following the Selection Line fan speed being reduced.

While the site operations and associated noise is extremely consistent, measurements were initially conducted during the day and nighttime periods on 29 April. Repeat measurements were taken on 27 July during the day period (deemed likely to be worst case). Results from the site monitoring carried out on 29 April and 27 July 2026 are presented in **Table 5**, with the calculated predicted receiver results provided in **Section 5.4**.

Table 6 April and July 2026 – On-site measured noise levels

Location	Time		Measured Noise Level, dB(A)		Site Operation
			$L_{Aeq(15\ min)}$	$L_{A90(15\ min)}$	
April 2026 measurements					
On-Site (Eastern Location)	Day	29/4/26 14:57	55.2	52.5	• Site dominant with majority of noise generated by continuous processes. • Minimal noise from rustling grass and trees
	Night	29/4/26 22:10	54.4	53.9	• Site noise dominant • Some insect noise
On-Site (Southern Location)	Day	29/4/26 15:20	67.2	66.1	• Measurements 35m from Selection Line baghouse
	Night	29/4/26 22:27	67.6	66.8	
July 2026 measurements					
On-Site (Eastern Location)	Day	27/7/26 14:35	53.6	52.4	• Occasional birds • Minimal non-site noise
On-Site (Southern Location)	Day	27/7/26 14:30	63.0	62.2	• Measurements 35m from Selection Line baghouse following fan speed decrease

The results of the site measurements in April demonstrate that there is minimal variation between the daytime and night noise levels from the site. The daytime noise levels are therefore considered appropriate to represent the noise emission from the site during daytime, evening and at night.

The measured L_{Aeq} and L_{90} noise level indicate the noise from the site is steady state, with minimal variation in noise level across the measurement period. As expected, following the reduction in speed of the Selection Line baghouse fan, the results of measurements performed on 27 July are lower than the April results. Measured Noise at 35m from the Selection Line baghouse decreased from 67 dB(A) to 63 dB(A).

5.3 Nighttime L_{AMax} and $L_{1,\ 1\ minute}$ Assessment

The Project Approval and EPL require a 45 dB(A) noise level from the site during the nighttime period, using the $L_{1,\ 1\ minute}$ and L_{Amax} noise descriptors respectively.

The L_{AMax} noise descriptor is more conservative, compared to $L_{1,\ 1\ minute}$ as it presents the single highest noise level recorded during the measurement period, instead of the noise level exceeded for 99% of a 1 minute measurement period. For simplicity, the L_{Amax} noise descriptor will be used to discuss the nighttime impact from the site.

The Project Approval Requirement states that the L_{AMax} must not exceed 45 dB at the two receiver locations (Kenvil Close and Wollombi Road) while the EPL stipulates that the $L_{A1,\ 1\ minute}$ must not exceed 45 dB at the nearest residential receiver most affected by noise from activities at the premises. The nearest worst affected residential receiver is the residence located directly to the east of the site at 26 Fairway Street, Farley.

26 Fairway Street, Farley is located approximately 350 metres from the site, while the two Project Approval locations at Kenvil Close and Wollombi Road are located 1050 metres and 1110 metres from the site respectively. Therefore, demonstrating compliance with the L_{AMax} noise criteria at 26 Fairway Street, Farley, will also demonstrate compliance with the Kenvil Close and Wollombi Road receivers located further away from the site.

The measured L_{AMax} noise level at 26 Fairway Street, Farley is presented in **Table 8**.

Table 7 April 2026 – Nighttime measured noise levels

Location	Time		Measured Noise Level, L_{AMax} dB(A)
26 Fairway Street, Farley	Night	29/4/26 22:10	44

The measured $L_{A,max}$ noise level at 26 Fairway Street, Farley presented in **Table 8**, is within the 45 dB(A) L_{Amax} EPL criteria from the site and is therefore also within the $L_{1,\ 1\ minute}$ criteria at the two Project Approval locations at Kenvil Close and Wollombi Road.

5.4 Predicted Noise Levels

As discussed, due to extraneous noise sources such as road traffic at the nominated receiver locations in Table 4, it was not possible to determine the noise contribution from the site. As a result, the methodology outlined in **Section 3.0**, was implemented. On-site noise monitoring results in **Table 6** were used as intermediate measurement points between the measured source(s) and receivers. These measured levels were then extrapolated to the receiver points using the relevant distance between the source and receiver.

The prediction of noise at the receiver locations accounts for hemispherical spreading, conservatively assuming no topographical shielding, ground or air absorption, directivity or meteorological effects. Calculated noise levels at each receiver location are presented in **Table 8**, with the July 27 daytime measurements (taken following the Selection Line baghouse fan speed being decreased), deemed representative of all time periods given the constant nature of the Site operations.

Table 8 2026 Calculated Noise Levels at the Receiver Locations

Receiver Location	Time	Calculated noise impact, dB(A)	Project Approval Limit, dB(A)	Comply
Kenvil Close	Day	35	35	Yes
	Evening	35	35	Yes
	Night	35	35	Yes
Wollombi Road	Day	33	35	Yes
	Evening	33	35	Yes
	Night	33	35	Yes

Predicted noise levels in **Table 8** show that the results are within the 35 dB(A) Project Approval limit at both receiver locations.

6.0 Conclusion

Attended noise compliance monitoring at designated NCIA Project Approval and EPL noise receivers was conducted on 29 April and 27 July 2026.

$L_{Aeq(15\ min)}$ levels measured at the receiver locations were largely influenced by extraneous noise sources such as road traffic and other ambient sources (e.g. birds, insects, trees rustling) at both assessment locations. Extraneous noise sources present at the defined Project Approval locations prevented in-situ assessment of the site contribution at the receiver locations.

Due to the difficulty in determining the contribution of the facility at the nominated receiver locations, an alternative method of determining compliance, in accordance with the NPfI, was considered appropriate. In this case site on-site noise measurements were used to calculate noise impacts at each receiver location.

Predicted noise levels based on measurements conducts at intermediate points, demonstrate compliance with the Project Approval noise limits, with daytime site measurements deemed representative of all three time periods.

The measured $L_{A,max}$ noise level at nearest residence to the site at 26 Fairway Street, Farley is within the 45 dB(A) L_{Amax} EPL criteria from the site and is therefore also within the $L_{1,\ 1\ minute}$ criteria at the two Project Approval locations at Kenvil Close and Wollombi Road.

Appendix A

Glossary of Acoustic Terms

Appendix A Glossary of Acoustic Terms

The following is a brief description of acoustic terminology used in this report:

Sound power level	The total sound emitted by a source
Sound pressure level	The amount of sound at a specified point
Decibel [dB]	The measurement unit of sound
A Weighted decibels [dB(A])	The A weighting is a frequency filter applied to measured noise levels to represent how humans hear sounds. The A-weighting filter emphasises frequencies in the speech range (between 1kHz and 4 kHz) which the human ear is most sensitive to, and places less emphasis on low frequencies at which the human ear is not so sensitive. When an overall sound level is A-weighted it is expressed in units of dB (A).
Decibel scale	The decibel scale is logarithmic in order to produce a better representation of the response of the human ear. A 3 dB increase in the sound pressure level corresponds to a doubling in the sound energy. A 10 dB increase in the sound pressure level corresponds to a perceived doubling in volume. Examples of decibel levels of common sounds are as follows: 0dB(A) Threshold of human hearing 30dB(A) A quiet country park 40dB(A) Whisper in a library 50dB(A) Open office space 70dB(A) Inside a car on a freeway 80dB(A) Outboard motor 90dB(A) Heavy truck pass-by 100dB(A) Jackhammer/Subway train 110 dB(A) Rock Concert 115dB(A) Limit of sound permitted in industry 120dB(A) 747 take off at 250 metres
Frequency [f]	The repetition rate of the cycle measured in Hertz (Hz). The frequency corresponds to the pitch of the sound. A high frequency corresponds to a high pitched sound and a low frequency to a low pitched sound.
Equivalent continuous sound level [L_{Aeq}]	The constant sound level which, when occurring over the same period of time, would result in the receiver experiencing the same amount of sound energy.
L_{max}	The maximum sound pressure level measured over the measurement period
L_{min}	The minimum sound pressure level measured over the measurement period
L_{10}	The sound pressure level exceeded for 10% of the measurement period. For 10% of the measurement period it was louder than the L_{10}.

$L_{A90(15\ min)}$	The sound pressure level exceeded for 90% of the measurement period. For 90% of the measurement period it was louder than the $L_{A90\ (15\ min)}$.
Ambient noise	The all-encompassing noise at a point composed of sound from all sources near and far.
Background noise	The underlying level of noise present in the ambient noise when extraneous noise (such as transient traffic and dogs barking) is removed. The $L_{A90\ (15\ min)}$ sound pressure level is used to quantify background noise.
Traffic noise	The total noise resulting from road traffic. The L_{eq} sound pressure level is used to quantify traffic noise.
Day	The period from 0700 to 1800 h Monday to Saturday and 0800 to 1800 h Sundays and Public Holidays.
Evening	The period from 1800 to 2200 h Monday to Sunday and Public Holidays.
Night	The period from 2200 to 0700 h Monday to Saturday and 2200 to 0800 h Sundays and Public Holidays.
Assessment background level [ABL]	The overall background level for each day, evening and night period for **each day** of the noise monitoring.
Rating background level [RBL]	The overall background level for each day, evening and night period for the **entire length** of noise monitoring.

*Definitions of a number of terms have been adapted from Australian Standard AS1633:1985 *"Acoustics – Glossary of terms and related symbols"*, the EPA's NSW Industrial Noise Policy and the EPA's NSW Road Noise Policy.