



Doc. No: 08397-7826

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# Noise Compliance Study National Ceramic Industries Australia Rutherford, NSW

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May 2018

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## INTRODUCTION

This report provides the results and findings of the compliance noise monitoring programme undertaken during April 2018 at National Ceramic Industries Australia (NCIA) in Racecourse Road, Rutherford, NSW.

The assessment has been carried out in accordance with the requirements of NCIA's Environmental Protection Licence (EPL) no. 11956 and Project Approval 09\_0006, dated 19 January 2012. The methodology used in this programme is aimed to most effectively determine compliance with the noise limits in the Project Approval. Some practical modifications to the formal monitoring locations are discussed in the text.

## NOISE LIMITS

The noise limits applicable to NCIA's operations are detailed in the Project Approval and reproduced below:

*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 (INP).*

Location	Day	Evening	Night	
	Leq (15 min)	Leq (15 min)	Leq (15 min)	Lmax
Kenvil Close	35	35	35	45
Wollombi Road	35	35	35	45

As per the NSW Industrial Noise Policy (INP), the noise conditions apply under all meteorological conditions except during rain, wind speeds greater than 3m/s (at 10m above ground level) and intense temperature inversions (greater than +3°/100m) between 6 pm and 7 am.

The Lmax noise limit relates to sleep disturbance conditions and applies 1 metre from the facade of a bedroom window and applies during the night time period only.

To avoid undue disturbance to residents it is common practice to use the L1 (1 min) noise level from the operational noise measurement location to show general compliance with the sleep disturbance criterion. This point of practicality was accepted in the 2015 independent audit of the NCIA operation. The justification is that the

distance between the noise source and the operational noise monitoring location is almost equivalent to the distance between the noise source and the sleep disturbance monitoring location (i.e. 1m from the facade of the house) and there will be little variation in L1 (1 min) levels between the more practical monitoring location and the formal monitoring location. It must be noted, however, that the sleep disturbance criterion is to be measured near a bedroom window. As the internal layout of each residence is not known, to consider a worst case, this is assumed to be facing towards NCIA.

## METHODOLOGY

Prescribed noise monitoring locations at Kenvil Close and Wollombi Road are specified in Condition 26 of the Project Approval. The measurement locations are shown in **Appendix 1**.

A series of attended noise measurements, of 15 minutes duration, were made in Kenvil Close and on Wollombi Road on Tuesday 23 April 2018 during the evening and night time periods and on Wednesday 24 April during the day period. During the day time period, measurements were also made on the NCIA site.

At the time of the monitoring activities at NCIA were being carried out under typical operating conditions.

Noise emission levels were measured with a Brüel & Kjær Type 2250 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Wind speed and direct meteorological data were obtained from NCIA's site meteorological station. During the day the temperature was approximately 24°C with a gentle breeze from the south east.

During the evening and night the temperature ranged from 15°C to 17°C. Winds were calm (<0.5 m/s) and drifting from the south to south west.

Night time temperature inversion strength was calculated from meteorological data via methods detailed in the INP.

## RESULTS

The results of the attended noise measurements at each location and time are shown in **Table 1**. To avoid undue disturbance to residents, and to avoid causing dogs to bark, all measurements in Kenvil Close were made in the reserve at the western end of the street. This

location is approximately in line with the nearest facade of the most potentially affected receiver in Kenvil Close.

At Wollombi Road the measurements were made in a clearing adjacent to the most potentially affected receiver. The location had line of sight to the NCIA facility without being obscured by trees. As such, this location is considered a slightly conservative proxy to the formal monitoring location, and also avoids disturbing residents or dogs at the residence.

Measured noise levels for each time are summarised in **Table 1**. The total measured Leq is shown. This was analysed with the Bruel & Kjaer “*Evaluator*” software to quantify the contributions of the various noise source(s) to the overall. The noise measurements were made over of one second statistical intervals with each one second interval accompanied by a one third octave band noise spectrum. Viewing the 15 minute time trace with the accompanying field notes for the monitoring period allows for individual noise sources and events to be isolated. The “*evaluator*” software can be used to add together the noise levels and durations of each identified noise source. The relative contribution(s) of each to the overall can then be determined.

The noise sources are listed in the *Identified Noise Sources* column with the contribution of each shown in brackets.

TABLE 1 RECEIVED NOISE LEVELS – 23/24 April 2018					
Location	Time	dB(A),Leq (15 min)	Wind speed/ dir./inversion*	Identified Noise Sources	dB(A) Lmax
Kenvil Close	3:48 pm	47	1.7 / 142	Wind (45), planes (39), insects (38), NCIA inaudible	n/a
Kenvil Close	9:19 pm	46	0.1 / 187	Traffic (43), trains (40), Insects (38), NCIA inaudible	n/a
Kenvil Close	10:24 pm	42	0.1 / 251 / 2.9	Traffic (41), NCIA (32), insects (30)	38
Wollombi Road	4:14 pm	70	1.7 / 142	Traffic (70), NCIA (24)	n/a
Wollombi Road	9:43 pm	60	0.1 / 187	Traffic (60), industry (27), NCIA (27)	n/a
Wollombi Road	10:00 pm	61	0.1 / 251 / 2.9	Traffic (61), trains (49), NCIA (28)	29

\* Night time inversion strength in °C/100m.

The results in **Table 1** show that the received noise from the NCIA site was audible and measureable at both the Kenvil Close and Wollombi Road monitoring locations at times.

On all occasions, and at all times, the noise from NCIA did not exceed the relevant criterion.

The measured noise emissions from NCIA when audible were relatively steady state with little variation over time.

At Kenvil Close during each of the monitoring periods there was significant contribution from noise from traffic on the New England Highway.

Noise from traffic on Wollombi Road was the most significant contributor to the measured noise at that monitoring location. Analysis of data from those times when the traffic noise was low allowed for the determination of the contribution of other noise sources to the overall acoustic environment.

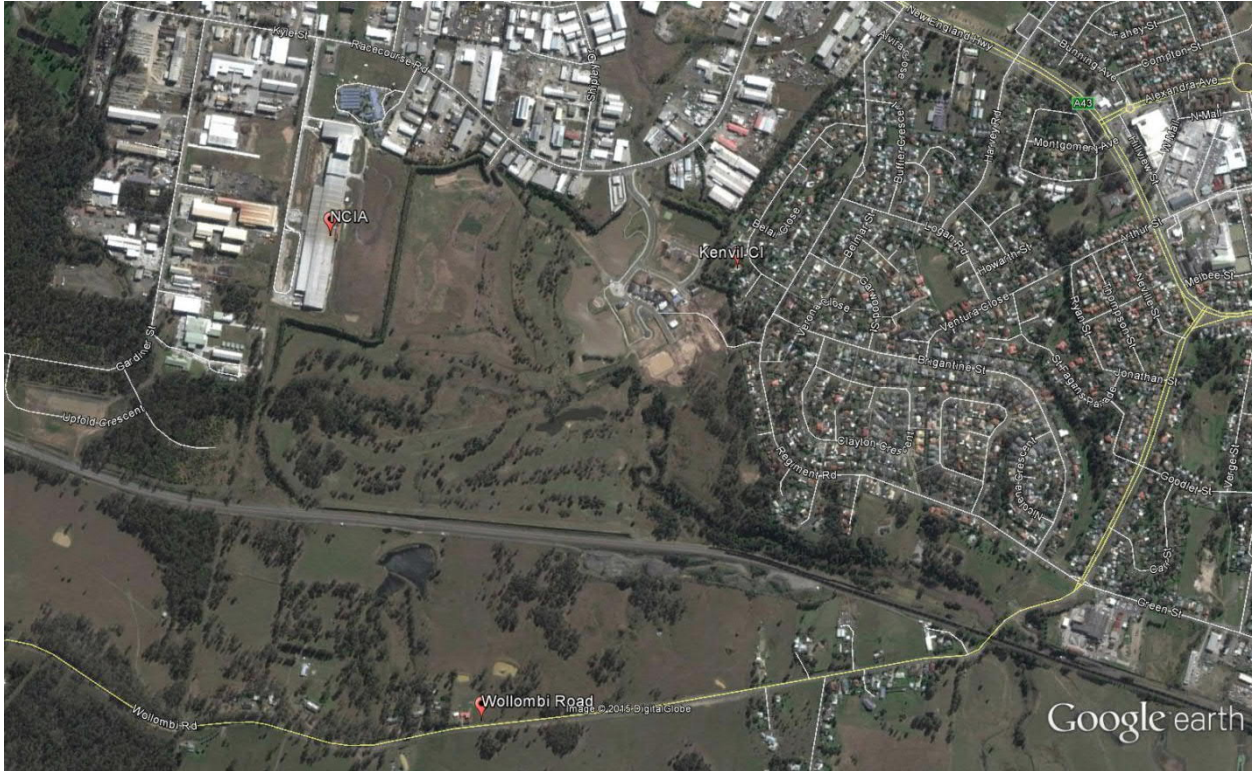
The measured L<sub>max</sub> noise level attributed to NCIA is also shown in **Table 1**. These show compliance with the sleep disturbance criterion, noting that the operational noise monitoring location was adopted as a proxy for the formal sleep disturbance monitoring location at 1m from the building facade. Levels were well below the sleep disturbance criterion and it is considered that sleep disturbance potential is minimal.

The noise emissions from NCIA are relatively constant and steady with some intermitted possibly metallic bangs audible. L<sub>max</sub> noise levels measured on the NCIA site (during the day) did not vary by more than 4 dB(A) from the measured Leq noise levels. Based on the results in **Table 1**, the L<sub>max</sub> noise at the closest receivers in Kenvil Close and Wollombi Road would be significantly lower than the 45 dB(A) criterion for the site.

## CONCLUSIONS

The assessment of noise emissions from NCIA was undertaken during April 2018 by measuring noise levels at the residential locations specified in the NCIA Project Approval, namely Kenvil Close, Rutherford and Wollombi Road, Farley to determine compliance with requirements of Project Approval 09\_0006.

The measurements showed that the noise levels were in compliance with the noise criteria for all time periods. Compliance with the sleep disturbance criterion at the proxy measurement location was also shown to be compliant, with levels sufficiently low that measurement at 1m from the residential facade is not considered necessary.



## SITE PLAN AND MONITORING LOCATIONS