150 Epping Road, Lane Cove West

Child Care Acoustic Assessment

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DOCUMENT CONTROL REGISTER

Project Number	20130454.1
Project Name	150 Epping Road, Lane Cove West
Document Title	Child Care Acoustic Assessment
Document Reference	20130454.1/2905A/R1/TA
Issue Type	Email
Attention To	Meriton Apartments Pty Ltd Mr Joe Bevacqua

Revision	Date	Document Reference	Prepared By	Checked By	Approved By
0	29/05/2013	20130454.1/2905A/R0/TA	TA		TA
1	29/05/2013	20130454.1/2905A/R1/TA	TA		TA

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1 INTRODUCTION

This report presents our environmental noise assessment for the proposed childcare centre to be located within the residential development at 150 Epping Road, lane Cove.

The following have been assessed in the report:

- Noise intrusion from traffic on Epping Road.
- Noise emission from proposed outdoor play areas.
- Noise emission from proposed indoor play activities.

Noise emissions will be assessed with reference to relevant Lane Cove Council acoustic guidelines.

Where necessary, building and/or management controls will be recommended in order to reduce noise emissions to acceptable levels.

The assessment is based on the architectural drawings A103 and A205 provided by Connybeare Morrison International dated 6 June 2013.

2 SITE DESCRIPTION

The proposed childcare centre is located at the ground level of the 150 Epping Road development.

The north of the child care centre is Epping Road, which is elevated approximately 5m above the level of the proposed child care centre. The east, south and west of the site will be bounded by future residential development.

Proposed operating hours for the childcare centre is 6am – 8pm seven days a week. Outdoor play area will be limited to 8am to 6pm.

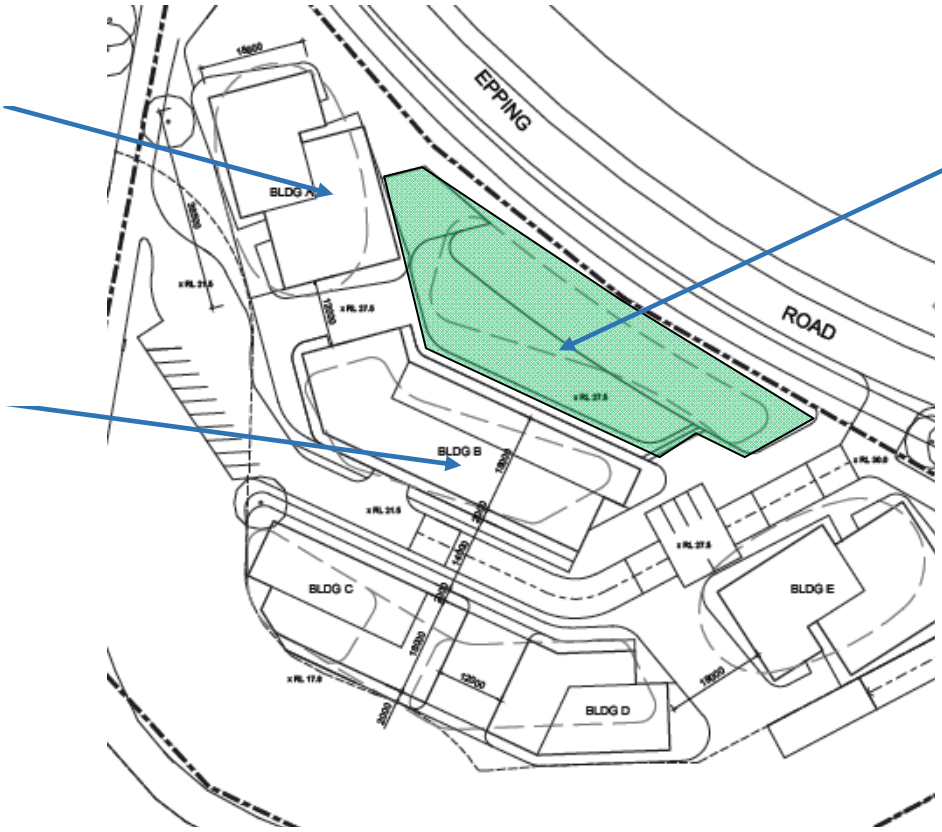
The nearest sensitive noise receivers are:

- Receiver 1: Residential apartments in Building A overlooking the outdoor play area
- Receiver 2: Residential apartments in Building B facing the outdoor play area.

The proposed layout is presented in Figure 1.

Building A

Building B



Proposed child care centre

Figure 1 – Site Map

3 NOISE DESCRIPTORS

Environmental noise constantly varies in level, due to fluctuations in local noise sources including road traffic. Accordingly, a 15 minute measurement interval is normally utilised. Over this period, noise levels are monitored on a continuous basis and statistical and integrating techniques are used to determine noise description parameters.

In the case of environmental noise three principle measurement parameters are used, namely L_{10}, L_{90} and L_{eq}.

The L_{10} and L_{90} measurement parameters are statistical levels that represent the average maximum and average minimum noise levels respectively, over the measurement intervals.

The L_{10} parameter is commonly used to measure noise produced by a particular intrusive noise source since it represents the average of the loudest noise levels produced by the source.

Conversely, the L_{90} level (which is commonly referred to as the background noise level) represents the noise level heard in the quieter periods during a measurement interval. The L_{90} parameter is used to set the allowable noise level for new, potentially intrusive noise sources since the disturbance caused by the new source depends on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the L_{90} level.

The L_{eq} parameter represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the measurement period. L_{eq} is important in the assessment of traffic noise impact as it closely corresponds with human perception of a changing noise environment; such is the character of industrial noise.

4 NOISE EMISSION ASSESSMENT

4.1 BACKGROUND NOISE MEASUREMENTS

Daytime background noise levels for the site have been presented in the AECOM Acoustic Assessment Report with reference 60196533 dated 8 March 2011.

The following table presents the resultant background noise levels at locations representative of nearby sensitive receivers adjacent to the proposed child care centre.

Table 1 - Noise Objectives for All Receivers

Location	Time of Day	Measured Background Noise Level dB(A) $L_{90(15,min)}$
Future Buildings A & B	Day (7am – 6pm)	58
	Evening (6pm – 8pm)	54
	Night-Shoulder Period (6am – 7am)	54

4.2 NOISE EMISSION CRITERIA FOR THE PROPOSED CHILDCARE CENTRE

In the absence of any specific noise criteria within the Lane Cove Council Child Care Centre DCP, the criteria adopted by the Land and Environment Court shall be adopted for the assessment of noise emissions from the proposed child care centre.

4.3 DECISIONS OF THE LAND AND ENVIRONMENT COURT

The Association of Australian Acoustical Consultants adopts a "background+10dB(A)" noise emission goal for the use of outdoor spaces of child care centres.

This more lenient goal is in recognition that:

- Noise from children playing is not typically considered as intrusive as industrial noise (or other noise sources typically required to comply with a "background+5dB(A)" criteria), and should therefore not be held to the same criteria;
- There are very limited building controls that can practically be implemented for control of noise from outdoor areas; and
- The outdoor play areas are used only for limited periods of the day, at times when nearby properties are typically less noise sensitive.

The AAAC guidelines recommend a "background +10dB(A)" criteria for periods of 2 hours per day, and "background+5dB(A)" for other periods, or other noise sources at the site (vehicle, plant noise, noise from internal areas).

These criterion have also been adopted by the Land and Environment Court in a number of decisions, including *Mesabo Pty Limited v Mosman Municipal Council* [2004] NSWLEC 492.

4.4 NOISE EMISSION GOALS TO BE ADOPTED FOR THIS PROJECT

For this assessment, we propose that:

- Outdoor play areas be permitted to generate a noise level of 10dB(A)L_{eq} above the background noise level for up to 2 hours per day.
- All other noise sources must not generate a noise level exceeding background levels by more than 5dB(A)L_{eq}.

A summary is presented below:

Table 2 –Noise Emission Objectives at Residential Receivers

Location	Time of day	Background Level dB(A)L_{90}	Noise Emission Objective	
			Outdoor Play Areas (2 hours per day) dB(A)$L_{eq\ (15min)}$	Other Noise Sources dB(A)$L_{eq\ (15min)}$
Residences in Building A and B	6:00am-7.00am (early morning)	**54**	**64**	**59**
	Day (7am to 6pm)	**58**	**68**	**63**
	Evening (6pm to 8pm)	**58**	**68**	**63**

4.5 NOISE EMISSION PREDICTIONS

4.5.1 Typical Outdoor Playing Noise Data

4.5.1.1 Outdoor Play Area Noise Measurements

Outdoor play area noise measurements were undertaken at Child Care Centre, 8 Central Avenue Mosman by this office on the 11th February 2005. Details of the measurements are presented below. Noise measurements were taken of the 3 to 6 year age group (8 children) at play. This group represents the most active of the age groups and hence are likely to generate the maximum noise levels. Although noise measurements have not been conducted for the 0-2 year age group, it would be expected that they would be likely to generate lower levels of sound than the older age group

4.5.1.2 Measurement Location

Measurements were taken during the morning play session within the outdoor play area with 8 children present.

The measurements were taken at noted distances to the children playing with the measured levels presented below.

4.5.1.3 Measurement Equipment

Noise measurements were obtained using a CEL-593 Type 1 Sound Level Analyser, set to A-weighted fast response. The sound level meter was calibrated at the beginning and the end of the measurement using a Rion NC-73 calibrator; no significant drift was detected. All measurements were taken on A-weighted fast response mode.

4.5.1.4 Measured Noise Levels

The measured activity noise levels from the 8 children playing are listed below in table below.

Table 3 - Measured Children Activity Noise Levels dB(A) L_{A10}

LOCATION	Activity	Distance	NOISE LEVEL
Outdoor Play Area	Bikes + Sandpit play	3m	66
	Blocks + Sandpit play	4m	64
	Stepping Blocks + Sandpit play	4m	57
	Play gym + Sand pit play	3-4m	65

4.5.2 Predicted Noise Levels

4.5.2.1 Outdoor Noise

Noise emissions from the play areas are predicted based on the following assumptions:

- The measured typical children's play noise data above
- Play areas are assumed to be operating at the nominated capacity, and the children are distributed evenly across the outdoor play area.
- Based on the information provided by the client, the approximate children distribution is as follows:
    - Option 1: maximum 26 children aged from 2-5 years old at the outdoor play area
    - Option 2: maximum 27 children aged from 0-2 years old plus maximum 15 children aged from 2-5 years old at the outdoor play area.
- Outdoor playing time will be restricted to between 8am and 6pm
- The recommended constructions and management controls presented in Section 6 of this report have been implemented in the building.

The noise level at the nearest residents was predicted using the above data and by taking into account any expected noise reduction provided by the building fabric, distance losses, directivity, barrier effects, number of children playing etc.

Noise levels are predicted to the balconies of the residences in Buildings A and B.

Table below shows the predicted noise levels from the children in outdoor play area.

Table 4 - Predicted Noise Levels from Outdoor Play

Receptor	Predicted Noise Level $L_{eq,\ 15min}$ dB(A)	Criteria $L_{eq,\ 15min}$ dB(A)	Complies
Building A: Apartments overlooking the outdoor area	53 External	68 External	Yes
Building B : Apartments overlooking the outdoor area	65 External	68 External	Yes

4.5.2.2 Indoor Noise

Noise Levels generated from indoor structured activities (i.e. lessons) are based on a raised speech sound power level of 78dB(A) for the teacher.

The noise level at the nearest residents was predicted using the above data and by taking into account any expected noise reduction provided by the building fabric, distance losses, directivity, barrier effects, etc. Table below shows the predicted noise levels from lessons.

Table 5 - Predicted Noise Levels from Indoor Play

Receiver	Predicted Noise Level $L_{eq,\ 15min}$ dB(A)*	Criteria $L_{eq,\ 15min}$ dB(A)	Complies
Building A	25	68	Yes
Building B	36	68	Yes

5 NOISE INTRUSION ASSESSMENT

Noise intrusion to the proposed child care centre will be assessed to comply with the requirements of AS2107:2000.

5.1.1 Australian Standard 2107:2000

Australian Standard 2107:2000 details the following control for external noise intrusion to childcare facility. The applicable criteria from that standard are as follows:

Table 6 – Recommended Design Sound Level

Type of Occupancy/Activity	Recommended Design Sound Level dB(A) $L_{eq,\ 1hour}$
Sleeping Rooms	35
Indoor Play Areas	40
Outdoor Play Areas (external)	55

5.2 MEASUREMENTS OF TRAFFIC NOISE

Measurements of traffic noise at the site have been presented in the AECOM Acoustic Assessment Report with reference 60196533 dated 8 March 2011. These daytime traffic noise levels are presented below:

Table 7 – Measured Noise Levels dB(A) L_{eq}

LOCATION	TRAFFIC NOISE LEVEL dB(A) $L_{eq(15\ hours)}$
	Day time 7am-10pm
150 Epping Road	68

6 RECOMMENDED TREATMENTS – BUILDING AND MANAGEMENT

These recommendations are indicative and based on current architectural plans. A second review of noise emissions should be conducted based on the selected child care operator's fitout plan.

The following building and management controls are required to control:

- Noise intrusion from traffic noise.
- Noise emission from outdoor play and indoor activities.

The development will comply with the criteria listed in Section 4.2 and 5.1 provided the following building and management controls are adopted:

- The number of children within the outdoor play area should be limited to 50 at any one time.
- Minimum 6mm glass with acoustic seals around perimeter is required, with minimum STC of 29.
- Signs reminding staff and visitors to minimise noise at all times shall be installed at ingress/egress points from the child care centre.
- Management is to ensure children are supervised at all times to minimise noise generated by the children whenever practical and possible.
- Install a contact phone number at the front of the centre so that any complaints regarding centre operation can be made.
- A secondary acoustic review of the child care centre should be conducted once there is an operator and a fit out plan for the child care centre is developed.

7 CONCLUSION

Potential noise impacts from the proposed childcare centre to be located at the ground floor of the 150 Epping Road have been assessed at the nearest potentially affected receivers.

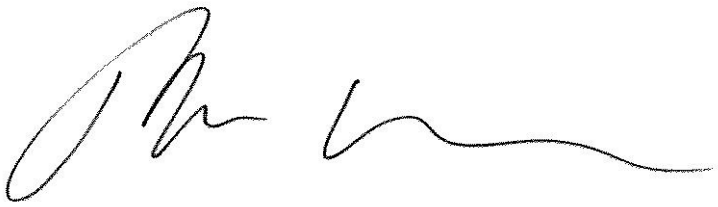
The assessment of noise impacts on neighbouring properties indicates that the proposed childcare centre will comply with the criteria of the Association of Australian Acoustical Consultants and the Land and Environment Court provided that the acoustic treatments/management controls presented in section 6 of this report are adopted.

Noise emissions will therefore be sufficiently controlled/managed to prevent adverse impact on nearby properties and will therefore be satisfactory.

Additionally, an assessment of noise intrusion to the child care centre as a result of traffic on Epping Road has been conducted. Recommendations to the child care centre façade have been determined to result in compliance with AS2107:2000.

We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,



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