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Prepared for: Davids Group

PROPOSED CHILDCARE CENTRE, CLEMTON PARK

ENVIRONMENTAL NOISE ASSESSMENT

ACOUSTIC LOGIC CONSULTANCY PTY LTD

9 Sarah Street, Mascot Tel: 8338 9888 Fax: 8338 8399

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1. INTRODUCTION

An acoustic assessment of the proposed Care Centre at Clemton Park has been undertaken including investigation into the following areas:

- The impact of the proposed childcare centre on the acoustic amenity of nearby residents (located above the childcare centre within the proposed development).

The childcare centre operating hours are yet to be given by the future operator. At this stage the indicative hours would be 7am to 7pm, 7 days per week.

2. PROPOSED CHILD CARE CENTRE

2.1 GENERAL DESCRIPTION

The proposed childcare centre is located on the Ground Level of Building B within the Clemton Park development. The child care facility would consist of an internal and external areas catering for up to a total of 75 children of which 50 may be outside at any one time.

The nearest affected residential occupancy would be located directly above the childcare centre within the proposed Clemton Park development.

Compliance at this locations would represent compliance at all other receivers.

3. BACKGROUND NOISE MEASUREMENTS

A background noise survey has previously been conducted at the site as part of the Noise Impact Assessment which will be used in this assessment.

3.1.1 Environmental Noise Levels

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.

3.1.2 Monitoring Period

Unattended noise monitoring was conducted during the period of 26th August 2008 to 1st September 2008 in order to measure the existing background noise levels.

In addition to the unattended noise monitoring, attended noise monitoring was conducted in numerous locations around the perimeter of the site on 8th September 2008.

3.1.3 Monitoring Equipment

Unattended noise measurements were obtained using an Acoustic Research Laboratories Pty Ltd noise logger. The logger was programmed to store 15-minute statistical noise levels throughout the monitoring period. The noises monitors were 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. There were no significant periods of adverse weather conditions during the measurement period.

Attended noise measurements were obtained using a Norsonics Type SA118 Precision Sound Level Analyser. The Precision Sound Level Analyser was calibrated at the beginning and the end of the measurement using a Norsonics Type 1251 Precision Sound Level Calibrator. No significant drift was noted. All measurements were conducted on A-weighted fast response mode. There were no significant periods of adverse weather conditions during the measurement period.

3.2 MEASURED NOISE LEVELS

The results of the background noise survey conducted at the site obtained the representative background noise levels as presented within the table below.

Table 1 – Measured Background Noise Levels, $L_{90\ (15min)}$ dB(A)

Location	Description	Day Noise Level 7am to 6pm (dB(A))	Evening Noise Level 6pm to 10pm (dB(A))	Night Noise Level 10pm to 7am (dB(A))
Clemton Park	Background $L_{90,15min}$	42	38	37

4. NOISE EMISSIONS FROM THE PROPOSED CHILD CARE CENTRE

There is no specific noise emission objective for Child Care Centres set out in local council criteria. Generally the EPA guidelines, such as the Industrial Noise Policy and the Noise Control Manual can be used to determine noise emission objectives.

The general guideline for assessing noise emissions at residential receivers in the Industrial Noise Policy is that noise emissions are not to exceed the background noise level by more than 5dB(A) L_{eq}. This criterion provides a useful starting point for assessment.

The above criterion, however, was developed predominantly to assess noise impact from industrial and mechanical noise sources. It should not be applied strictly in the case of noise emissions from a child care centre for the following reasons:

- The sounds made by young children playing in the outdoor areas do not resemble typical industrial or mechanical noise sources and would be less likely to cause adverse noise impact compared to machinery noise at the same dB(A) level above the background.

- Outdoor play activity is a required part of child care and the ability to reduce noise emissions to these areas is limited.

Accordingly, the strict application of the background + 5dB(A) criterion is inappropriate when assessing child care centre noise emissions.

The EPA Noise Control Manual (Chapter 159) states that noise emissions from community/social events (sporting activities in the case of Chapter 159) can be minimised by appropriate planning of the venue site. In the event that noise emissions from site are likely to be intrusive (noise emissions exceeding background levels by more than 5dB(A)), the Noise Control Manual states that a equitable degree of noise control can be achieved through regulation of the frequency and duration of noisy events.

A similar methodology for assessment of childcare centres has been adopted in a number of Land and Environment Court Cases, where background +10dB criteria have been adopted provided that times of use of the outdoor area are regulated (eg *Mesabo Pty Limited v Mosman Municipal Council* [2004] NSWLEC 492). In this case it was noted that a background +10dB noise level was satisfactory for a centre where the play area was in use no more than 4.5hours per day, five days per week.

Therefore, when considering noise from community activities such as child care centres (as opposed to factory noise) the following methodology will be used:

- Compare the level of noise emissions to a *"background + 5dB(A)"* criterion.

- If the *"background + 5dB(A)"* noise level will be exceeded than all practical measures should be employed to reduce noise levels to *"background + 5 dB(A)"*.

- In the event that noise emissions will exceed *"background + 5dB(A)"* and further acoustic treatment is not feasible – adopt management controls to limit the times of use of the outdoor areas or the number of children using the area at any one time.

It is noted that noise from vehicles and parents/children walking in the street and to the centre has not been assessed as this is external to the property and no scope for assessment is required under the Council's DCP.

4.1 PROPOSED NOISE ASSESSMENT OBJECTIVES

Table 2 provides a summary of the assessment criteria applicable to the proposed long day childcare centre at the nearest potentially affected residential receiver. The italicised noise levels are the governing criteria for the particular time period and location.

Table 2 – Noise Objectives For Nearest Residential Receivers, dB(A)

Location	Time of Day	Noise Level Objective dB(A) L_{eq} Background +5dB(A) - 10dB(A)[1]
Nearest Resident	Day (7am to 6pm)	**47 to 52**
	Evening (6pm to 10pm)	**43 to 48**
	Night (10pm to 7am)	**N/A[2]**

[1] If noise emissions from the development will not exceed background + 5dB(A), no further management controls are required in order to preserve residential amenity. However, if noise emissions are predicted to exceed *"background + 5dB(A)"* and further acoustic treatments are not feasible, noise emissions of up to *"background + 10dB(A)"* are reasonable provided that management controls are used to limit the time period of use of the outdoor area.

[2] The child care centre will no operate during night time hours.

If noise levels exceed those presented in Table 4, additional management measures should be applied.

4.2 ASSESSMENT OF NOISE IMPACT

4.2.1 Children Activity Noise Sources

Noise levels generated by children at play have been measured previously by this office. The typical sound power levels per child are then used in order to assess the likely noise emissions at nearby residential premises. Noise emissions from the play areas are predicted below, and are based on the following assumptions:

- The average sound power level per child is 76dB(A) L_{eq}. This sound power level has been adopted by the Land and Environment Court in recent noise emission assessments of child care centres.

- That one in two children in the play area is generating noise at any one time (as has also been assumed in the noise emission assessment in the Land and Environment Court.

- Play areas are assumed to be operating at maximum capacity, and that the children are distributed evenly across the outdoor play area.

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 5 shows the predicted noise levels from the children.

Calculations assumed that the external areas of the child care were being used at full capacity at all times of the day and evening. For the indoor cases it is assumed that upgraded single glazed, acoustically sealed windows and doors will be installed for the centres facades with no open windows. The finish inside the child minding centre was assumed to be acoustically "hard" with an indoor noise level of up to 80 dB(A) L_{eq}.

5. DISCUSSION

The analysis showed that noise associated with the operation of the proposed child care within the Clemton Park development at the potentially worst affected residential properties would comply with recommended criteria with minimum acoustic treatments.

Recommended management and acoustic treatment control strategies which will be required to control noise generation within the proposed child care centre to ensure compliance with criteria include, but are not limited, to the following:

- Limit periods that children are allowed access to the external area. Time limits should be coordinated to ensure minimum impact on residence above, ie external area not in operation after 6pm.
- Limitation of the number of children using the external area at any one time.
- Continuous monitoring of children activities within the external play area.
- Keep external façade closed and install upgraded single glazing with acoustic seals.
- Install automatic door closers to external doors.

6. CONCLUSION

Potential noise impacts from the proposed child care facility within the future Clemton Park development has been assessed to the future residential properties in building B of the development..

The potential impact of noise emissions has been assessed based on noise objectives determined using EPA and previously agreed noise criteria within the Land and Environment Court.

Noise emissions from the proposed child care centre will comply with presented criteria provided acoustic treatments and management controls indicated in Section 5 of this report are adopted.

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

Report prepared by

ACOUSTIC LOGIC CONSULTANCY PTY LTD
Ben White