

Project	P03988 – South Rock Childcare	Date 8/07/2026
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Subject	Acoustic DA Assessment	

1. Introduction

This acoustic letter has been prepared to provide supplementary acoustic advice in relation to the proposed childcare centre at South Rock State School, Yarrabilba QLD 4207.

A previous acoustic report was prepared for the broader Precinct 4 development under approval no. DEV2017/860. The previous report relates to traffic noise impacts associated with the broader reconfiguration of the land.

This letter has been prepared to provide further information regarding the proposed South Rock State school childcare centre, detailed consideration for potential operational noise emissions to nearby noise sensitive receivers.

1.1. Scope of Assessment

The scope of this letter is limited to the assessment of operational noise emissions from the proposed childcare centre to the nearest noise sensitive receivers. Specific consideration has been given to noise from children using the proposed outdoor play areas, as this has been identified as the primary potential noise source associated with the childcare operation.

The assessment considers the proposed childcare capacity, operating hours, outdoor play area locations, assumed child age distribution, nearest sensitive receiver locations and relevant acoustic planning requirements for development within the Yarrabilba Priority Development Area.

1.2. Relevant Documents

The acoustic criteria and recommendations presented in this report have been developed with reference to the following documents:

- Yarrabilba PDA Development Scheme
- AAAC Guideline for Child Care Centre Acoustic Assessment
- Environmental Protection Act 1994
- Queensland Environmental Protection (Noise) Policy 2019
- Logan Planning Scheme 2015

Recommendations are provided where required to minimise potential impacts on surrounding receivers

2. Site Description and Proposed Development

2.1. Site Description

The subject site is located at South Rock State School, Yarrabilba, within the Yarrabilba Priority Development Area. The surrounding environment comprises predominantly residential development together with educational and community land uses. An aerial map of the proposed childcare site and nearest noise sensitive receivers are provided in

Figure 1.

Figure 1: Subject Site Markup with Closest Noise Sensitive Receivers



The property details for the subject site are summarised in Table 1. The property holding is related to the broader school site, including the existing primary school grounds.

Table 1: Property Details

Property Details	Description
Property Address	South Rock State School, Yarrabilba QLD 4207
Planning Scheme	Yarrabilba Priority Development Area
Property Holding Details	Lot 5080 Wentland Avenue Yarrabilba QLD 4207
Site Area	70,050 m ²

2.2. Nearest Noise Sensitive Receivers

A description of the nearest noise sensitive receivers is provided in Table 2 and illustrated in Figure 1.

Table 2: Description of nearest noise sensitive receivers

NSR ID	Address	Description	Approximate Distance Separation from Outdoor Play Area (m)
RC1	9 Moreton Cres, Yarrabilba QLD 4207	Single-Story Home	72
RC2	11 Moreton Cres, Yarrabilba QLD 4207	2-Story Town House	65

Note – The distance separation values noted above are indicative and used as estimates only. E-Lab takes no responsibility for the accuracy of the separation of the nearest NSRs. Where noise emissions from the subject site are compliant with NSR 1 and 2, we anticipate that compliance would be achieved at all other nearby noise sensitive receivers.

3. Applicable Noise Emission Criteria

3.1. Yarrabilba Development Scheme

The subject site is located within the Yarrabilba Priority Development Area and is subject to the requirements of the Yarrabilba Development Scheme. Accordingly, the proposed development should incorporate appropriate acoustic design and operational controls to ensure that noise emissions associated with the use do not adversely affect nearby residential or other sensitive uses.

3.2. Environmental Protection Act 1994

The Environmental Protection Act 1994 establishes a general environmental duty to take all reasonable and practicable measures to prevent or minimise environmental harm. In this context, the development should be designed and operated to minimise the potential for environmental nuisance associated with noise emissions.

3.2.1 Queensland Environmental Protection (Noise) Policy 2019

The Queensland Environmental Protection (Noise) Policy 2019 (QLD EPP 2019) provides acoustic quality objectives for sensitive receptors. For residences outdoors during the daytime and evening periods, the relevant acoustic quality objective is 50dB(A) $L_{Aeq,adj,1hr}$. This criterion has been adopted for the assessment of the outdoor play noise emissions at the nearest noise sensitive receiver.

Table 3: Acoustic Quality Objectives for sensitive receptors

Sensitive Receptor	Time of Day	Acoustic Quality Objectives dB(A)		
		$L_{Aeq,adj,1hr}$	$L_{A10,1hr}$	$L_{A1,1hr}$
Dwelling (outdoors)	Daytime and evening	50	55	65
Dwelling (indoors)	Daytime and evening	35	40	45
Dwelling (indoors)	Night-time	30	35	40
Commercial and Retail activity (indoors)	Daytime, Evening and Night Operational hours	45	-	-

3.3. Logan Planning Scheme 2015

The subject site is located within the Yarrabilba Priority Development Area (PDA). Similarly, the nearest noise sensitive receivers are also located within the Yarrabilba PDA. As such, the SC6.2.3 Environmental management noise emission and immission standards are not considered applicable.

The Childcare Centre Codes for Logan have been considered as a general reference for typical acoustic design expectations. Acceptable outcome AO9.1 of the Logan Planning Scheme 2015 Childcare Centre Code recommends that an acoustic fence be provided along a boundary shared with land in the residential zone category. The proposed childcare is located within the existing school grounds and does not share a direct boundary with residential zoned land. Accordingly, an acoustic boundary fence is not considered necessary on this basis.

4. Outdoor Play Area Assessment

4.1. AAAC Guideline for Child Care Centre Acoustic Assessment

The AAC guideline for Child Care Centre Acoustic Assessment was used to accurately predict the effective sound power levels for groups of children playing. It specifies the sound levels at octave band centre frequencies for 10 children playing. The values can be extrapolated to represent the size of the proposed childcare development. Table 4 below details the effective sound power levels.

Table 4: Effective Sound Power Levels for Groups of 10 Children Playing

Number and Age of Children	Sound Power Levels (dB) at Octave Band Centre Frequencies (HZ)								
	dB(A)	63	125	250	500	1k	2k	4k	8k
10 Children – 0 to 2 Years	78	54	60	66	72	74	71	67	64
10 Children – 2 to 3 years	85	61	67	73	79	81	78	74	70
10 Children – 3 to 5 years	87	64	70	75	81	83	80	76	72

4.2. Adaption of AAAC Childcare Guideline

The AAAC Guideline was referenced to establish representative outdoor play noise levels for children within the proposed age group.

Using the criteria from AAAC, noise emissions from the proposed childcare outdoor play area have been calculated. The following operational information has been provided by the project team:

- Maximum approved childcare capacity – 44 children per day (22 in each unit)
- Current/expected distribution of children by age range, expressed as a percentage – eligible kindergarten age is 3 ½ - 4 ½ yrs (100%)
- Proposed operational hours – Monday to Friday usually between 8.30/9am – 2.30/3pm in school. This falls within day period for noise emissions assessment

As such, all children are expected to be within the 3 to 5 years age bracket meaning only the bottom criteria applies for Table 4. **Error! Reference source not found.** The sound levels were conservatively adjusted as worst-case scenario of all 44 children in the outdoor play area. It ensures conservative results which will minimise the impact to the noise sensitive receivers. The following logarithmic adjustment was made to the **Error! Reference source not found.** values to determine the noise levels:

$$\text{Adjusted Sound Power Levels} = \text{Reference Level} + 10 \log \left(\frac{N}{10} \right)$$

Where N = number of children assessed

Table 5: Effective Sound Power Levels for Proposed Development

Number and Age of Children	Sound Power Levels (dB) at Octave Band Centre Frequencies (HZ)								
	dB(A)	63	125	250	500	1k	2k	4k	8k
44 Children – 3 to 5 Years	93	70.4	76.4	81.4	87.4	89.4	86.4	82.4	78.4

4.3. Propagation to Nearest Sensitive Receivers

Noise propagation from the proposed outdoor play area to the nearest noise sensitive receiver has been calculated using the adopted outdoor play noise emission levels presented in Table 5.

The propagation calculations have been based on the separation distances between the outdoor play area and the nearest noise sensitive receiver, as presented in Table 2. The calculated noise levels at the receiver are summarised in Table 6. The noise emission was modelled as a plane source to represent the wide area that the project noise could be emitted from.

Table 6: Noise propagation from Outdoor Play Area to the NSRs

NSR	Distance (m)	Parameter	Sound Power Levels (dB) at Octave Band Centre Frequencies (HZ)									
			Total dB(A)	63	125	250	500	1k	2k	4k	8k	
RC1	72	Propagation loss	-	45.4	45.4	45.4	45.4	45.4	45.4	45.4	45.4	
		Predicted receiver level	48	25.1	31.1	36.1	42.1	44.1	41.1	37.1	33.1	
RC2	65	Propagation loss	-	44.5	44.5	44.5	44.5	44.5	44.5	44.5	44.5	
		Predicted receiver level	49	25.9	31.9	36.9	42.9	44.9	41.9	37.9	33.9	

The predicted outdoor play noise levels have been assessed at the nearest identified noise sensitive receivers and compared with the adopted 50dB(A) acoustic quality objective at façade of residential receivers.

Based on the untreated assessment presented in Table 6, the predicted receiver noise levels of 47.7dB(A) and 48.5dB(A) for noise sensitive receivers 1 and 2 respectively. The results indicate that noise emissions from the proposed outdoor play area are expected to be acoustically acceptable at the assessed receiver locations based on the compliance with the Daytime targets of the QLD EPA Acoustic Quality Objectives.

The assessment outcome is subject to the adopted source noise levels, assessed child capacity, separation distances, and operating hours remaining generally consistent with the assumptions outlined in this letter.

5. Mechanical Plant Noise Emissions

Mitigation measures for the mechanical plant should be considered during the design development stage to ensure compliance with the outlined criteria in Section 3 at the nearest sensitive receiver catchments. These mitigation measures could include but not limited to the following:

- Positioning mechanical plant away from nearby receivers
- Acoustic attenuators fitted to duct work
- Screening around mechanical plant
- Acoustic insulation within duct work

It should be noted that the noise reduction requirements will likely be refined and reduced once the mechanical plant and equipment selections and designs have been progressed further during the detailed design of the proposed development. The mitigation measures proposed at this stage of the development are conservative in nature.

6. Noise Intrusion Assessment

External noise intrusion to the development is primarily expected to be associated with road traffic from Grampians Circuit. No significant rail, industrial or aircraft noise sources have been identified as requiring detailed assessment.

The proposed development shall consider noise intrusion impacts as well as building envelope performance so that internal acoustic amenity of internal childcare spaces are not adversely affected.

For the acoustic design of the Childcare centre the relevant Acoustic Quality Objectives of the Environmental Protection (Noise Policy) 2019 are applicable for indoor and outdoor acoustic amenity. The recommended noise intrusion indoor noise level targets are summarised below in Table 7.

Table 7: Indoor Acoustic Amenity Criteria

Area	Indicative Acoustic Target ($L_{Aeq,adj,1hr}$)
Indoor childcare areas, when open, excluding sleep periods	35 dB(A)
Indoor childcare areas, during usual sleep periods	30 dB(A)

The building façade/envelope should be designed to achieve acceptable internal noise levels. Acoustic performance requirements pertaining to the building envelope shall be developed during detailed design.

7. Conclusion

7.1. Potential Noise Emissions

Outdoor Play Area

Our assessment of outdoor play noise indicates a worst-case noise level of L_{Aeq} 49dB(A). On this basis, the predicted noise emissions are expected to comply with the QLD EPP 2019 Acoustic Quality Objectives provided in Section 3.2.1 during daytime and evening (aligning with proposed operational hours of childcare).

Carpark Extension

The proposed carpark extension for the childcare centre is not anticipated to have increase noise impacts compared to the existing for the following reasons:

- Current staff carpark serving the wider school is significantly larger than proposed childcare carparking extension
- Current staff carpark has the same distance separation from the nearest residential receivers when as the proposed carpark extension for the childcare

Mechanical Noise

Mitigation measures for the mechanical plant should be considered during the design development stage to ensure compliance with the outlined criteria in Section 3. General treatment considerations are provided in Section 5.

Based on the above, adverse noise impacts are not anticipated at the nearest noise sensitive receivers from operation of the future childcare centre.

7.2. Noise Intrusion

Consideration of noise intrusion impacts shall be considered such that acoustic amenity of occupants/children is not significantly affected.

Acoustic design of the building envelope should be considered during design development.

Should there be any queries please do not hesitate to contact the undersigned.

Kind Regards,

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