

APPENDIX H

SPP 5.4
Acoustic
Assessment



**PROPOSED CHILD CARE CENTRE
26A HARRIS STREET
BICTON**

STATE PLANNING POLICY 5.4 ACOUSTIC ASSESSMENT

SEPTEMBER 2020

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ACOUSTIC ASSESSMENT
CHILD CARE CENTRE – HARRIS STREET, BICTON

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FOR

HARLEY DYKSTRA

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APPENDICIES

A	Child Care Plans
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1. INTRODUCTION

Herring Storer Acoustics was commissioned to undertake an acoustic assessment for the proposed child care centre, located at 26A Harris Street, Bicton with regards to vehicles travelling along Canning Highway. The acoustic assessment is to comply with the requirement of State Planning Policy 5.4 "Road and Rail Transport Noise" (SPP5.4).

As the child care centre is located on Canning Highway, being a major road, an acoustic assessment with regards to State Planning Policy 5.4 has been undertaken. As part of this assessment, the following was carried out:

- Determine by modelling, the noise that would be received at child care centre from traffic on Canning Highway.
- Assess the predicted noise levels for compliance with the appropriate criteria.
- If exceedances are predicted, comment on possible noise amelioration options for compliance with the appropriate criteria.

For information, plans for the child care centre are attached in Appendix A.

2. SUMMARY

It is noted that the child care centre is only occupied during the day period, thus under State Planning Policy 5.4 "Road and Rail Transport Noise" only the criteria for the day period is applicable.

We note that cot room has been positioned within the middle of the building. Thus, the noise level within the cot room would comply with the internal criteria of 35 dB(A). For other rooms (ie playrooms, meeting room) located on the façade, the internal acoustic criteria would be 40 dB(A).

Based on the noise modelling undertaken, noise received at within the first floor outdoor area would comply with the external acoustic criteria of an $L_{Aeq(Day)}$ of 55 dB(A). Additionally, to reduce noise levels within the ground floor outdoor area, it is recommended that the wall to this outdoor area be 2 metres high. We note the proposed open timber fencing to Canning Highway, however, to act as a barrier, this wall needs to be solid. This can be achieved by installing a solid backing (ie child care side). There are a number of materials that can be used as a backing, such and compressed fibre cement sheeting, glass or even Perspex.

With the installation of glazing that meets the recommended R_w ratings as listed in Table 6.1, noise received at the child care centre would comply with the requirements of State Planning Policy 5.4.

3. CRITERIA

Road traffic noise received at a sensitive premise needs to comply with the requirements of State Planning Policy 5.4 "*Road and Rail Transport Noise*". Under this policy, for non-residential noise sensitive premises, internal noise levels should meet the design sound levels as listed in Table 1 of AS/NZ 2107:2000 "*Acoustics – Recommended design sound levels and reverberation times for building interiors*". Under AS 2017, the internal criteria would :

Sleep Rooms	-	$L_{Aeq(Day)}$ of 35 dB(A).
Play/Group Rooms	-	$L_{Aeq(Day)}$ of 40 dB(A).
Staff Room	-	$L_{Aeq(Day)}$ of 45 dB(A).
Office	-	$L_{Aeq(Day)}$ of 40 dB(A).
Reception	-	$L_{Aeq(Day)}$ of 45 dB(A).
Work areas (eg :Laundry)	-	$L_{Aeq(Day)}$ of 50 dB(A).

Additionally, under SPP 5.4, noise received at least one outdoor area should be design as far as is reasonable and practical to comply with the Policies outdoor Target Noise level of an $L_{Aeq(Day)}$ of 55 dB(A).

4. MEASUREMENTS

To determine the noise that would be received at the proposed child care centre from vehicles travelling along Canning Highway, a noise level measurement was undertaken within the road reserve to Canning Highway, 3 metre from the western boundary fence to the proposed development. The measurement was carried out between 4:45 and 5:00 pm on Monday 31st August 2020. The noise level recorded was an L_{Aeq} of 65.3 dB(A).

Given the traffic profile obtained from the MRWA Traffic Map, the peak traffic volume is at 5:00pm. Thus, the above measurement would provide the worst case (highest) noise level that would be received at the child care centre. For information, the weekday traffic flows for Canning Highway is attached in Appendix B.

5. MODELLING

To determine the noise received at the child care centre from vehicles travelling along Canning Highway, noise modelling was carried out using SoundPlan, in accordance with the "Implementation Guidelines" for the State Planning Policy 5.4.

Ground contours were as obtained from Google Maps.

Noise modelling was undertaken based on the plans attached in Appendix A.

Traffic flows obtained from the MRWA traffic map and used in the noise model for Canning Highway was 25,206 vehicles per day (vpd).

Notes :

- 1 It was assumed that in the future, the traffic speed and road surfacing would remain unchanged.
- 2 To account for future traffic, as outlined in the Implementation Guidelines, 2 dB(A) has been added to the results.
- 3 Boundary fencing to be as indicated on the plans.
- 4 The balustrading to the first floor playscape to be as shown on the drawings.

The noise received at the various areas of the child care centre for the future, were determined to be as listed in Table 5.1.

TABLE 5.1 – CALCULATED NOISE LEVEL

Location	Calculated Noise Level (dB(A))
Ground Floor	
0-1 Group Room (Southern Façade)	61
0-1 Group Room (Western Façade)	64
Reception	63
Office	60
UAT	61
Baby Change	61
Corridor (Northern Façade)	61
First Floor	
+3 years group room (south Façade)	67
+3 years group room (west façade)	65
1-2 years group room (west façade)	64
2-3 years group room (west façade)	61
2-3 years group room (south façade)	58
Junior WC	67
Roof Deck	
Southern Deck Area	55
Northern Deck Area	54
Toilet	67
Stair (eastern Façade)	67

6. ASSESSMENT

Based on this noise modelling and including the adjustments, the minimum recommended R_w rating and suggested glazing for this development are summarised in Table 6.1.

TABLE 6.1 – GLAZING R_w RATING AND SUGGESTED GLAZING

Location	Calculated R_w dB
Ground Floor	
0-1 Group Room (Northern Façade)	27
0-1 Group Room (Western Façade)	30
Reception	29
Office	22
UAT	21
Baby Change	27
Corridor (Northern Façade)	24
First Floor	
+3 years group room (Southern Façade)	27
+3 years group room (west façade)	30
1-2 years group room (west façade)	28
2-3 years group room (west façade)	24
2-3 years group room (south façade)	21
Junior WC	29
Roof Deck	
Toilet	29
Stair (eastern Façade)	29

Example windows for various R_w ratings are listed in Table 6.2.

TABLE 6.2 MINIMUM ACOUSTIC RATING OF SELECTED EXTERNAL BUILDING ELEMENTS

Glazing Type	Airborne weighted sound reduction rating with traffic correction R_w dB	Building element Type Airborne weighted sound
Sliding or double hung opening	23	<ul style="list-style-type: none"> • 4mm monolithic glass
	26	<ul style="list-style-type: none"> • Single pane glazing to R_w 33dB • 6mm monolithic or laminated glass • 6mm toughened safety glass • '6-12-6' double insulated glass unit (IGU)
	29	<ul style="list-style-type: none"> • Single pane glazing to R_w 36dB • 10mm monolithic (aka float) glass • 10mm laminated or toughened safety glass • 6mm-12mm-10mm double insulating
Fixed sash, awning or casement type opening	26	<ul style="list-style-type: none"> • 4mm monolithic glass
	31	<ul style="list-style-type: none"> • Single pane glazing to R_w 33dB • 6mm monolithic or laminated glass • 6mm toughened safety glass • '6-12-6' double insulated glass unit (IGU)
	34	<ul style="list-style-type: none"> • Single pane glazing to R_w 36dB • 10mm monolithic (a.k.a. float) glass • 10mm laminated or toughened safety glass • 6mm-12mm-10mm double insulated glass unit (IGU)
	36	6.5mm VLam Hush
Fully glazed sliding door	24	<ul style="list-style-type: none"> • 6mm monolithic or laminated • 5 or 6mm toughened safety glass
	27	<ul style="list-style-type: none"> • 10mm monolithic or laminated • 10mm toughened safety glass
	36	6.5mm VLam Hush

Based on the noise modelling undertaken, noise received at within the first floor outdoor area would comply with the external acoustic criteria of an $L_{Aeq(Day)}$ of 55 dB(A). Additionally, to reduce noise levels within the ground floor outdoor area, it is recommended that the wall to this outdoor area be 2 metres high.

With the installation of glazing that meets the recommended R_w ratings as listed in Table 6.1, noise received at the child care centre would comply with the requirements of State Planning Policy 5.4.

Note : The boundary wall to Canning Highway is proposed to be an open timber fence, however, to act as a barrier, this wall needs to be solid. This can be achieved by installing a solid backing (ie child care side). There are a number of materials that can be used as a backing, such and compressed fibre cement sheeting, glass or even Perspex.