



**PROPOSED CHILD CARE CENTRE
15 WILLCOCK STREET
ARDROSS**

STATE PLANNING POLICY 5.4 ACOUSTIC ASSESSMENT

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ACOUSTIC ASSESSMENT
CHILD CARE CENTRE – ARDROSS

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FOR

HARLEY DYKSTRA

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1. INTRODUCTION

Herring Storer Acoustics was commissioned to undertake an acoustic assessment for the proposed child care centre, located at 15 Willcock Street, Ardross with regards to vehicles travelling along Canning Highway and Riseley Street. 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 Willcock Street, which as shown on Figure 01 is within the assessment buffer zones for traffic noise associated with Canning Highway and Riseley Street, an acoustic assessment in accordance with State Planning Policy 5.4 has been undertaken. As part of this assessment, the following was carried out:

- Determine the noise that would be received at child care centre from future traffic associated with Canning Highway and Riseley Street.
- 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.

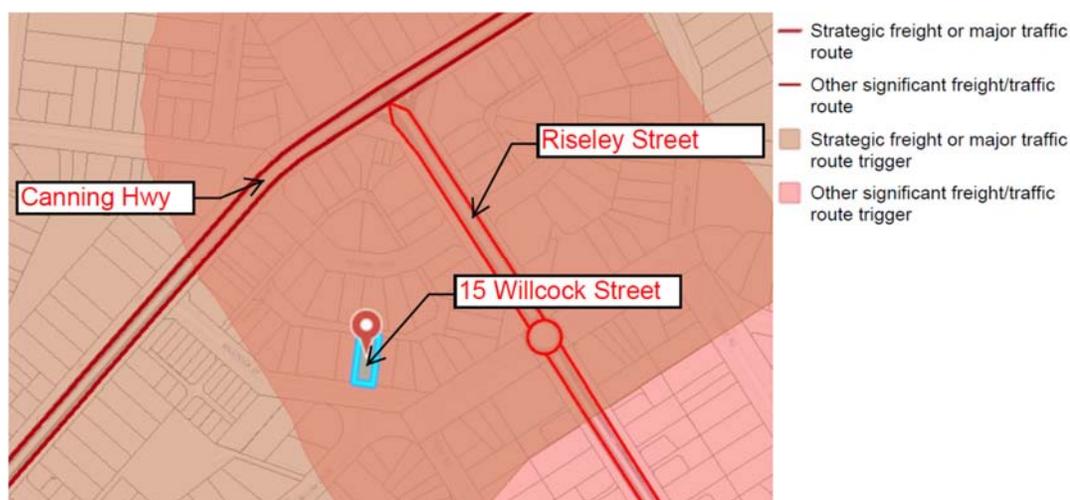


FIGURE 01 – STATE PLANNING POLICY BUFFER ZONES
(<https://espatial.dplh.wa.gov.au/PlanWA>)

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 and Freight Considerations in Land Use Planning” only the criteria for the day period is applicable.

We note that the cot room has been positioned within the middle of the building, hence the noise level within the cot room would comply with the internal criteria of 35 dB(A). For other rooms (i.e. playrooms, meeting room) located on the façade, the internal acoustic criteria would be 40 dB(A). From the assessment undertaken, compliance with the above criteria would be achieved with standard constructions.

Based on the noise assessment undertaken, noise received at the child care centre would be below 55 dB(A) for noise received from traffic associated with both Canning Highway and Riseley Street, therefore under the Policy, no further action is required.

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).
Meeting Room	-	L _{Aeq(Day)} of 40 dB(A).
Reception	-	L _{Aeq(Day)} of 45 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 AND OBSERVATIONS

The noise measurements were conducted on 22 October 2019 for a short term period during peak hour to determine the L_{A10} noise level. Utilising this measurement, reference to the DEFRA publication has been sought and the difference between the L_{A10,18hr} and the L_{Aeq,8hr} and the L_{Aeq,16hr} has been calculated. The results of the measurement and the determination of the L_{Aeq(Day)} and L_{Aeq(Night)} are shown in Table 3.1.

Noise measurements were conducted with a Larson Davis 831 Sound Level Meter. The Sound Level Meter was calibrated prior to and after use with a Bruel and Kjaer 4230 Calibrator. All equipment used is currently NATA laboratory calibrated. Calibration certificates are available on request.

TABLE 3.1 : SUMMARY OF MEASURED NOISE LEVELS

Measurement Location	Measured/Calculated Noise Level, dB(A)		
	L _{A10}	L _{Aeq, day (6am to 10pm)}	L _{Aeq, night (10pm to 6am)}
Canning Highway	73.3	69.9	62.2

It is noted that whilst Riseley Street is listed under the PlanWA as an “Other Significant Freight Route Trigger”, it only has approximately 13,000 Vehicles as per the last Main Road WA Traffic Count. As a result, it has been included in the noise modelling conducted, however does not have an acoustically significant impact compared to that of Canning Highway.

To determine the noise levels from traffic on Canning Highway and Riseley Street, acoustic modelling was carried out using SoundPlan, using the Calculation of Road Traffic Noise (CoRTN)¹ algorithms.

The input data for the model included:

- Topographical and cadastral data supplied by client (Shown in Appendix A);
- Traffic data as per Table 4.1;
- Adjustments as listed in Table 4.2.

¹ Calculation of Road Traffic Noise UK Department of Transport 1987

TABLE 4.1 - NOISE MODELLING INPUT DATA

Parameter	Canning Highway	Riseley Street
Traffic Volumes Current Future	42500 vpd (2019) 63200vpd	13900 vpd (2018) 20700 vpd (2018)
Percentage traffic 0600 – 2400 hours (Assumed)	94%	94%
Heavy Vehicles (%) (Assumed)	6.6%	6.6%
Speed (km/hr)	60km/hr	60km/hr

* Sourced from Main Roads Traffic Map (Shown in Appendix C), Assumed 2% Increase Per Annum.

TABLE 4.2 – ADJUSTMENTS FOR NOISE MODELLING

Description	Value
Façade Reflection Adjustment	+2.5 dB
Conversion from L_{A10} (18 hour) to L_{Aeq} (16 hour) (Day)	-3.4 dB*

* Based on measured results listed in Table 3.1.

Notes :

- 1 The traffic count for Riseley Street does not include a count of heavy vehicles. Thus, to be conservative, we have assumed that the percentage of heavy vehicles is the same as for Canning Highway.
- 2 The noise model has been based on the existing buildings and not the potential future building that would be higher than the existing, which would increase the barrier affect. Thus, thus, the noise model is considered to be conservative.

5. TRAFFIC NOISE ASSESSMENT

Using the data contained in Tables 3.1, 4.1 and 4.2 modelling was carried out under existing conditions for calibration. The SoundPlan model for the site has been set up for the 2041 scenario as defined in Table 4.1. The following assumptions have been made:

- 18 hour traffic count will be 94% of daily figures;
- Noise model calibrated to measured noise level as per Table 3.1;
- The same diurnal relationship will exist in the future between the L_{A10} (18 hour) and the L_{Aeq} parameters; and
- 2.5 dB(A) has been added to the results for façade reflection.

Based on the above, noise received at the Child Care Centre from both Canning Highway and Riseley Street combined has conservatively been determined to be 53 dB(A) in the worst case location (north western corner of development). Therefore, Under State Planning Policy 5.4, as the noise received at the premises is below the ‘Target’ criteria, no further action is required.

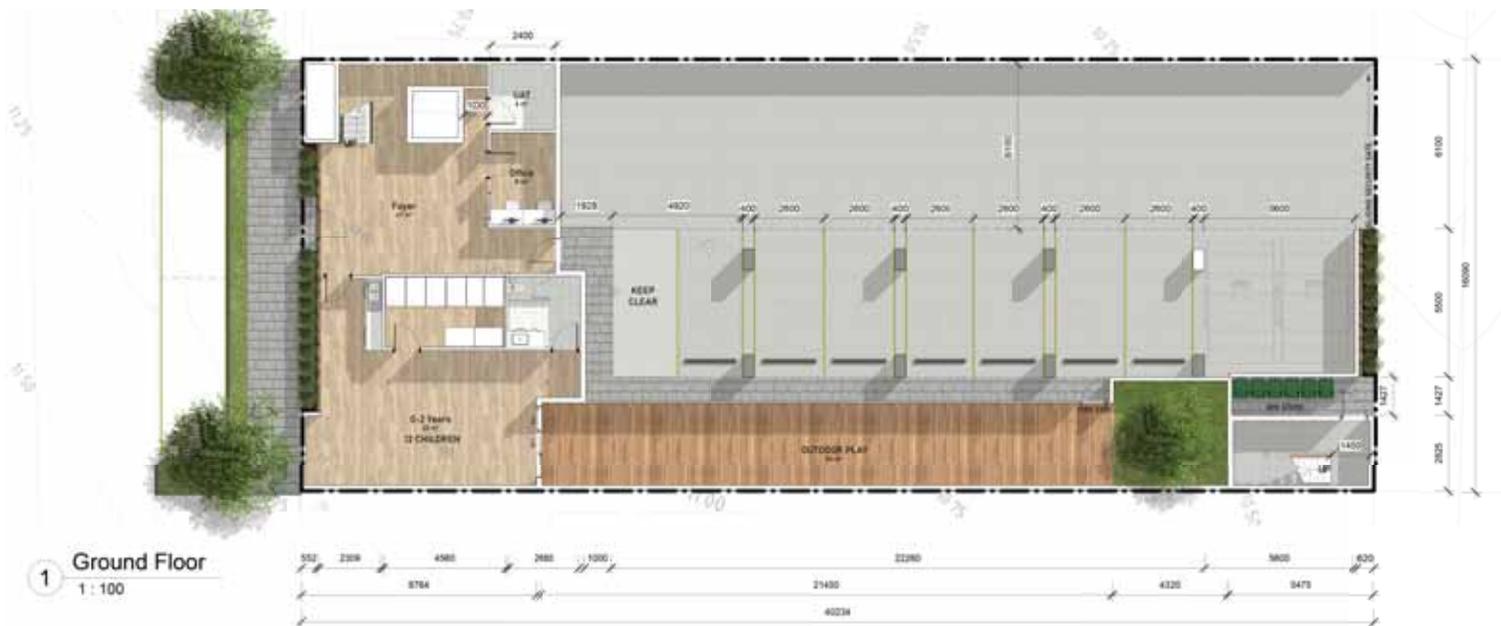
6. CONCLUSION

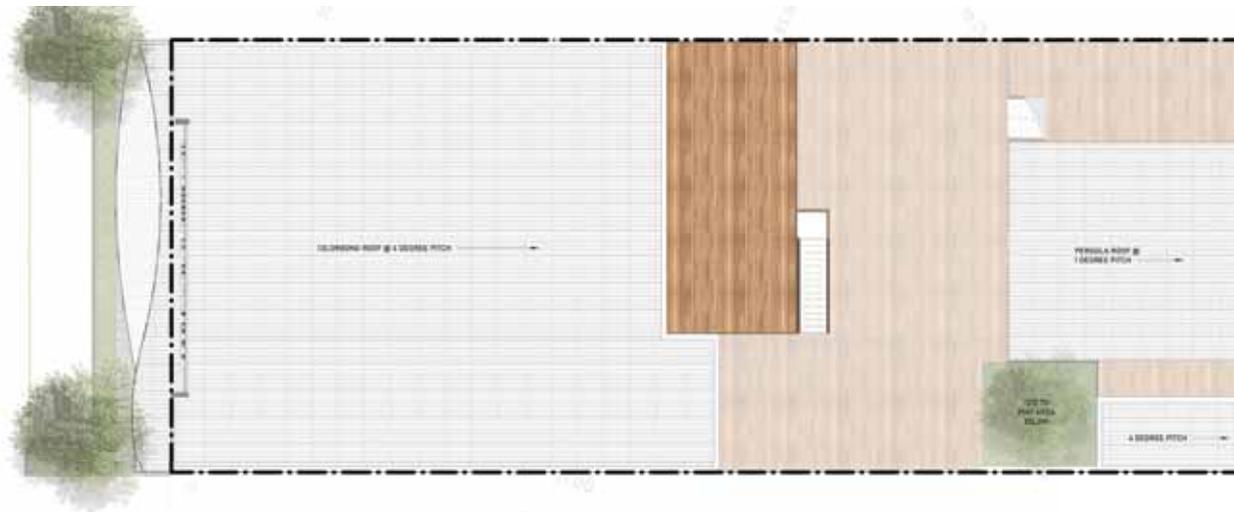
In accordance with the WAPC Planning Policy 5.4, an assessment of the noise that would be received within the development of a child care centre at 15 Willcock Street, Ardross, from vehicles travelling on both Canning Highway and Riseley Street has been undertaken.

The results of the acoustic assessment indicate that noise received at the development from future traffic has been determined to be is the worst case location be 53 dB(A), which complies with the noise level criteria. Therefore, under State Planning Policy 5.4, as the noise received at the premises is below the "Target" criteria, no further action is required.

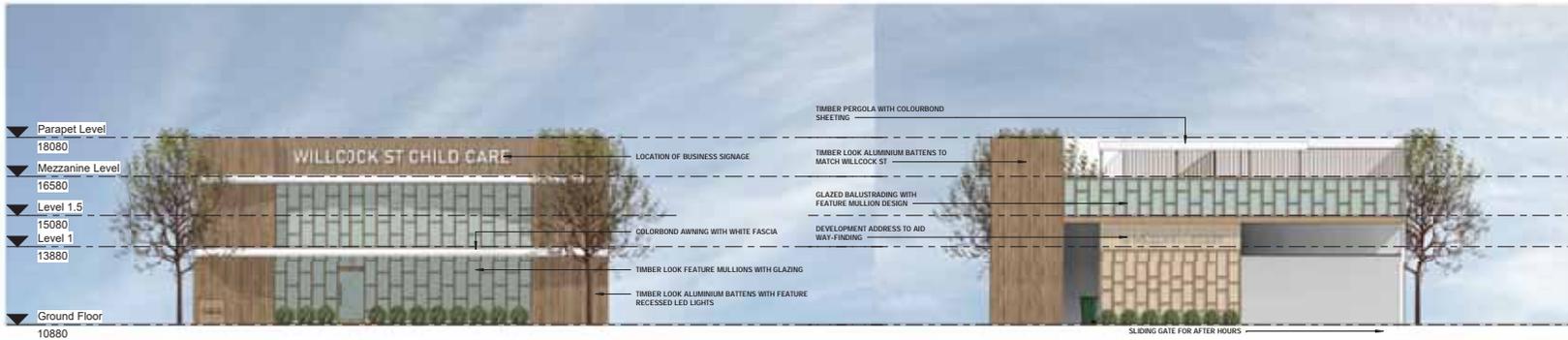
APPENDIX A

PLANS





1 Mezzanine Level
1 : 100

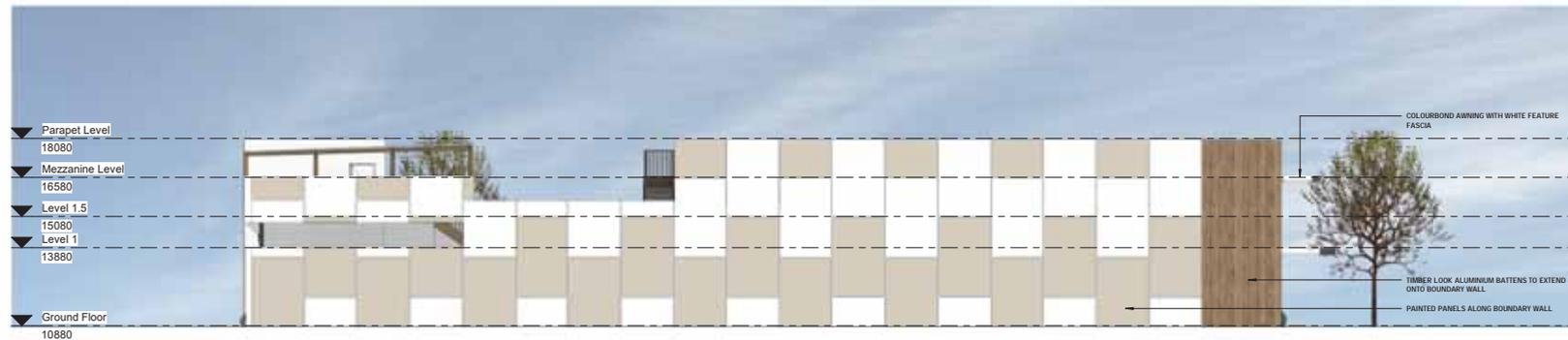


1 Willcock Street Elevation
1 : 100

2 Post Lane Elevation
1 : 100



3 East
1 : 100



4 West
1 : 100

APPENDIX B

TRAFFIC FLOWS FOR CANNING HIGHWAY AND RISELEY STREET



Hourly Volume

Canning Hwy (H013)

2018/19
Monday to Friday

West of Riseley St (SLK 8.15)

	All Vehicles		
	EB	WB	Both
00:00	62	69	131
01:00	31	47	78
02:00	24	34	58
03:00	29	27	56
04:00	81	57	138
05:00	323	228	551
06:00	896	637	1533
07:00	1465	1029	2494
08:00	1177	1290	2467
09:00	1243	1177	2420
10:00	993	1080	2073
11:00	1051	1086	2137
12:00	1019	1084	2103
13:00	995	1034	2029
14:00	1102	1180	2282
15:00	1250	1439	2689
16:00	1192	1511	2703
17:00	1182	1562	2744
18:00	910	1198	2108
19:00	688	733	1421
20:00	532	585	1117
21:00	472	537	1009
22:00	343	415	758
23:00	202	261	463
TOTAL	17262	18300	35562

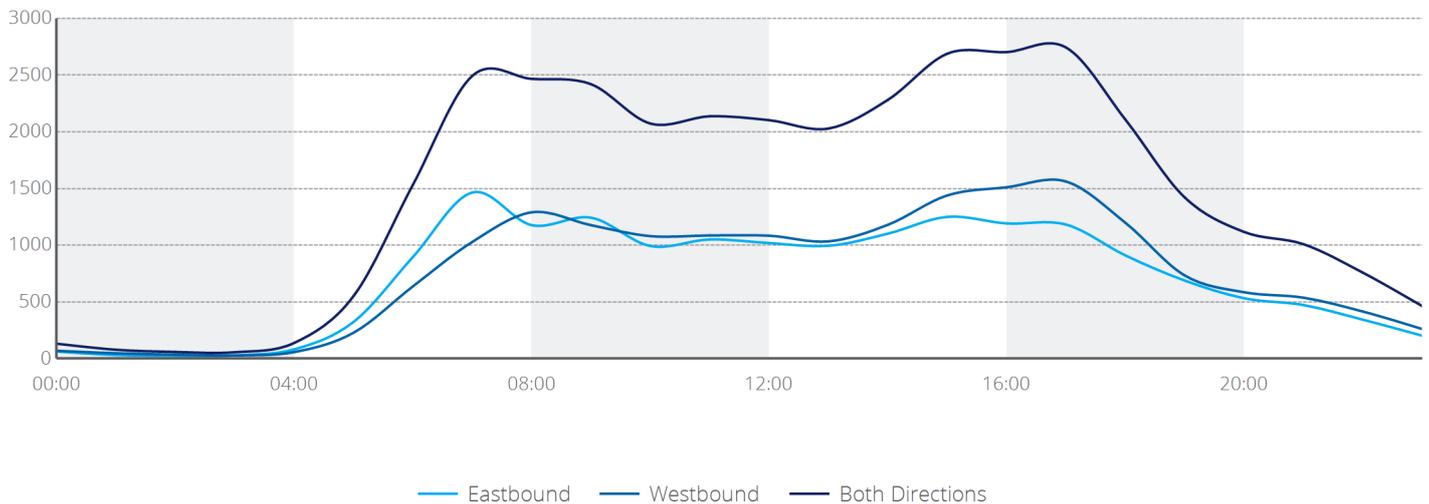
	Heavy Vehicles				%
	EB	WB	Both		
00:00	0	3	3	2.3	
01:00	2	1	3	3.8	
02:00	1	2	3	5.2	
03:00	2	2	4	7.1	
04:00	10	6	16	11.6	
05:00	32	18	50	9.1	
06:00	76	64	140	9.1	
07:00	99	86	185	7.4	
08:00	78	83	161	6.5	
09:00	94	93	187	7.7	
10:00	87	90	177	8.5	
11:00	89	84	173	8.1	
12:00	87	80	167	7.9	
13:00	83	82	165	8.1	
14:00	100	73	173	7.6	
15:00	86	82	168	6.2	
16:00	65	60	125	4.6	
17:00	41	52	93	3.4	
18:00	27	42	69	3.3	
19:00	26	25	51	3.6	
20:00	18	18	36	3.2	
21:00	13	15	28	2.8	
22:00	10	11	21	2.8	
23:00	6	5	11	2.4	
TOTAL	1132	1077	2209	6.2	



Peak Statistics

AM	TIME	06:45	08:00	08:30	06:30	09:30	06:45
	VOL	1478	1290	2562	102	97	191
PM	TIME	15:15	16:30	15:30	14:00	12:30	12:30
	VOL	1266	1567	2778	100	86	178

Volume



— Eastbound — Westbound — Both Directions

