HERRING STORER ACOUSTICS

PROPOSED CHILD CARE CENTRE
WOOLWORTHS GROUP

EAST VICTORIA PARK DEVELOPMENT

STATE PLANNING POLICY 5.4
NOISE MANAGEMENT PLAN

MARCH 2024

OUR REFERENCE: 32380-1-24064

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SPP 5.4 – NOISE MANAGEMENT PLAN

CHILD CARE CENTRE – EAST VICTORIA PARK

Job No: 24064

Document Reference: 32380-1-24064

FOR

WOOLWORTHS GROUP

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APPENDICIES

1. INTRODUCTION

Herring Storer Acoustics was commissioned to undertake an acoustic assessment for the proposed child care centre, located within the Woolworths Commercial East Victoria Park development with regards to vehicles travelling along Albany Highway as well as Shepperton Road. The acoustic assessment is to comply with the requirement of State Planning Policy 5.4 *"Road and Rail Transport Noise"* (SPP5.4). As part of this assessment, the following was carried out:

- Determine by modelling, the noise that would be received at child care centre from vehicles travelling on Albany Highway and Shepperton Road.
- 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.

The results of the acoustic assessment indicate that noise received at the development from future traffic, exceed external noise level criteria. Therefore, noise amelioration listed in Appendix B, are required.

Although under the Policy, there are no requirements with regards to the outdoor play areas, noise received within these areas does need to be considered to provide a practicable external noise level. There are outdoor play areas on the opposite side of the proposed childcare building, hence, with a calculated noise level of 52 dB $L_{AEq(Day)}$, and as a result, this criteria is considered to be met.

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).

We also note that additional to the above, under Section 6.1 of the Policy, "a reasonable degree of acoustic amenity for outdoor living areas on each residential lot." Under the Policy, an outdoor living area is as defined in the State Planning Policy 3.1 Residential Design Codes. The definition for an outdoor living area is as per below:

Outdoor living area

The area external to a **single house**, **grouped** or **multiple dwelling** to be used in conjunction with that **dwelling** such that it is capable of active or passive use and is readily accessible from the dwelling.

However, the Policy also states that "For non-residential noise-sensitive developments, for example schools and child care centres the design of outdoor areas should take into consideration the noise targets."

Finally, it is also noted that under the Policy, "It is recognized that in some instances, it may not be reasonable and/or practicable to meet the outdoor noise targets". Thus, for child care centres, compliance with the "Target" noise levels within the outdoor play areas is not a requirement under the Policy, however, noise received at within the outdoor area still need to be considered.

4. MEASUREMENTS AND OBSERVATIONS

The noise measurements were conducted on 22 February 2024 for Albany Highway and Shepperton Road for a short term period during peak hour to determine the L_{A10} noise level. Utilising this measurement, reference to the DEFRA publication (*Method for Converting the UK Road Traffic Noise $L_{A10,18h}$ to the EU Noise Indices for Road Noise Mapping, ref: st/05/91/AGG04442)* 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 4.1 – MEASURED NOISE LEVELS

Description	L_{A10} dB	L_{Aeq} dB
Albany Highway	68.5	64.9
Shepperton Road	70.3	66.9

5. MODELLING

To determine the noise levels from traffic on Albany Highway and Shepperton Road, acoustic modelling was carried out using Sound Plan, 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 5.1 (Based on available information on MRWA Traffic Map, Attached in Appendix C).
- Adjustments as listed in Table 5.2.

TABLE 5.1 - NOISE MODELLING INPUT DATA

Parameter	Albany Highway 2024 (Current)	Albany Highway 2044 (Future)	Shepperton Rd 2024 (Current)	Shepperton Rd 2044 (Future)
Traffic Volumes	17,220	25,590 vpd	33,660 vpd	50,020 vpd
Percentage Traffic 0600 – 2400 hours (assumed)	94%	94%	94%	94%
Heavy Vehicles (%)	5.8%	5.8%	8.3%	8.3%
Speed (km/hr)	40 km/hr	40 km/hr	60 km/hr	60 km/hr
Road Surface	Chip Seal	Dense Graded Asphalt	Chip Seal	Dense Graded Asphalt

TABLE 5.2 – ADJUSTMENTS FOR NOISE MODELLING

Description	Value
Façade Reflection Adjustment	+2.5 dB
Conversion from $L_{A10\ (18\ hour)}$ to $L_{Aeq\ (16\ hour)}$ (Day) Albany Highway	-3.6 dB
Conversion from $L_{A10\ (18\ hour)}$ to $L_{Aeq\ (16\ hour)}$ (Day) Shepperton Road	-3.4 dB

Conversion from $L_{A10(18\ hour)}$ to $L_{Aeq(16\ hour)}$ was conducted with the method detailed in the DEFRA publication – "*Method for Converting the UK Road Traffic Noise $L_{A10,18h}$ to the EU Noise Indices for Road Noise Mapping, ref: st/05/91/AGG04442"*

The future road traffic volumes were based on information provided by the MRWA traffic maps and by the MRWA ROM Department.

1 *Calculation of Road Traffic Noise* UK Department of Transport 1987

6. TRAFFIC NOISE ASSESSMENT

Using the data contained in Tables 4.1, 5.1 and 5.2 and the adjustments noted above, modelling was carried out under existing conditions for calibration. The Sound Plan model for the site has been set up for the 2044 scenario as defined in Table 4.1.

The noise requirements based on the above have been listed in Appendix B.

It is noted that these requirements pertain to acoustic requirements only, with regard to *State Planning Policy 5.4,* and may be superseded by other requirements (BAL, Thermal, etc).

7. CONCLUSION

In accordance with the WAPC Planning Policy 5.4, an assessment of the noise that would be received within the development of the Woolworths Commercial East Victoria Park development from vehicles travelling on Albany Highway and Shepperton Road has been undertaken.

In accordance with the Policy, the following would be the internal acoustic criteria applicable to this project:

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).

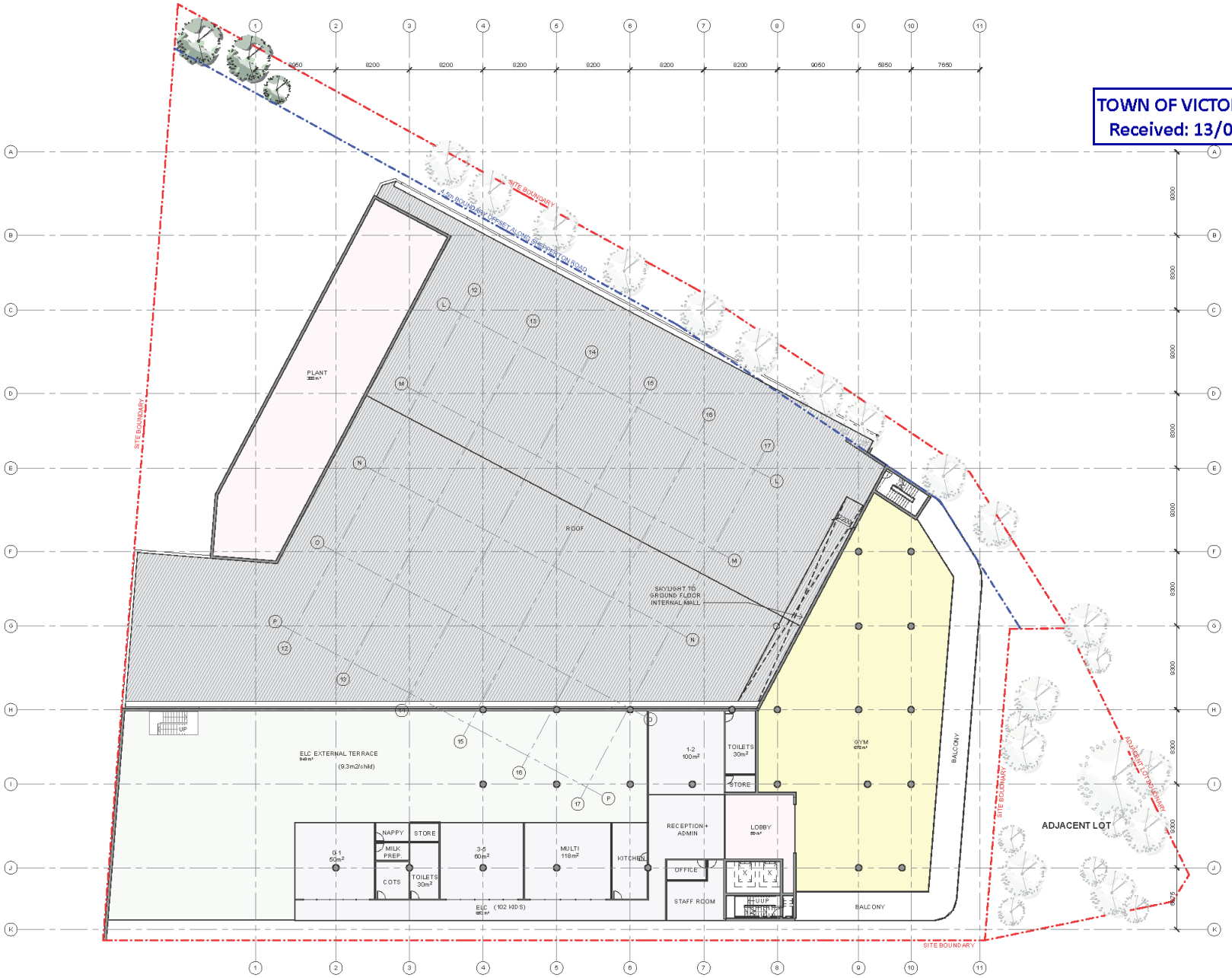
The results of the acoustic assessment indicate that noise received at the development from future traffic, exceed external noise level criteria. Therefore, noise amelioration listed in Appendix B, are required.

It is noted that there is not currently any glazing planned on the façade to the road (Albany Highway), however, this is listed as an option in Appendix B should the plans change, assuming a glazing area to room area ratio of 0.6.

Although under the Policy, there are no requirements with regards to the outdoor play areas, noise received within these areas does need to be considered to provide a practicable external noise level. There are outdoor play areas on the opposite side of the proposed childcare building, hence, this criteria is considered to be met.

APPENDIX A

PLAN



WOOLWORTHS GROUP

LEVEL 1 FLOOR PLAN - OPTION 3

WOOLWORTHS EAST VIC PARK

Status:

Path: C:\Users\j.harding\Documents\44694_Woolworths East Vic Part_j.harding.R13DW.rvt

Scale: 1:200 @ A1

0 16

North:

Project Number:	44694
Drawing Number:	SK001
Revision:	C
Date:	18/06/23

Hames Sharley

APPENDIX B

GLAZING REQUIREMENTS

Calculated Noise Levels and Required R_w and C_{tr} Ratings			Example Construction
Location	**Level**	**$R_w + C_{tr}$***	
Sleep Areas	67	40	VLam Hush Double Glazing 8.5mm-16mm-12.5mm
Play Areas	67	35	VLam Hush 10.5mm
Walls	67	50	-
Roof/Ceiling	67	40	-

Notes: The required R_W rating can be reduced by reducing the area of glazing.
All non-listed locations would meet requirements given standard construction (4mm Monolithic windows, 6mm monolithic doors).
Requirements pertain to only acoustic advice in regard to *State Planning Policy 5.4* and may be superceded by other requirements (BAL, Thermal, etc).

APPENDIX C

MRWA TRAFFIC FLOW DATA

mainroads WESTERN AUSTRALIA

SITE 0011

Hourly Volume

Albany Hwy (1290252)

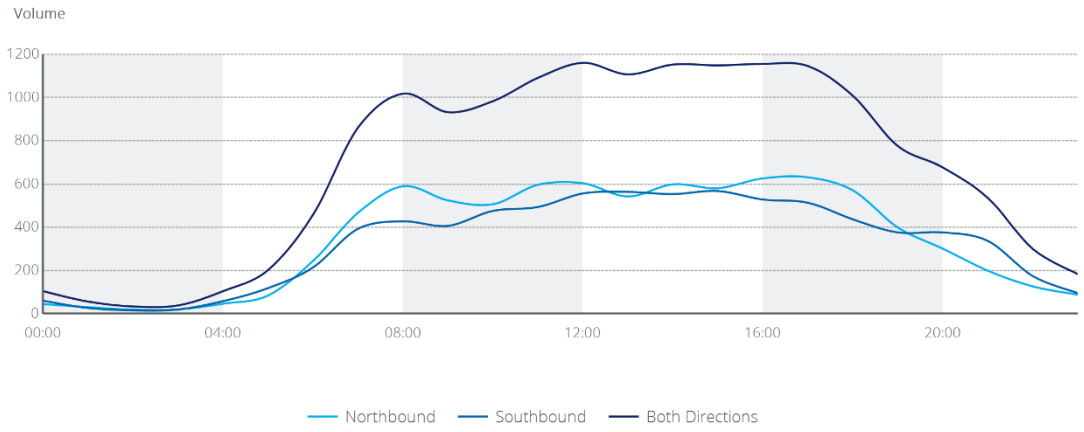
North of Welshpool Rd (SLK 0.09)

2020/21
Monday to Friday

	All Vehicles			Heavy Vehicles			
	NB	SB	Both	NB	SB	Both	%
00:00	44	60	104	0	1	1	1.0
01:00	30	26	56	2	1	3	5.4
02:00	18	15	33	2	1	3	9.1
03:00	19	19	38	1	2	3	7.9
04:00	46	58	104	6	3	9	8.7
05:00	84	118	202	8	3	11	5.4
06:00	244	214	458	35	14	49	10.7
07:00	467	393	860	35	30	65	7.6
08:00	590	428	1018	35	33	68	6.7
09:00	525	407	932	44	40	84	9.0
10:00	507	476	983	46	33	79	8.0
11:00	597	494	1091	45	35	80	7.3
12:00	604	557	1161	37	42	79	6.8
13:00	543	564	1107	42	36	78	7.0
14:00	599	554	1153	41	36	77	6.7
15:00	581	568	1149	40	27	67	5.8
16:00	627	529	1156	30	24	54	4.7
17:00	632	514	1146	21	20	41	3.6
18:00	571	437	1008	18	15	33	3.3
19:00	399	376	775	9	11	20	2.6
20:00	301	376	677	6	8	14	2.1
21:00	199	337	536	4	5	9	1.7
22:00	126	174	300	4	2	6	2.0
23:00	88	95	183	1	3	4	2.2
TOTAL	8441	7789	16230	512	425	937	5.8

Peak Statistics

AM	TIME	11:45	11:45	11:45	09:45	09:30	09:15
	VOL	612	550	1162	50	42	89
PM	TIME	17:00	13:30	16:30	13:30	12:15	13:30
	VOL	632	569	1164	47	44	84



mainroads WESTERN AUSTRALIA

SITE 0721

Hourly Volume

Shepperton Rd (H001)

North of Oats St (SLK 4.45)

2020/21
Monday to Friday

	All Vehicles			Heavy Vehicles			
	NB	SB	Both	NB	SB	Both	%
00:00	58	121	179	4	4	8	4.5
01:00	38	81	119	4	2	6	5.0
02:00	24	63	87	4	1	5	5.7
03:00	51	54	105	6	5	11	10.5
04:00	105	75	180	8	6	14	7.8
05:00	319	164	483	44	16	60	12.4
06:00	719	351	1070	100	43	143	13.4
07:00	1375	707	2082	159	66	225	10.8
08:00	1811	810	2621	152	80	232	8.9
09:00	1120	694	1814	125	83	208	11.5
10:00	840	743	1583	85	86	171	10.8
11:00	875	849	1724	89	90	179	10.4
12:00	924	855	1779	91	96	187	10.5
13:00	855	909	1764	85	85	170	9.6
14:00	971	1052	2023	91	102	193	9.5
15:00	1043	1408	2451	76	107	183	7.5
16:00	1192	1592	2784	70	108	178	6.4
17:00	1152	1540	2692	63	86	149	5.5
18:00	862	956	1818	47	43	90	5.0
19:00	562	625	1187	33	28	61	5.1
20:00	426	557	983	26	22	48	4.9
21:00	389	603	992	26	22	48	4.8
22:00	246	457	703	15	16	31	4.4
23:00	165	330	495	12	7	19	3.8
TOTAL	16122	15596	31718	1415	1204	2619	8.3

Peak Statistics

AM	TIME	08:00	11:45	08:00	07:15	11:45	07:15
	VOL	1811	890	2621	162	95	234
PM	TIME	16:30	15:45	16:15	12:15	15:30	15:30
	VOL	1224	1644	2855	99	123	194