HERRING STORER ACOUSTICS

PLANNING SOLUTIONS

TEMPORARY WORKFORCE ACCOMMODATION
LOT 67 (#45) BATES DRIVE, SOMERVILLE

SPP 5.4 NOISE MANAGEMENT PLAN

AUGUST 2023

OUR REFERENCE: 31336-3-23220

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:
HERRING STORER ACOUSTICS
P.O. Box 219, Como, W.A. 6952
(08) 9367 6200
hsa@hsacoustics.com.au

DOCUMENT CONTROL PAGE

SPP 5.4 NOISE MANAGEMENT PLAN
LOT 67 (#45) BATES DRIVE

Job No: 23220

Document Reference: 31336-3-23220

FOR

PLANNING SOLUTIONS

DOCUMENT INFORMATION			
Author:	Geoffrey Harris	**Checked By:**	Tim Reynolds
Date of Issue:	7 August 2023		

REVISION HISTORY

Revision	Description	Date	Author	Checked
1	Original Issue	07/08/23	GH	TR
2	Typos	11/08/23	GH	TR
3	Wording changes	23/08/23	GH	TR

DOCUMENT DISTRIBUTION

Copy No.	Version No.	Destination	Hard Copy	Electronic Copy
1	1	Planning Solutions Attn: Jozef Ewing Email: jozef.ewing@planningsolutions.com.au		✓
1	2	Planning Solutions Attn: Jozef Ewing Email: jozef.ewing@planningsolutions.com.au		✓
1	3	Planning Solutions Attn: Jozef Ewing Email: jozef.ewing@planningsolutions.com.au		✓

CONTENTS

APPENDICES

1. INTRODUCTION

Herring Storer Acoustics were commissioned by Planning Solutions to carry out an acoustic study with regards to traffic related noise for the proposed development at Lot 67 (#45) Bates Road, Somerville.

The purpose of the study was to:

- Assess the noise that would be received within the development area from vehicles travelling on Hannan Street/Great Eastern Highway for future traffic volumes.
- Compare the results with accepted criteria and if exceedances exist, develop the framework for the management of noise.

A plan is attached in Appendix A.

2. ACOUSTIC CRITERIA

2.1 NOISE

The Western Australian Planning Commission (WAPC) released on 6th September 2019 State Planning Policy 5.4 *"Road and Rail Noise".* The requirements of State Planning Policy 5.4 are outlined below.

POLICY APPLICATION (Section 4)

When and where it applies (Section 4.1)

SPP 5.4 applies to the preparation and assessment of planning instruments, including region and local planning schemes; planning strategies, structure plans; subdivision and development proposals in Western Australia, where there is proposed:

a) *noise-sensitive land-use within the policy's trigger distance of a transport corridor as specified in* ***Table 1****;*
b) *New or major upgrades of roads as specified in* ***Table 1*** *and maps* ***(Schedule 1,2 and 3);*** *or*
c) *New railways or major upgrades of railways as specified in maps (****Schedule 1, 2 and 3);*** *or any other works that increase capacity for rail vehicle storage or movement and will result in an increased level of noise.*

Policy trigger distances (Section 4.1.2)

Table 1 *identifies the State's transport corridors and the trigger distances to which the policy applies.*

The designation of land within the trigger distances outlined in ***Table 1*** *should not be interpreted to imply that land is affected by noise and/or that areas outside the trigger distances are un-affected by noise.*

*Where any part of the lot is within the specified trigger distance, an assessment against the policy is required to determine the likely level of transport noise and management/ mitigation required. An initial screening assessment (****guidelines: Table 2: noise exposure forecast****) will determine if the lot is affected and to what extent."*

TABLE 1: TRANSPORT CORRIDOR CLASSIFICATION AND TRIGGER DISTANCES

Transport corridor classification	***Trigger distance***	***Distance measured from***
Roads		
Strategic freight and major traffic routes *Roads as defined by Perth and Peel Planning Frameworks and/or roads with either 500 or more Class 7 to 12 Austroads vehicles per day, and/or 50,000 per day traffic volume*	*300 metres*	*Road carriageway edge*
Other significant freight/traffic routes *These are generally any State administered road and/or local government road identified as being a future State administered road (red road) and other roads that meet the criteria of either >=23,000 daily traffic count (averaged equivalent to 25,000 vehicles passenger car units under region schemes)*	*200 metres*	*Road carriageway edge*
Passenger railways		
	100 metres	*Centreline of the closest track*
Freight railways		
	200 metres	*Centreline of the closest track*

Proponents are advised to consult with the decision making authority as site specific conditions (significant differences in ground levels, extreme noise levels) may influence the noise mitigation measures required, that may extend beyond the trigger distance.

POLICY MEASURES (Section 6)

The policy applies a performance-based approach to the management and mitigation of transport noise. The policy measures and resultant noise mitigation will be influenced by the function of the transport corridor and the type and intensity of the land-use proposed. Where there is risk of future land-use conflict in close proximity to strategic freight routes, a precautionary approach should be applied. Planning should also consider other broader planning policies. This is to ensure a balanced approach takes into consideration reasonable and practical considerations.

Noise Targets (Section 6.1)

***Table 2** sets out noise targets that are to be achieved by proposals under which the policy applies. Where exceeded, an assessment is required to determine the likely level of transport noise and management/mitigation required.*

In the application of the noise targets the objective is to achieve:

- *indoor noise levels as specified in **Table 2** in noise sensitive areas (for example, bedrooms and living rooms of houses, and school classrooms); and*
- *a reasonable degree of acoustic amenity for outdoor living areas on each residential lot. For non-residential noise-sensitive developments, for example schools and child care centres the design of outdoor areas should take into consideration the noise target.*

It is recognised that in some instances, it may not be reasonable and/or practicable to meet the outdoor noise targets. Where transport noise is above the noise targets, measures are expected to be implemented that balance reasonable and practicable considerations with the need to achieve acceptable noise protection outcomes.

TABLE 2: NOISE TARGETS

Proposals	***New/Upgrade***	***Noise Targets***		
		Outdoor		***Indoor***
		Day (L_{Aeq}(Day) dB) (6 am-10 pm)	***Night (L_{Aeq}(Night)dB) (10 pm-6 am)***	***(L_{Aeq} dB)***
Noise-sensitive land-use and/or development	*New noise sensitive land use and/or development within the trigger distance of an existing/proposed transport corridor*	*55*	*50*	*L_{Aeq} (Day) 40(Living and work areas) L_{Aeq} (Night) 35 (bedrooms)*
Roads	*New*	*55*	*50*	*N/A*
	Upgrade	*60*	*55*	*N/A*
Railways	*New*	*55*	*50*	*N/A*
	Upgrade	*60*	*55*	*N/A*

Notes:

- *The noise target is to be measured at one metre from the most exposed, habitable façade of the proposed building, which has the greatest exposure to the noise-source. A habitable room has the same meaning as defined in State Planning Policy 3.1 Residential Design Codes.*
- *For all noise-sensitive land-use and/or development, indoor noise targets for other room usages may be reasonably drawn from Table 1 of Australian Standard/New Zealand Standard AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors (as amended) for each relevant time period.*
- *The 5dB difference in the criteria between new and upgrade infrastructure proposals acknowledges the challenges in achieving noise level reduction where existing infrastructure is surrounded by existing noise-sensitive development.*
- *Outdoor targets are to be met at all outdoor areas as far as is reasonable and practical to do so using the various noise mitigation measures outlined in the guidelines. For example, it is likely unreasonable for a transport infrastructure provider to achieve the outdoor targets at more than 1 or 2 floors of an adjacent development with direct line of sight to the traffic.*

<u>Noise Exposure Forecast (Section 6.2)</u>

*When it is determined that SPP 5.4 applies to a planning proposal as outlined in Section 4, proponents and/or decision makers are required to undertake a preliminary assessment using **Table 2**: noise exposure forecast in the guidelines. This will provide an estimate of the potential noise impacts on noise-sensitive land-use and/ or development within the trigger distance of a specified transport corridor. The outcomes of the initial assessment will determine whether:*

- *no further measures are required;*
- *noise-sensitive land-use and/or development is acceptable subject to deemed-to-comply mitigation measures; or*
- *noise-sensitive land-use and/or development is not recommended. Any noise-sensitive land-use and/ or development is subject to mitigation measures outlined in a noise management plan."*

3. MEASUREMENTS AND OBSERVATIONS

Due to the location of the development, no measurements were taken to calibrate the noise model.

Typically, the noise modelling software SoundPlan overpredicts noise levels, and this approach is generally considered conservative.

Similarly, the development is approximately 130m at the closest point to the road reserve, which would relate to a 53 dB $L_{Aeq(day)}$ based on a noise screening survey, including a -4 dB(A) adjustment for buildings and barriers in the way. Regardless, the full noise model was conducted for thoroughness.

If confirmation measurements are required, these can be completed at a later date.

4. MODELLING

To determine the noise levels from traffic on Hannan 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:

- Plans supplied by client (Shown in Appendix A);
- Traffic data as per Table 4.1 (And Sourced in Appendix B);
- Adjustments as listed in Table 4.2.

TABLE 4.1 - NOISE MODELLING INPUT DATA

Parameter	Hannan Street (Current) 2020*	Hannan Street (Future) 2042*
Traffic Volumes	8,898 vpd	13,486 vpd
Percentage traffic 0600 – 2400 hours (Assumed)	94%	94%
Heavy Vehicles (%) (Assumed)	18.9%	18.9%
Speed (km/hr)	60km/hr	60km/hr
Road Surface	Chip Seal	Dense Grade Asphalt

* From MRWA, shown in Appendix B

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)	-0.9 dB*
Adjustment for Future Modelled Noise	-1.7 dB

* Based on DEFRA Calculation.

Based on the DEFRA Calculation, the difference between the $L_{Aeq,(16hr)}$ and $L_{Aeq,(8hr)}$ is -8.4 dB, hence, the day period is the critical period for compliance. Hence, achieving compliance with the day period criteria would also result in compliance with the night period criteria.

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

5. TRAFFIC NOISE ASSESSMENT

Based on noise modelling conducted, the highest noise level received at Lot 65 (#45) Bates Drive, Somerville would be 47.0 dB $L_{AEq(Day)}$, and no noise amelioration in the form of quiet house design upgrades would be required.

6. CONCLUSION

Under the WAPC State Planning Policy 5.4, for this development, the appropriate "Noise Targets" to be achieved under SPP 5.4, external to a residence are:

External

Day	Maximum of 55 dB(A) L_{Aeq}
Night	Maximum of 50 dB(A) L_{Aeq}

The policy states that the "outdoor targets are to be met at all outdoor areas as far as reasonable and practical to do so using the various noise mitigation measures outlined in the guidelines". The Policy also states, under Section 6 – Policy Measures that "a reasonable degree of acoustic amenity for living areas on each residential lot". The policy recognises that "it may not be practicable to meet the outdoor noise targets".

The Policy states the following acceptable internal noise levels:

Internal

Living and Work Areas	$L_{Aeq(Day)}$ of 40 dB(A)
Bedrooms	$L_{Aeq(Night)}$ of 35 dB(A)

For this development, compliance with the requirements of SP 5.4, noise modelling and assessment are based on the day period for residence located adjacent to Hannan Street, as compliance with the day period would yield compliance with the night period.

Noise associated with vehicles travelling on Hannan Street, would be at maximum 47.0 dB $L_{Aeq(Day)}$ and as a result no "Quiet House" design is required for this development.

APPENDIX A

Plans

LEGEND:

- 4 No. 1 BED ENSUITE
- LAUNDRY AND LINEN
- 2 No. VIP AND UNIVERSAL ACCESS (UA) ENSUITE
- COVERED SEATING AREA
- SITE BOUNDARY
- FENCE LINE
- GATE
- EXISTING CONTOURS
- PARKING BAYS

50 40 30 20 10 0 50

SCALE 1:1000 (METRES)

PRELIMINARY

GENERAL ARRANGEMENT PLAN

REVISIONS	MK	DATE	INT	APP
FOR REVIEW	B	01-08-23	CS	PG
FOR REVIEW	A	14-07-23	CS	PG

REFERENCE DRAWINGS — DRG NO

SCALE	1:1000	
DRAWN	C.SANTIAGO	14-07-23
CHECKED	P.GILLAN	14-07-23
APPROVED		
PROCESS OWNER		
SAP NUMBER		
BHP EQUIP No		

BHP

KALGOORLIE NICKEL SMELTER LOCKED BAG 16 KALGOORLIE

KALGOORLIE NICKEL WEST
CONSTRUCTION ACCOMMODATION VILLAGE
GENERAL ARRANGEMENT
PLAN

NICKEL WEST — ABN 76004 184 598

DRAWING No.
1921-A-85240-VD-00112

REVISION B A1

APPENDIX B

MRWA Traffic Flows

mainroads WESTERN AUSTRALIA

SITE 16193

Hourly Volume

Great Eastern Hwy (H005)

East of Atbara St (SLK 587.92)

2022/23
Monday to Friday

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	11	6	17	1	0	1	5.9
01:00	12	10	22	0	0	0	0.0
02:00	7	14	21	1	2	3	14.3
03:00	30	41	71	6	2	8	11.3
04:00	30	191	221	4	15	19	8.6
05:00	116	646	762	27	50	77	10.1
06:00	169	562	731	42	36	78	10.7
07:00	236	463	699	49	42	91	13.0
08:00	305	429	734	46	49	95	12.9
09:00	304	329	633	42	50	92	14.5
10:00	286	302	588	46	41	87	14.8
11:00	322	305	627	44	42	86	13.7
12:00	385	352	737	42	38	80	10.9
13:00	357	350	707	44	38	82	11.6
14:00	388	291	679	43	33	76	11.2
15:00	434	295	729	45	34	79	10.8
16:00	703	250	953	53	28	81	8.5
17:00	630	180	810	52	22	74	9.1
18:00	262	115	377	24	9	33	8.8
19:00	104	68	172	8	4	12	7.0
20:00	58	42	100	3	2	5	5.0
21:00	38	35	73	1	1	2	2.7
22:00	27	19	46	2	1	3	6.5
23:00	17	13	30	1	1	2	6.7
TOTAL	5231	5308	10539	626	540	1166	11.1

Peak Statistics

AM	TIME	11:45	05:00	06:30	07:00	05:00	07:30
	VOL	388	646	815	49	50	97
PM	TIME	16:15	12:45	16:15	16:15	12:30	16:15
	VOL	755	373	986	57	40	85