

**SUNSET BEACH UNIT TRUST
C/O LANDWEST**

**RESIDENTIAL DEVELOPMENT
LOT 2349 GUARA DRIVE
SUNSET BEACH**

SPP 5.4 NOISE MANAGEMENT PLAN

MAY 2023

OUR REFERENCE: 31027-1-23113

DOCUMENT CONTROL PAGE

**SPP 5.4 NOISE MANAGEMENT PLAN
LOT 2349 GUARA DRIVE
SUNSET BEACH**

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FOR

LANDWEST

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1. INTRODUCTION

Herring Storer Acoustics were commissioned by Landwest on behalf of Sunset Beach Unit Trust to carry out an acoustic study with regards to traffic related noise for the proposed residential development at Lot 2349 Guara Drive, Sunset Beach.

The purpose of the study was to:

- Assess the noise that would be received within the development area from vehicles travelling on Northwest Coastal Road 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 <i>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</i>	300 metres	Road carriageway edge
Other significant freight/traffic routes <i>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)</i>	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 ($L_{Aeq}(\text{Day})$ dB) (6 am-10 pm)	Night ($L_{Aeq}(\text{Night})$ 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.

Noise Exposure Forecast (Section 6.2)

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 is 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

Noise logging was conducted in the vicinity of the site from 3 April to 6 April 2023, however the logger was damaged and data unretrievable. As a result, monitored data from Lot 9001 Ord Street, Beresford has been utilised and detailed below.

The automatic noise data logger records sound pressure levels in accordance with Australian Standard 2702-1984: *Acoustics - Method for Measurement of Road Traffic Noise*. The logger used records statistical noise level data, of which the L_{A10} , L_{Aeq} and L_{A90} levels are reported. These are defined below:

L_{A10} The noise level exceeded for 10% of the time (in this instance, the noise level exceeded for 6 minutes in each 1-hour period).

L_{Aeq} The energy equivalent noise level for the 1-hour period. A single number value that expresses the time-varying sound level for the 1-hour period as though it were a constant sound level with the same total sound energy as the time-varying level.

L_{A90} The noise level exceeded for 90% of the time (in this instance, the noise level exceeded for 54 minutes in each 1-hour period).

The logger used was a NRST MK3 noise data logger. The Noise Logger was calibrated prior to and after use with a Bruel and Kjaer 4230 Calibrator. All equipment used is currently factory calibrated. Calibration certificates are available on request.

The results of the noise logging are summarised in Table 3.1.

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)
Lot 9001	66.5	64.2	56.2

4. MODELLING

To determine the noise levels from traffic on Northwest Coastal Highway, 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 C).
- 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	Northwest Coastal Highway (Current) 2021	Northwest Coastal Highway (Future) 2041
Traffic Volumes	13,750 vpd	20,430 vpd
Percentage traffic 0600 – 2400 hours (Assumed)	94%	94%
Heavy Vehicles (%) (Assumed)	8.3%	8.3%
Speed (km/hr)	60 km/hr	60 km/hr
Road Surface	Dense Graded Asphalt	Dense Graded Asphalt

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)	-2.3 dB*

* Based on measured results listed in Table 3.1.

5. TRAFFIC NOISE ASSESSMENT

Using the data contained in Tables 4.1 and 4.2, noise modelling was conducted for three scenarios;

- Scenario 1 – No Noise Amelioration;
- Scenario 2 – 1800mm high eastern boundary wall.

For each scenario, areas requiring “Quiet House Design”, have been indicated in Appendix C.

Additionally, Appendix A contains a site plan and Appendix B shows future day time noise contour for reference.

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

6. CONCLUSION

In accordance with the WAPC Planning Policy 5.4, an assessment of the noise that would be received within the development of Lot 2349, Guara Drive Sunset Beach from vehicles travelling on Northwest Coastal Highway has been undertaken.

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

External

Day	55 dB(A) L _{Aeq}
Night	50 dB(A) L _{Aeq}

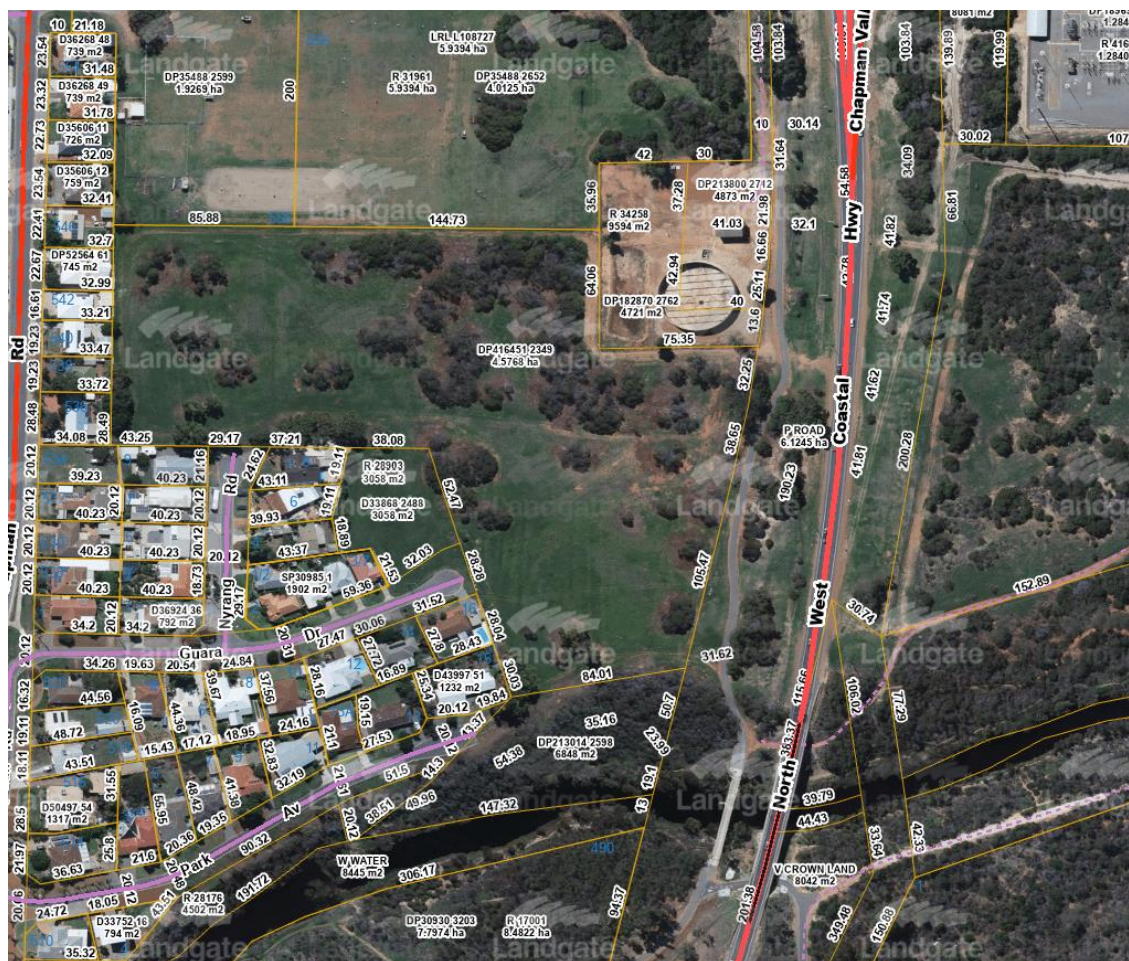
Internal

Sleeping Areas	35 dB(A) L _{Aeq(night)}
Living Areas	40 dB(A) L _{Aeq(day)}

The results of the acoustic assessment indicate that noise received at the development from future traffic does exceed external noise level criteria. Therefore, “Quiet House Design” Packages as indicated in Appendix C (or equivalent provided by an Acoustic Consultant), would be required for any new dwelling.

APPENDIX A

Site Layout



APPENDIX B

Future Day Time Noise Contours

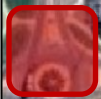




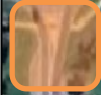
APPENDIX C

QHD Requirements

SCENARIO 1



Area requiring "Quiet House Design" Package C and Notifications on Title



Area requiring "Quiet House Design" Package B and Notifications on Title



Area requiring "Quiet House Design" Package A and Notifications on Title



SCENARIO 2



Area requiring "Quiet House Design" Package C and Notifications on Title



Area requiring "Quiet House Design" Package B and Notifications on Title



Area requiring "Quiet House Design" Package A and Notifications on Title



APPENDIX D

MRWA Traffic Flows



Hourly Volume

North West Coastal Hwy (H007)

2020/21
Monday to Friday

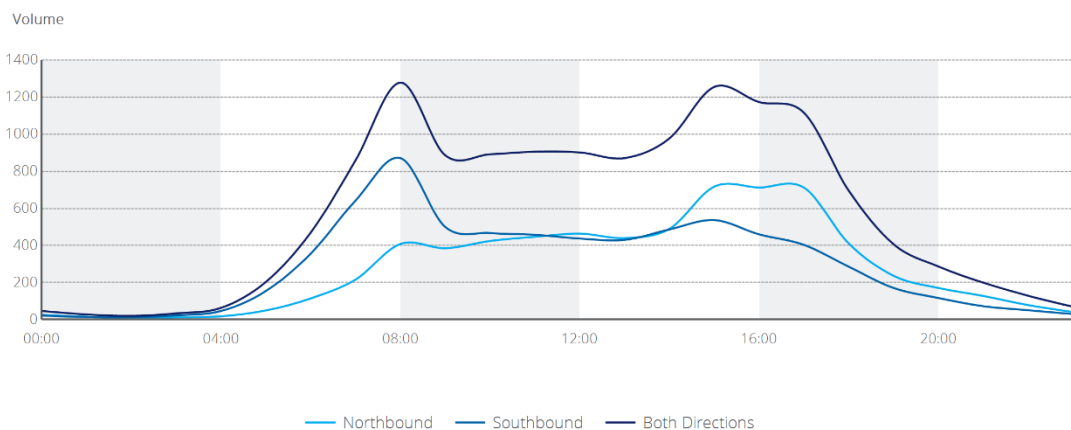
North of Green St (SLK 7.23)

	All Vehicles			Heavy Vehicles			
	NB	SB	Both	NB	SB	Both	%
00:00	25	21	46	3	2	5	10.9
01:00	14	13	27	1	1	2	7.4
02:00	7	12	19	1	1	2	10.5
03:00	11	22	33	1	3	4	12.1
04:00	17	46	63	4	5	9	14.3
05:00	49	154	203	6	15	21	10.3
06:00	114	356	470	15	32	47	10.0
07:00	216	643	859	30	45	75	8.7
08:00	408	870	1278	45	49	94	7.4
09:00	385	500	885	43	35	78	8.8
10:00	424	467	891	48	40	88	9.9
11:00	447	458	905	41	40	81	9.0
12:00	464	437	901	43	34	77	8.5
13:00	440	430	870	39	34	73	8.4
14:00	490	487	977	47	47	94	9.6
15:00	718	537	1255	61	40	101	8.0
16:00	713	460	1173	60	31	91	7.8
17:00	712	403	1115	59	20	79	7.1
18:00	410	285	695	32	14	46	6.6
19:00	236	170	406	15	12	27	6.7
20:00	170	116	286	12	7	19	6.6
21:00	127	72	199	10	5	15	7.5
22:00	78	50	128	6	2	8	6.3
23:00	40	29	69	3	2	5	7.2
TOTAL	6715	7038	13753	625	516	1141	8.3



Peak Statistics

AM	TIME	11:30	07:45	07:45	08:15	07:15	08:00
	VOL	470	932	1299	49	50	94
PM	TIME	16:30	14:30	15:00	15:30	14:15	14:45
	VOL	761	576	1255	69	53	103



Our ref: 32196-1-23113

5 February 2024

Landwest
8 Anzac Terrace
Geraldton WA 6530

Attention: Gail Birmingham
Email: gail@landwest.net.au

Dear Gail,

**LOT 2349 GUARA DRIVE, SUNSET BEACH
TECHNICAL NOTE**

It is understood that the following commentary has been made on the Herring Storer Acoustic's (HSA) State Planning Policy 5.4 Noise Management Plan (our ref: 31027-1-23113).

Noise Management Plan

- *As stated in Section 3 of the NMP, noise logging at the site was unable to be retrieved and data from Lot 9001 Ord Street was used instead. The City's Environmental Health Team have reviewed the document against SPP 5.4 Road and Rail Guidelines and have advised that substitute data can be included where it is of the same road class and configuration and where appropriate and stated adjustments occur. Officers comments are that configuration of the road alignments are somewhat different given the proximity of the site to the NWCH-Chapman Valley Road intersection and the justification may not be sufficient for DWER requirements.*
- *The structure plan will be referred to the DWER team for assessment as part of the consultation process. If additional clarification is required, it can form part of the existing process.*

Based on the above, HSA provides the following comparison the two roads in Table 1 below.

TABLE 1 – ROAD COMPARISON

Parameter	Ord Road	Guara Drive	Commentary
Traffic Volumes	22,000 vpd	20,430 vpd	7% difference; +0.3 dB(A) adjustment
Speed	60km/hr	60km/hr	Same
Surface	DGA	DGA	Same
Lanes	2 Lanes	2 Lanes	Same
Composition	10.7% Heavy	8.3% Heavy	+0.6 dB(A) adjustment
Location	North of Geraldton Town Centre	North of Geraldton Town Centre	Same

As shown in Table 1, the roads conditions are largely the same, aside from the traffic flows and composition, which would be taken into account in the results derived from modelling input parameters. The noise logging is only utilised to determine the calibration adjustment and relationship between L_{A10} , $L_{Aeq(Day)}$ and $L_{Aeq(Night)}$ parameters. Additionally, the day time period is the critical period as the difference between $L_{Aeq(Day)}$ and $L_{Aeq(Night)}$ is greater than 5 dB(A).

Based on the above, we believe that the logged data would suffice as a basis for the derivation for the calibration adjustment for this site and would not be a valid reason to refute the assessment made in the *State Planning Policy 5.4 Noise Management Plan*.

Yours faithfully,
for **HERRING STORER ACOUSTICS**

Geoffrey Harris