Lot 1 Alston Close, Waikiki

Acoustic Report – Development Application

Project No.	P04048
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Issue and Revision Record

Revision	Date	Comments	Engineer	Reviewer
01	26.06.2026	DA Issue	IK	TDN
02				
03				
04				

The project design and construction team are required to review and consider the implications of these recommendations on their design for the project. The design team shall coordinate with any specific condensation, acoustic, wind, structural, safety, constructability, maintenance or architectural design requirement for this particular project.

Engineering Lab NSW Pty Ltd

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1. Introduction

1.1 Document Purpose

E-Lab Consulting has been commissioned by Adras Pty Ltd to undertake an acoustic assessment for the proposed development at Lot 1 Alston Close, Waikiki WA 6169

This Acoustic report has been prepared as part of Development Application for the proposed development. The following acoustic assessments were undertaken, and recommendations are made to maintain compliance:

- Noise Intrusion to the project from external noise sources (road traffic from Read Street) in accordance with State Planning Policy 5.4 – Road and Rail Noise
- Noise emissions from the development impacting noise sensitive receivers in accordance with WA Environmental Protection (Noise) Regulations 1997

1.2 Relevant Documents

The following standards, regulations and guidelines have been used to establish the project specific acoustic design requirements for the development.

- Architectural documentation by Dale Alcock Projects dated 12th January 2026
- WAPC/DPLH, State Planning Policy 5.4 – Road and Rail Noise, Sep 2019 (SPP 5.4)
- Western Australian Environmental Protection (Noise) Regulations 1997 (WA EPNR)

1.3 Project Description

The proposed project site is located at Lot 1 Alston Close, Waikiki WA 6169. The area surrounding the site comprises entirely of residential housing.

The Site is bordered by Oakwood Crescent to the North, houses to the East, Alston Close to the South and more residential dwellings to the West, beyond which lies Read Street a major transport corridor

The project location is within the trigger distance of State Planning Policy 5.4 - Road and Rail Noise due to its proximity to Read Street. The Project location and nearest noise sensitive receivers are shown in Figure 1.



Figure 1: Project Location and Nearest Noise Sensitive Receiver (Source: google maps)

2. Acoustic Design Criteria

This section presents the regulatory requirements, and acoustic design criteria applicable for the proposed project.

2.1 Road Noise – State Planning Policy 5.4

The project site falls within the SPP 5.4 trigger zone (Figure 2) for Read Street. SPP 5.4 establishes the indoor and outdoor noise criteria that apply to a noise sensitive land use due to noise emissions from road and rail transport.

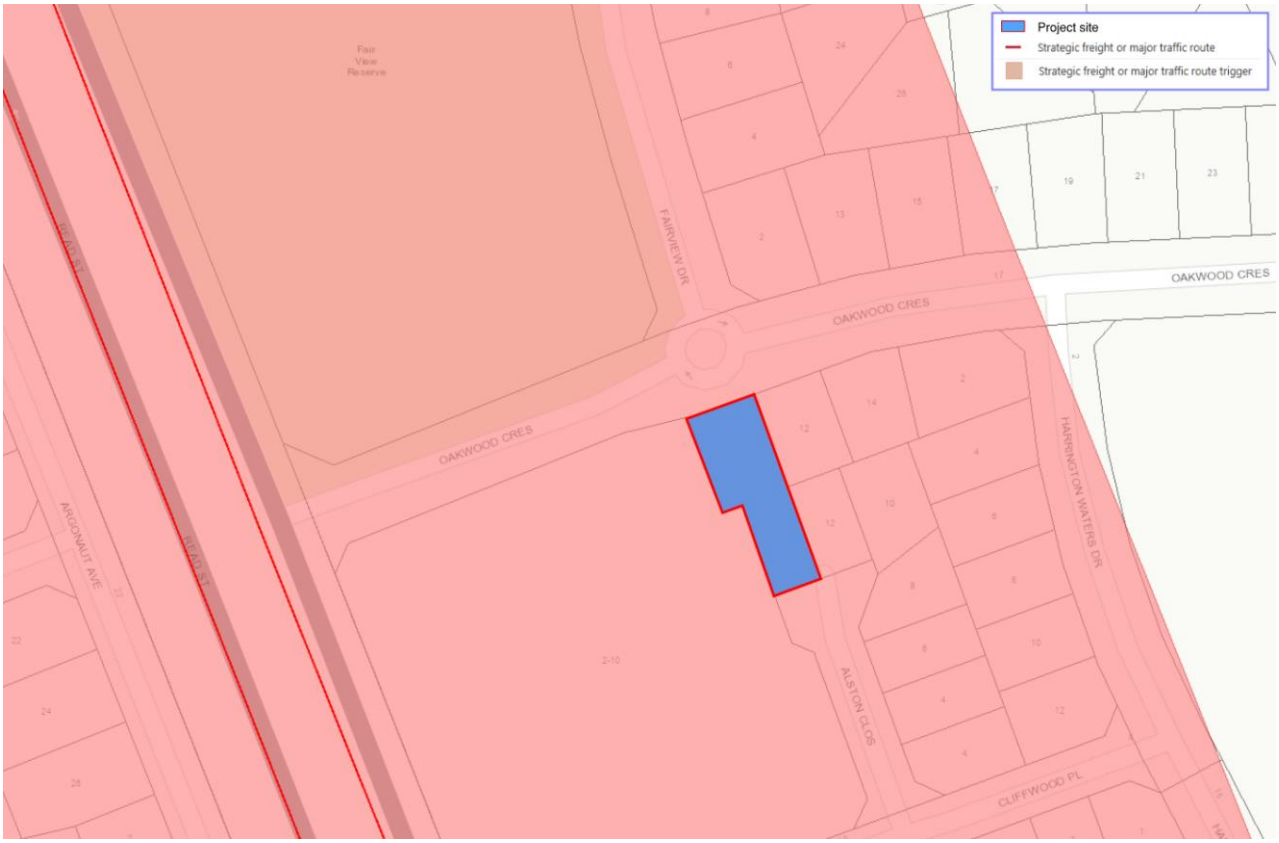


Figure 2: Project Location and SPP 5.4 Zone (Department of Planning, Lands and Heritage)

The applicable noise level criteria are presented below in Table 1.

Table 1: State Planning Policy 5.4 Criteria

Proposal	New / Upgraded	Noise Target - Outdoor		Noise Target - Indoor
		DAY 6am – 10pm L_{Aeq},(Day) dB	NIGHT 6am – 10pm L_{Aeq},(Night) 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	Day – L_{Aeq} 40 (Living and Working Areas) Night – L_{Aeq} 35 (Bedrooms)

SPP5.4 requires assessment of traffic impact for future traffic volumes for the next 20 year. Where predicted noise levels are exceeding the noise targets, mitigation measures are needed to meet the noise targets. The policy requires 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.

2.2 Noise Emissions – WA Environmental Protection (Noise) Regulations 1997

Environmental noise emissions resulting from the development are addressed through the Environmental Protection Act 1986 with the prescribed standards detailed in the Environmental Protection (Noise) Regulations 1997 (WA EPNR). The regulations are based on maximum allowable noise levels termed the 'assigned noise level".

According to the EPNR, noise emissions from any premises are deemed not to significantly impact the receiver if the emissions are 5 dB or less below the assigned levels. In summary, assigned noise levels are set by evaluating the presence of commercial and industrial zones, major transport routes, and sporting venues around noise-sensitive premises.

The assigned levels apply at premises receiving the noise (noise sensitive receiver) and not to areas within the project site or lot. In addition, the Environmental Protection (Noise) Regulations 1997 identify the following in Schedule 3, clause 2A.

- *"If the land within either of the circles is categorised on the land use map as land in respect of which mixed uses are permitted, the use of that land that results in the highest influencing factor is to be used in the determination of the influencing factor."*

City of Rockingham's online mapping system (Town Planning Scheme 2) has been used to ascertain land use. Based on these maps the influencing factor at the nearest noise sensitive receivers has been calculated.

The nearest noise sensitive receivers have been identified as detailed below and shown in Figure 1.

- Catchment 1:
  - 2/10 Oakwood Cres, Waikiki WA 6169
- Catchment 2:
  - 12 Oakwood Cres, Waikiki WA 6169
  - 12 Alston Cl, Waikiki WA 6169

2.2.1 Influencing Factors

Traffic data for roads surrounding the nearest noise sensitive receiver were obtained from Main Roads Western Australia (MRWA). Table 2 presents the traffic data of the nearby roads.

Table 2: Traffic Data (Source: Main Roads WA)

Road	WA EPNR Classification	Annual Average Daily Traffic Volumes / Year
Read Street (South of Malibu Rd)	Major Road	23,092 (2020 - 2021)

The zoning maps used for the calculation of influencing factor showing the land use types has been presented in Figure 3 and Figure 4.

Table 3 presents the influencing factor for results from identifying major roads, commercial and industrial areas for the nearest noise sensitive receivers is detailed in Table 2.

Table 3: Influencing Factor (IF) Noise Sensitive Receivers

Noise Sensitive Receivers	Commercial	Industrial	Road	Influencing Factor
Catchment 1	0% within 100m Radius 0% within 450m Radius	0% within 100m Radius 0% within 450m Radius	Read Street within 100m Radius	6 dB
Catchment 2	0% within 100m Radius 0% within 450m Radius	0% within 100m Radius 0% within 450m Radius	Read Street within 450m Radius	2 dB

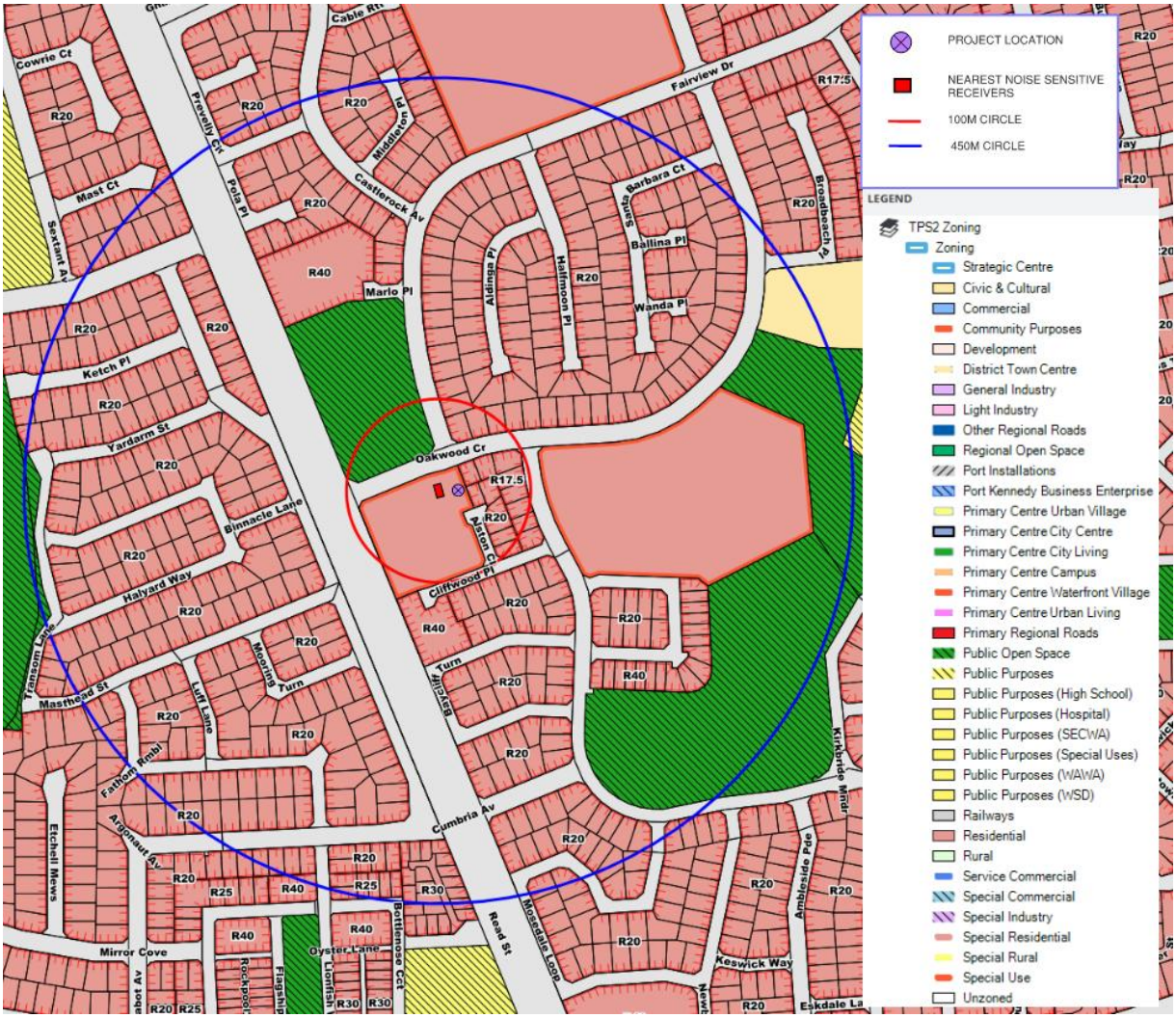


Figure 3: Zoning Maps for the Project and Surrounding Areas – Catchment 1 (Source: City of Rockingham Intramaps)

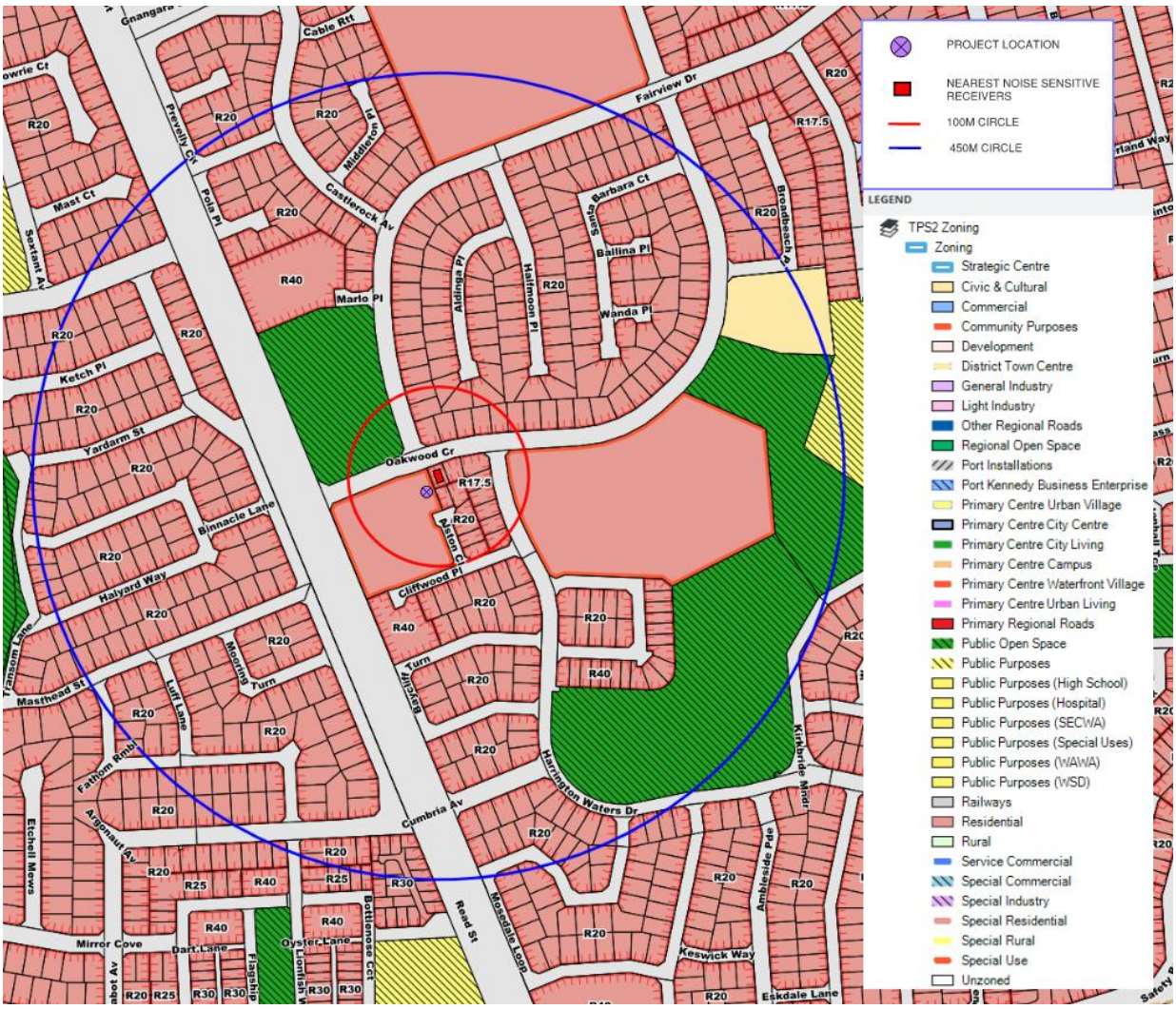


Figure 4: Zoning Maps for the Project and Surrounding Areas – Catchment 2 (Source: City of Rockingham Intramaps)

2.2.2 Assigned Noise Levels – Noise Sensitive Receivers

Table 4 to 7 summarises the assigned levels at the nearest noise sensitive receivers. All noise emissions from the development are below the assigned level criteria for all defined periods of the day and at the lot boundary of the receiver or 15m from any associated building.

Table 4: Assigned Levels – Receiver Catchment 1

Types of Premises Receiving Noise	Time of Day	Assigned Levels (dB)		
		L_{A10}	L_{A1}	L_{max}
Noise Sensitive Premises: Highly Sensitive Area	0700 to 1900 hours Monday to Saturday	51	61	71
	0900 to 1900 hours Sunday & public holidays	46	56	71
	1900 to 2200 hours all days	46	56	61
	2200 hours on any day to 0700 hours Monday to Saturday, and 0900 hours Sunday & public holidays	41	51	61

Table 5: Assigned Levels – Receiver Catchment 2

Types of Premises Receiving Noise	Time of Day	Assigned Levels (dB)		
		L_{A10}	L_{A1}	L_{max}
Noise Sensitive Premises: Highly Sensitive Area	0700 to 1900 hours Monday to Saturday	47	57	67
	0900 to 1900 hours Sunday & public holidays	42	52	67
	1900 to 2200 hours all days	42	52	57
	2200 hours on any day to 0700 hours Monday to Saturday, and 0900 hours Sunday & public holidays	37	47	57

Table 6: Assigned levels – Noise sensitive receivers in other areas and Commercial receivers

Types of Premises Receiving Noise	Time of Day	Assigned Levels (dB)		
		L_{A10}	L_{A1}	L_{max}
Noise Sensitive Premises: any area other than highly sensitive areas	All Hours	60	75	80
Commercial premises	All Hours	60	75	80
Industrial and utility premises	All Hours	65	80	90

2.2.3 Noise Character Adjustments

Regulation 7 states that the noise character must be "free" of annoying characteristics, namely —

- Tonality, e.g. whining, droning;
- Modulation, e.g. like a siren; and
- Impulsiveness, e.g. banging, thumping.

Regulation 9 (1) establishes the methodology for determining noise characteristics. If these characteristics cannot be reasonably and practicably removed, a series of adjustments to the measured levels are required, indicated in Table 7.

Table 7: Noise Character Adjustments

Adjustment Where Noise Emission is not Music These Adjustments are Cumulative to a Maximum Of 15 Db			Adjustment Where Noise Emission is Music		
Where tonality is present	Where modulation is present	Where impulsiveness	Where tonality is present	Where modulation is present	Where impulsiveness
+ 5 dB	+ 5 dB	+ 10 dB	+ 10 dB	+ 15 dB	+ 5 dB

2.2.4 Mechanical Services Noise Emissions

Mechanical equipment serving the project is required to meet the assigned levels of the EPNR at the nearest sensitive receivers. It is important that noise emissions from the site do not present any form of tonality, modulation or impulsiveness (as defined by the EPNR).

3. Noise Intrusion

3.1 Traffic Noise Intrusion – SPP 5.4

An evaluation of external transport noise impacts on the site was conducted in line with SPP 5.4. The methodology and assessment criteria are outlined in the SPP 5.4 Guidelines (hereafter referred to as the Guidelines). Sound PLAN v9.0, a 3D noise modelling software, was used to simulate noise emissions from major roads and to assess the resulting noise levels at the building façades of the development.

The noise assessment accounts for both current and future traffic volumes that will impact the proposed development. The findings from this assessment were used to evaluate the level of noise intrusion into the apartments.

Noise levels were modelled 1 meter from the building façade. The predicted receiver noise levels at the façade also include a +2.5 dB façade correction, in accordance with SPP 5.4 requirements. Compliance with the relevant sections of the SPP 5.4 Noise Modelling Checklist is documented in Appendix A.

3.2 Modelling Inputs

3.2.1 Topography & Ground Absorption

Topographical data for areas surrounding the site (1m elevation contours) were sourced from Geoscience Australia Digital Elevation Model (DEM) 5 Metre Grid of Australia derived from LiDAR.

A ground condition of 0.6 has been used in the model, which is in between a soft ground condition (1) and a reflective ground condition (0).

A reflection order of 3 has been considered in all assessments.

3.2.2 Road Traffic

The road traffic noise assessment has been conducted based on the methodology described by the Calculation of Road Traffic Noise algorithm (CoRTN, UK Transport Agency).

The CoRTN algorithm has been developed to calculate $L_{A10,18hr}$ noise levels. However, SPP 5.4 requires road noise assessments to be based upon the energy averaged $L_{Aeq,16hr}$ and $L_{Aeq,8hr}$ noise descriptors for the daytime and night-time respectively. Conversions are applied using the method outlined in the DEFRA publication, *"Method for Converting the UK Road Traffic Noise Index $L_{A10,18hour}$ to the EU Noise Indices for Road Noise Mapping."*

- This algorithm considers the following parameters:
- Noise levels measured on site for calibration of the model
- Traffic volume during each period of the day, and for current and future scenarios
- Traffic speeds
- Percentage of heavy vehicles; and
- Gradient and surface of road

The noise model included the heights of road traffic noise sources as specified by the Guidelines. Below are the modelled heights of the vehicle "strings":

- Passenger vehicles: + 0.5 m
- Heavy vehicles — Engine noise: + 1.5 m
- Heavy vehicles — Exhaust: + 3.6 m

The modelled and observed average daily traffic volumes for 2026 and 2046 were sourced from Main Roads Western Australia (MRWA), Reference No. 43767. This data pertains to traffic on Read Street

SPP 5.4 requires that all noise assessments account for changes in traffic volumes anticipated over the next 20 years. The traffic volume projections provided by MRWA were utilized for this purpose. Table 8 summarises the current and projected future traffic volumes used in the assessment.

Table 8: Traffic Volumes - Current and Future

Road	year	daily vehicle count	daytime vehicle volume / hr	nighttime vehicle volume / hr	percentage of heavy vehicle	Speed (km / hr)
Read Street	2026	26,177	1,573	126	Day – 5% Night – 5%	70
	2046	43,164	2,594	207	Day – 5% Night – 5%	70

3.3 Noise Modelling Results

Road traffic noise impact for the future year (2046) predicted the highest external noise levels for the day and night-time periods:

- Day-time scenario 60 dB(A)
- Night-time scenario 50 dB(A)

Predicted noise levels on the facades (façade noise maps) are provided in Appendix B. The facade sections facing Read Street are projected to experience noise levels exceeding the 'noise target' values outlined in SPP5.4. Noise intrusion assessment and recommendations for façade to meet the internal noise levels are provided in section 5.0.

4. Noise Intrusion Assessment

4.1 External Façade

Noise intrusion calculations were conducted using the approach outlined in British Standard BS EN 12354:2000. The calculations were based on the highest on-site measured noise levels to select appropriate glazing for achieving the desired internal noise levels. Adjustments were made to the linear spectral noise levels to account for potential losses from flanking paths and façade corrections. The minimum required external façade configuration have been recommended based on highest measured outdoor noise levels.

4.2 Glazed Façade

The noise intrusion has been calculated for all façade elements, which is relevant to their surface area. Based on the highest measured noise levels, required façade performance is presented below:

- Glazing –
  - Single glazing option – 6.38mm laminated glass – R_w33
  - Double glazing option – 6mm glass /12mm air space / 6mm glass – R_w35
- Solid façade
  - Masonry wall option – Double cavity brick work – R_w45
  - Light weight option – External cladding + 90mm timber or steel studs +100mm insulation within cavity + 1 x 13mm plasterboard – R_w 40

4.3 Rain Noise – Roof Treatment

In accordance with the project rain noise criteria for noise-sensitive areas such that internal noise criteria during rainfall of no greater than 5dB(A) above the AS2107 recommended internal noise levels, it has been determined that a system capable of reducing rain noise by circa 38dB(A) would be required.

Typical roof ceiling configuration for controlling rain noise is detailed below.

- Colorbond metal deck roof with 65mm thick High Density Anticon Insulation to be the underside, and a suspended plasterboard ceiling with 50mm insulation laid directly above.

5. Noise Emissions

5.1 Mechanical Plant

Mechanical services will be expected to comply with the respective WA EPNR criteria at the nearest noise sensitive receivers for all periods of the day. At this stage no information has been provided regarding mechanical service equipment selection.

Typically, this data is not available at the development application phase. Following recommendations are provided to maintain compliance to the WA EPNR

- Positioning mechanical plant away from nearby receivers
- Screening around mechanical plant

6. Conclusion

E-Lab Consulting were commissioned by Adras Pty Ltd to undertake an acoustic assessment for the proposed development at Lot 1 Alston Close, Waikiki WA 6169

This Acoustic report has been prepared as part of Development Application for the proposed development. The applicable criteria have been established, and recommendations were made to maintain compliance:

- Noise Intrusion to the project from external noise sources (road traffic from Read Street) in accordance with State Planning Policy 5.4 – Road and Rail Noise
- Noise emissions from the development impacting noise sensitive receivers in accordance with WA Environmental Protection (Noise) Regulations 1997

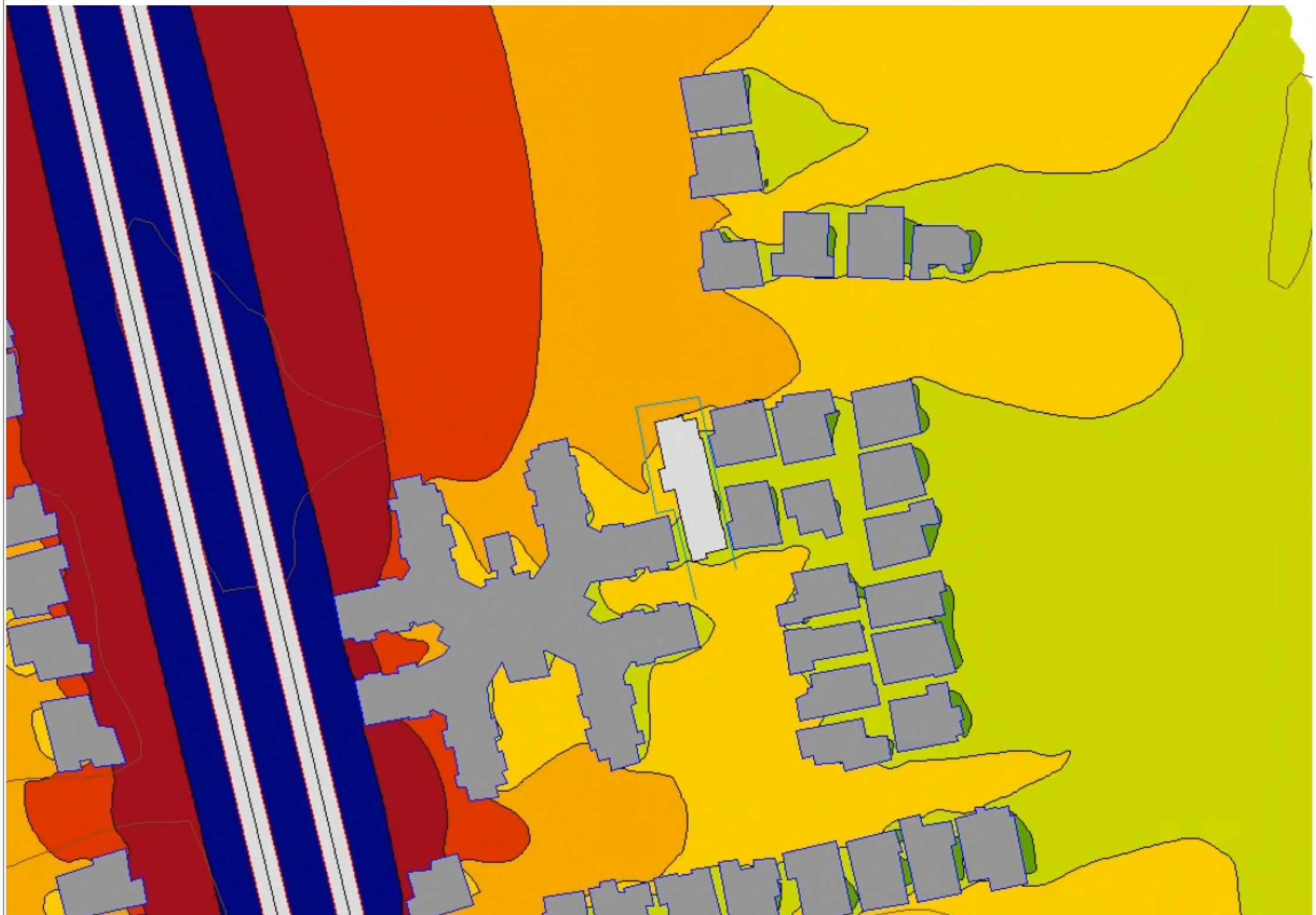
A road traffic noise assessment has been conducted, and the minimum recommended external façade construction has been specified to comply with internal noise level criteria. Predicted noise levels at the building façades were calculated using the 3D noise modelling software package SoundPLAN v9.0.

Appendix A Noise Modelling Checklist

Checklist Item		Action
Road Traffic Input Data - Current		
Road Name	**Read Street 2026**	
	16-hr daytime road traffic volume	24241
	Percentage of heavy vehicles (daytime)	5
	8-hr night-time road traffic volume	1936
	Percentage of heavy vehicles (night-time)	5
Road Pavement	Dense Graded Asphalt	
Road traffic heights	**Have the road emissions sources been modelled at the following heights?**	
	Light and heavy vehicle tyre-road height at +0.5 m	Y
	Heavy vehicle engine height at +1.5 m	Y
	Heavy vehicle exhaust height at +3.6 m	Y
Traffic Speed	What is the modelled road posted (signal) traffic speed?	70 km / hr

Checklist Item		Action
Road Traffic Input Data - Future		
Road Name	**Read Street 2046**	
	16-hr daytime road traffic volume	39971
	Percentage of heavy vehicles (daytime)	5
	8-hr night-time road traffic volume	3192
	Percentage of heavy vehicles (night-time	5
Road Pavement	Dense Graded Asphalt	
Road traffic heights	**Have the road emissions sources been modelled at the following heights?**	
	Light and heavy vehicle tyre-road height at +0.5 m	Y
	Heavy vehicle engine height at +1.5 m	Y
	Heavy vehicle exhaust height at +3.6 m	Y
Traffic Speed	What is the modelled road posted (signal) traffic speed?	70 km / hr

Appendix B Grid Noise Maps



E-LAB CONSULTING

ISSUE	DATE	STATUS
1	25/06/2026	ISSUE FOR INFORMATION

LEGEND

GRID Noise Level - $L_{day,1.5m}$ dB(A)

- <= 40
- 41 - 45
- 46- 50
- 51 - 55
- 56 - 60
- 61 - 65
- 65 - 70
- >70

NOTES

Signs and symbols

- Road
- Road axis
- Emission line
- Main building
- Auxiliary building
- Fence

PROJECT
Waikiki Project

PROJECT NO.
P04048

ARCHITECT

CLIENT
Adras Pty Ltd

SCALE
NTS

STATUS
ISSUE FOR INFORMATION

DRAWING
GRID Noise Map - DAY TIME
(1.5m Receiver Height)

DISCIPLINE
ACOUSTICS

DRAWING NUMBER
AC-DWG-100-01-01

REVISION
001



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