

9 January 2026

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Attention: Anthony Rizzacasa
GPG No. 25 Pty Ltd.
c/- Griffin Group Pty Ltd
U205, 1 Learoyd Street
Menora WA 6050

SLR Project No.: 675.073582.00001

**RE: Lot 288 (No. 5) Macrae Road, Applecross – Multiple Dwelling
Development
Acoustic Report – State Planning Policy 5.4 Screening Assessment**

1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Griffin Group Pty Ltd (the Client) to address requirements within State Planning Policy 5.4 Road and Rail Noise (SPP5.4) in regard to the proposed multi-dwelling development at Lot 288 (No. 5) Macrae Road, Applecross.

1.1 About the author

SLR Consulting Australia Pty Ltd (SLR) – Perth office is a member of the Association of Australian Acoustical Consultants. This may be verified by visiting the AAAC website 'WA' page at <https://aaac.org.au/wa>.

The author and reviewer of this report are qualified and experienced in the area of environmental noise assessment and who by their qualifications and experience are eligible to hold membership of the Australian Acoustical Society. This may be verified by visiting the AAS website and the 'Find a Member' tool at <https://www.acoustics.org.au/>.

1.2 Scope of work

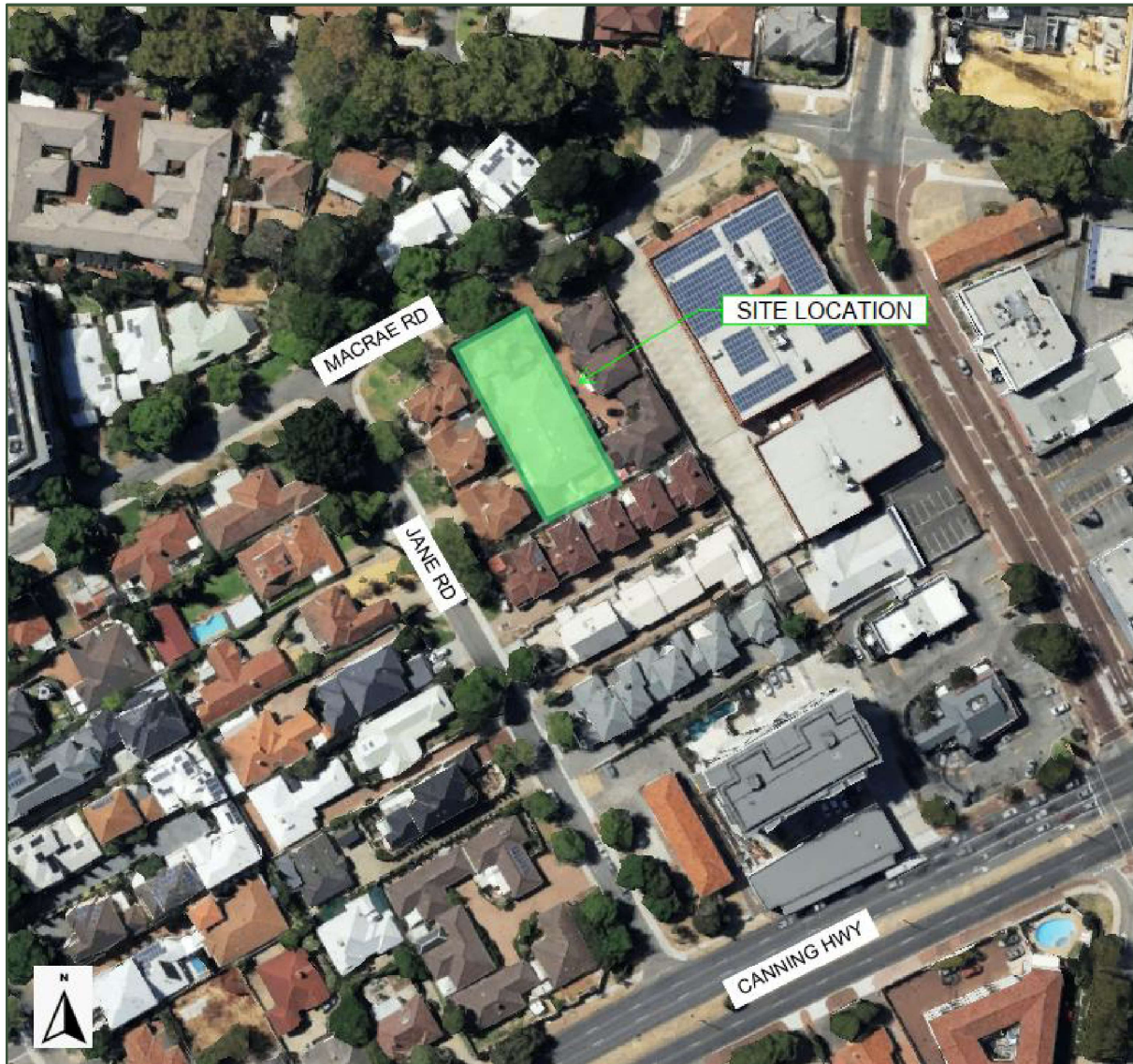
SLR was engaged to undertake the following:

- Review of the site and proposed development drawings for the 6-storey residential development and carry out screening assessments as per WA State Planning Policy 5.4 Road & Rail Noise.
- Calculate noise exposure category for existing and future predicted (20 year planning horizon) road traffic noise conditions and compile built-form requirements under the Policy.
- Prepare road traffic noise screening assessment report for the proposed Lot suitable for inclusion with DA approval submission to Council with recommendations where appropriate.

1.3 Site locality

The proposed residential development will be located at 5 Macrae Road, Applecross. The development is to comprise of ground floor parking, two- or three-bedroom apartments over six floors and rooftop terrace. The site is located approximately 115 metres from Canning Highway. **Figure 1** shows the site locality.

Figure 1 Site locality



2.0 Criteria

2.1 SPP 5.4

SPP5.4 applies to the preparation and assessment of planning instruments, including regional and local planning schemes; planning strategies, structure plans; subdivision and development proposals in Western Australia. The noise targets that apply to proposals for new noise-sensitive development specified in SPP5.4 are outlined in **Table 1**.

Table 1 Noise Targets

Proposals	New/upgrade	Noise Targets		
		Outdoor		Indoor
		Day L _{Aeq} (day) dB (6am – 10pm)	Night L _{Aeq} (night) dB (10pm – 6am)	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) dB 40 – living and work areas L _{Aeq} (night) dB 35 - bedrooms

SPP5.4 applies the L_{Aeq} noise metric, which represents an average noise level over each period. These targets are applicable to the emission of road and rail transport noise as received at a noise-sensitive land use, measured at one metre from the most exposed habitable facade of the proposed building, which has the greatest exposure to the noise source.

It is recognised that in some instances, it may not be reasonable 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.

2.2 AS/NZS 2107

AS/NZS 2107¹ provides recommended design sound levels for building interiors. According to the standard, an L_{Aeq} of 35-40 dB is recommended for sleeping areas.

¹ AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberations times for building interiors



3.0 SPP 5.4 Assessment

3.1 Screening Assessment

A screening level assessment of the proposed development site was undertaken in accordance with the SPP5.4 Implementation Guidelines. This assessment determines the noise exposure category of the development and defines relevant treatments under that category. It is simpler but considered more conservative (protective) than a Detailed Assessment under the SPP5.4 Guidelines.

The nearest major road relevant to the noise exposure category is Canning Highway. Considering typical traffic growth of 3% per year, it is predicted that the noise levels on site will increase by 3 dB within next 20 years.

The SPP5.4 allows for one-off reduction in exposure levels, which equates to a 4 dB deduction, to take into consideration a screening affect from existing structures and/or terrain. This is allowed if the building of similar scale and height screens not intermittently more than 50 per cent of the most exposed frontage of a noise-sensitive development and when there is no direct line of sight between the road vehicles and assessable positions on the noise-sensitive premise. This reduction therefore is applicable to ground level and levels 1 and 2 of the development.

Table 2 presents information used to determine the applicable noise exposure category relevant to the nearest major road.

Table 2 Noise exposure category

Aspect	Canning Hwy				
Road – Classification	Major traffic route, 2-3 lane dual carriageway				
Building section	North	North	North	South	South
Floor level	Ground	Level 1-2	Level 3-5	Level 1-2	Level 3-5
Distance, m	153	141	141	119	119
Outdoor Noise Target, $L_{Aeq, day}$ dB	55				
Forecast Level, $L_{Aeq, day}$ dB	57	58	58	59	59
Reduction for existing screening*, dB	-4	-4	-	-4	-
Resulting noise level, dB	53	54	58	55	59
Adjusted Noise Level $L_{Aeq, day}$, dB based on 20-year planning horizon (2046)	56	57	61	58	62
Further design measures required	Yes	Yes	Yes	Yes	Yes
Corresponding quiet house package	QH A	QH A	QH B	QH A	QH B

* Applicable from Ground Level to Level 2

Under the *SPP5.4 Screening Assessment Tool*, it was determined the incident noise levels for the façade facing the road exceed the outdoor noise target, therefore further design measures are required by the *State Planning Policy 5.4 Road and Rail Noise Guidelines*.

Taking into account the size of the site, orientation to the road corridor and screening within the site, the quiet house packages A and B are applicable to the development, as indicated on **Figure 2** below.



Figure 2 Quiet House Packages applicable to the site.



For the sites located in noise-affected areas, SPP5.4 states that a notification on title should be required as a condition of subdivision or development approval, and provides recommended notification wording as follows:

'This lot is in the vicinity of a transport corridor and is affected, or may in the future be affected, by road transport noise. Road transport noise levels may rise or fall over time depending on the type and volume of traffic.'

3.2 Quiet House Package Implementation – Building Envelope

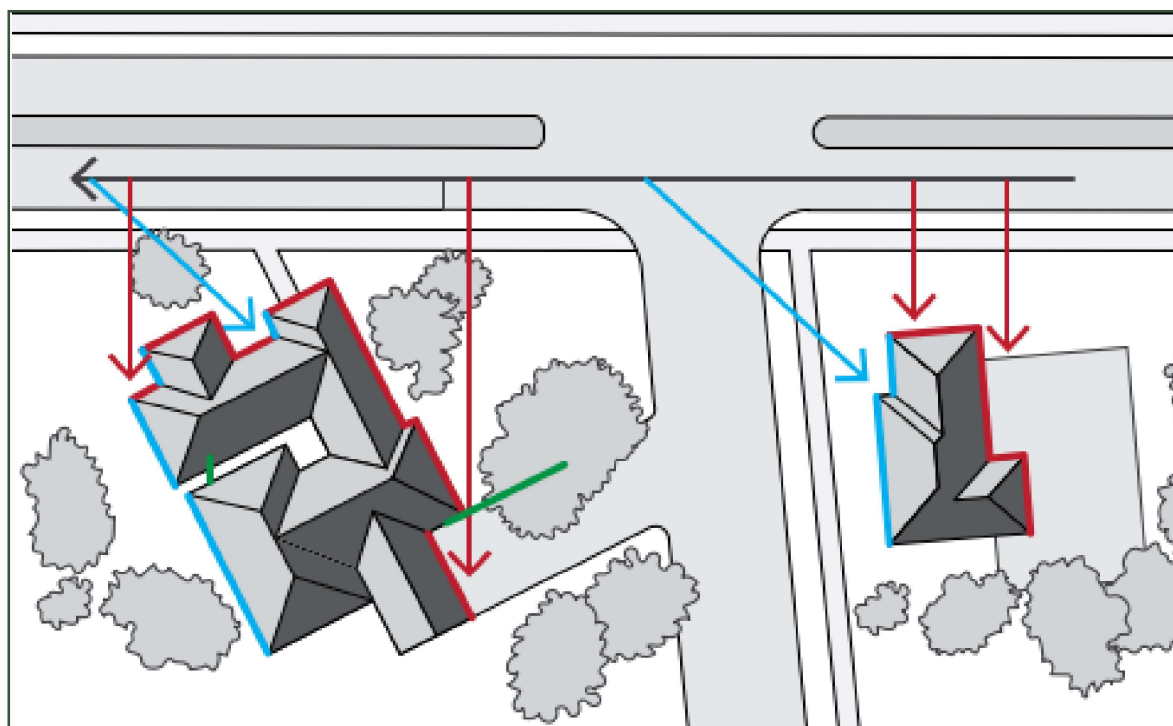
The acoustic rating requirements for building elements depend on the house position relative to the road corridor. The policy specifies three types of façade exposure to the traffic noise.

Figure 3 below shows example of determining building face orientation towards the road corridor. In this figure the face orientation is as follows:

- **Facing** the transport corridor (red): any part of a building façade is 'facing' the transport corridor if any straight line drawn perpendicular to its nearest road lane intersects that part of the façade without obstructions (ignoring any fence).
- **Side on** to transport corridor (blue): any part of a building façade is 'side on' to the transport corridor if any straight line, at any angle, can be drawn from it to intersect the nearest road lane without obstruction (ignoring any fence).
- **Opposite** to transport corridor (green): neither 'side on' or 'facing', as defined above.





Figure 3 Determining building face orientation (Source: SPP 5.4 guidelines).





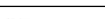



Quiet House A and B acoustic ratings and example construction are presented in **Table 3** and has been derived from SPP5.4. **Appendix A** presents the building elements colour-coded markup with the corresponding criteria. Elements with no mark-up do not have any specific acoustic rating in this regard.

Table 3 Quiet house A and B requirements

Building element	Sound Insulation Rating $R_w + C_{tr}$	Example Construction*
Walls	50 	Single leaf of 90mm brick masonry: 70mmx35mm timber studs or 64mm steel studs at 600mm centres, 25mm cavity 50mm glasswool or polyester cavity insulation 1x 10mm plasterboard fixed to the inside face, OR Single leaf of 220mm brick masonry with 13mm cement render on each face
	45 	92mm studs at 600mm centres: Resilient steel channels fixed to the outside of the studs, and 9.5mm hardboard or 9mm fibre cement sheeting or 11mm fibre cement weatherboards fixed to the outside of the channels, and 75mm glass wool or polyester insulation, and Two layers of 16mm fire rated plasterboard fixed to the inside face of the studs. OR Single leaf of 150mm brick masonry with 13mm cement render on each face. OR Double brick: two leaves of 90mm clay brick masonry with a 20mm cavity between leaves.



Building element	Sound Insulation Rating $R_w + C_{tr}$	Example Construction*
External doors	28 	Glazed hinged door with certified to $R_w + C_{tr}$ 28 rated door and frame including seals and 6mm glass
	25 	35mm solid core timber hinged door and frame system certified to R_w 28 including seals, OR Glazed sliding door with 10mm glass and weather seals.
Windows	31 	Fixed sash, awning or casement with min 10mm single or 6mm-12mm-6mm double insulated glazing.
	28 	Sliding or double hung with min 10mm single pane or 6mm-12mm-6mm double insulated glazing. Sealed awning or casement windows may use 6mm glazing instead.
	25 	Sliding or double hung with min 6mm single pane or 6mm-12mm-6mm double insulated glazing.
	22 	Sliding or double hung with min 6mm single pane or 6mm-12mm-6mm double insulated glazing.
Roof/ceiling	40	To all sleeping areas, 2 layers of 10mm plasterboard, or one layer of 13mm high density sealed plasterboard (min. surface density of 12.5kg/m ²) affixed using steel furring channels beneath ceiling rafters/supports. R3.0+ insulation batts laid in cavity. Concrete or terracotta tiled roof with sarking, or Metal sheet roof with foil backed R2.0+ fibre insulation between steel sheeting and roof battens.

*Any equivalent performing system can be used provided it has the same sound insulation performance or higher.

Please note that these are minimum requirements for sound isolation - additional material may be required for say thermal insulation or to meet other National Construction Code requirements.

SPP 5.4 also sets the requirements for mechanical ventilation and air conditioning as follows:

- *'Acoustically rated opening and ductwork to provide a minimum sound reduction performance or R_w 40 into sensitive spaces.*
- *Evaporative systems require attenuated ceiling air vents to allow closed windows.*
- *Refrigerant-based systems need to be designed to achieve National Construction Code fresh air ventilation requirements.*
- *Openings such as eaves, vents and air inlets must be acoustically treated, closed or relocated to buildings sides facing away from the corridor where practicable.'*



4.0 Closing

A screening level assessment was undertaken for the proposed residential development in accordance with the SPP5.4 Guidelines. The relevant noise exposure category was determined, and details of applicable quiet house package treatments are provided.

I trust the above is satisfactory and please do not hesitate to contact me if you need any further information.

Regards,

SLR Consulting Australia Pty Ltd



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APPENDIX A
Building Elements Acoustic Markup

Figure 4 Building elements acoustic markup – Ground Level, north side. Quiet House A.

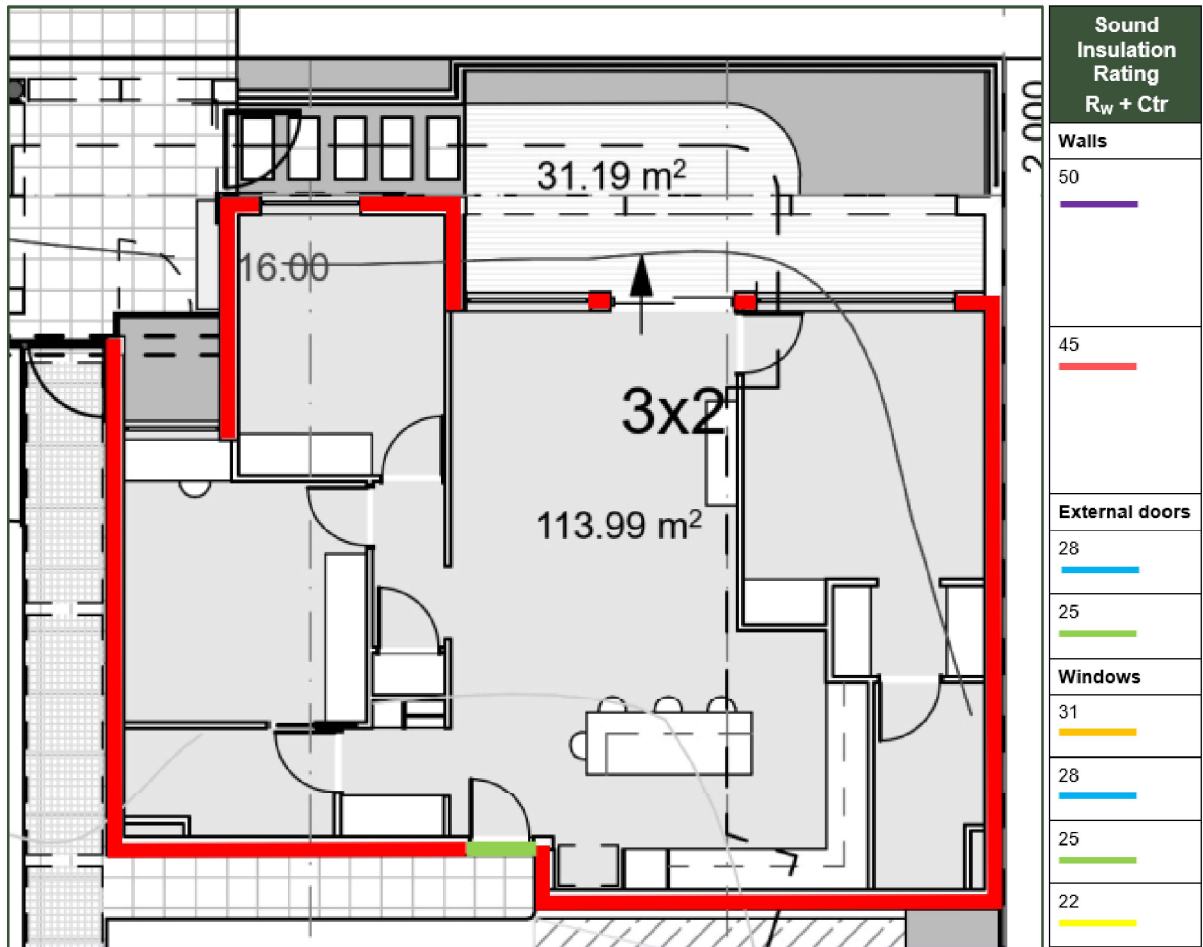


Figure 5 Building elements acoustic markup - Level 1 to 2, north side. Quiet House A.

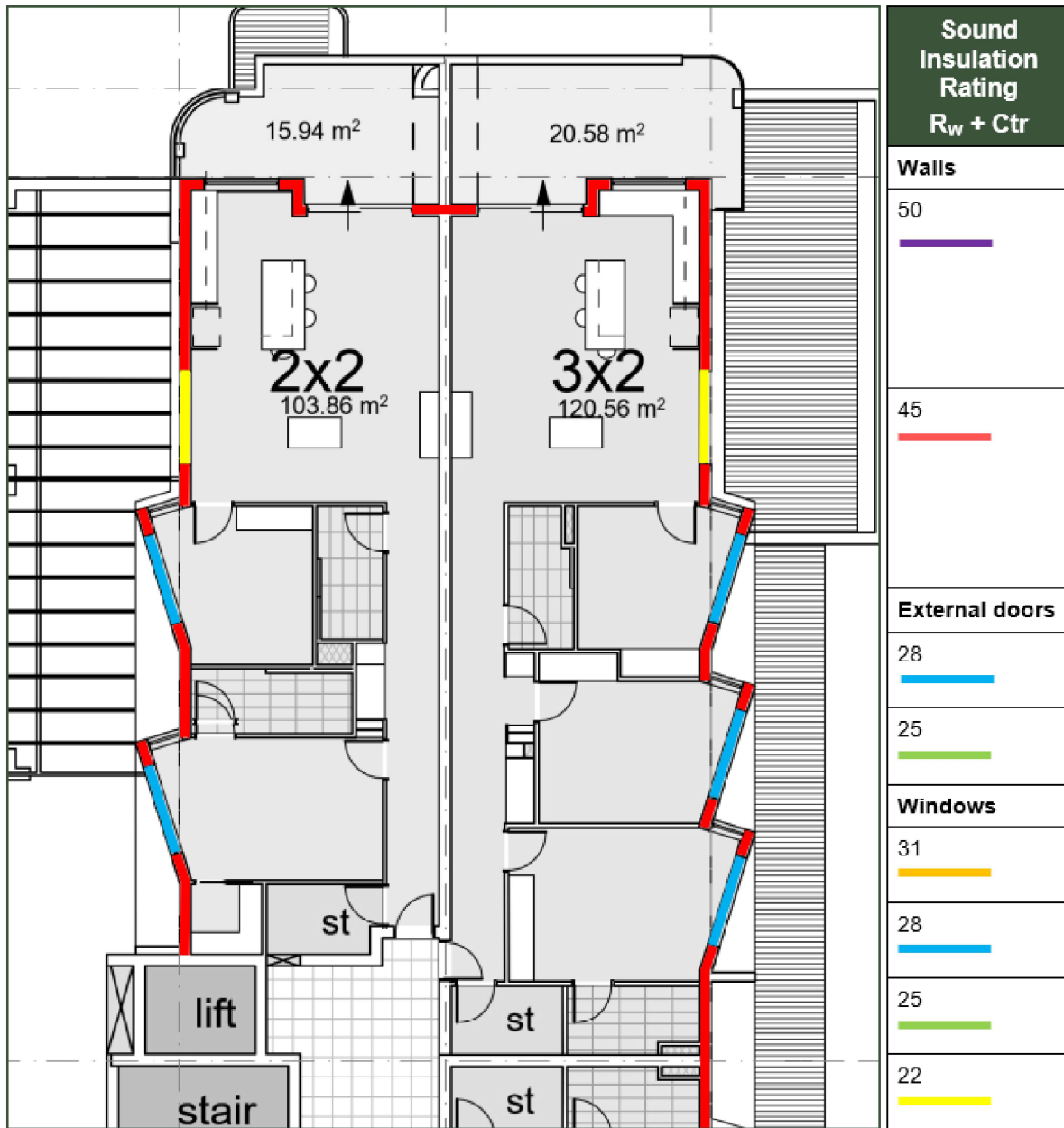


Figure 6 Building elements acoustic markup - Level 1 to 2, south side. Quiet House A.

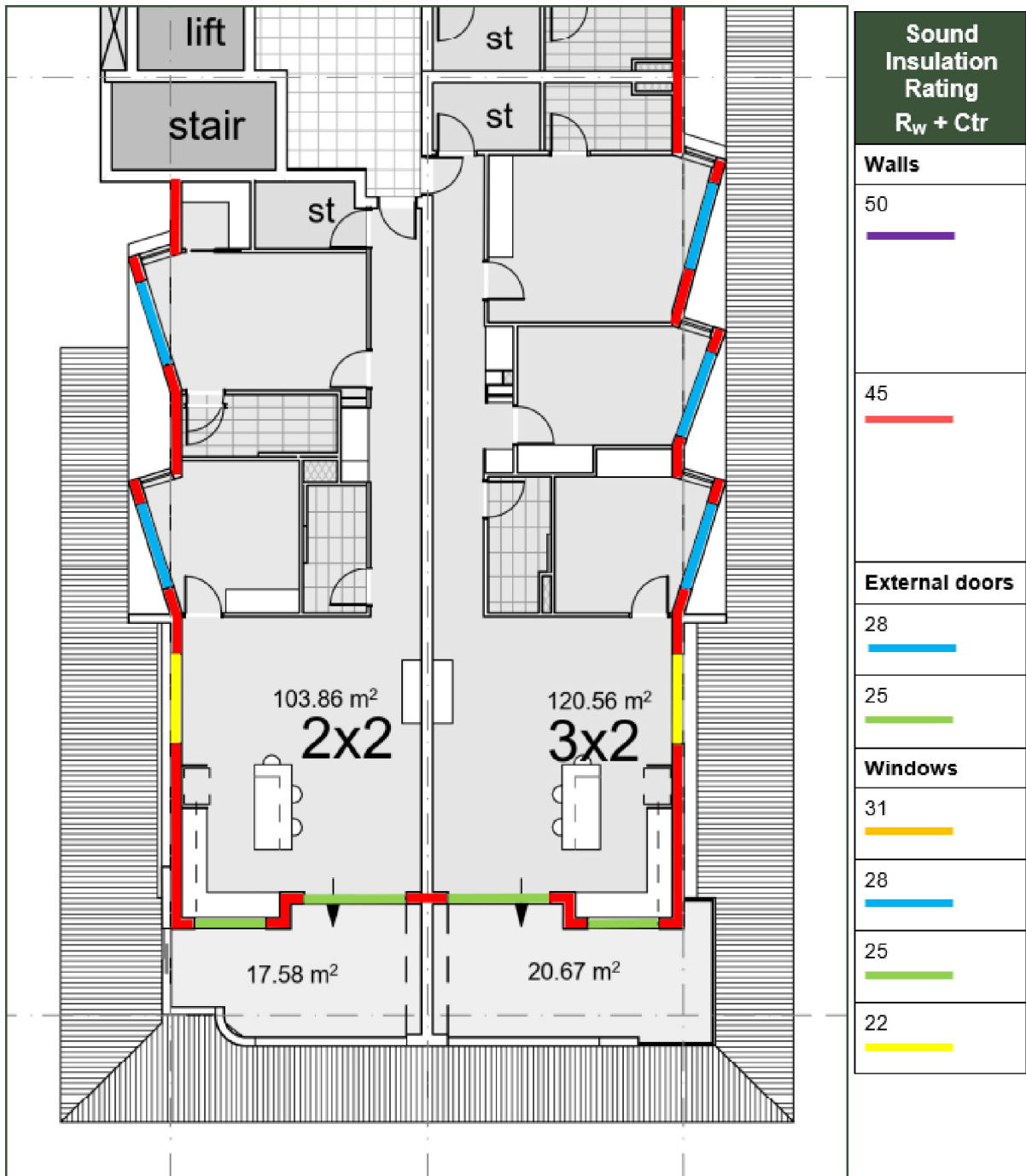


Figure 7 Building elements acoustic markup - Level 3 to 5, north side. Quiet House B.

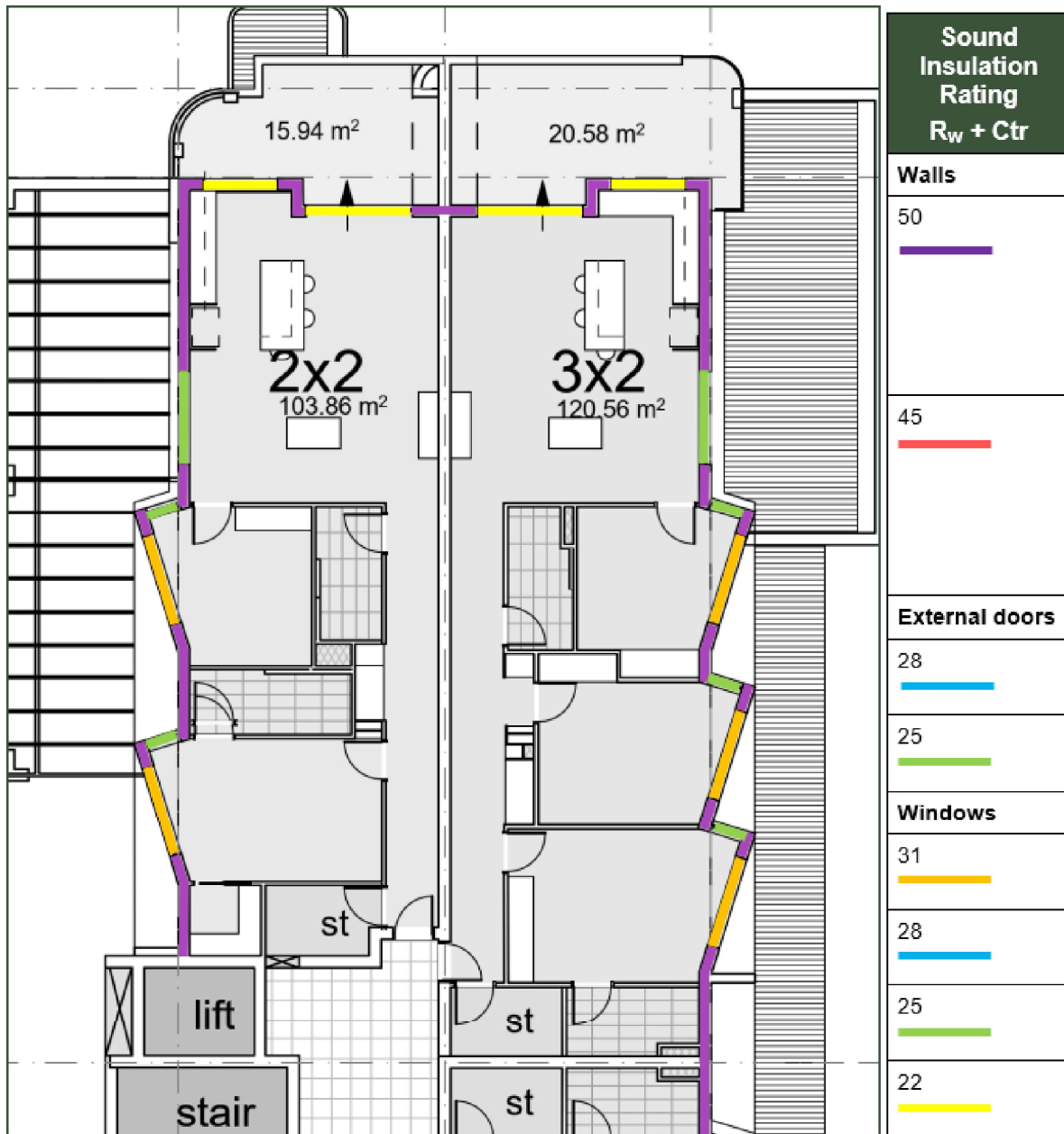
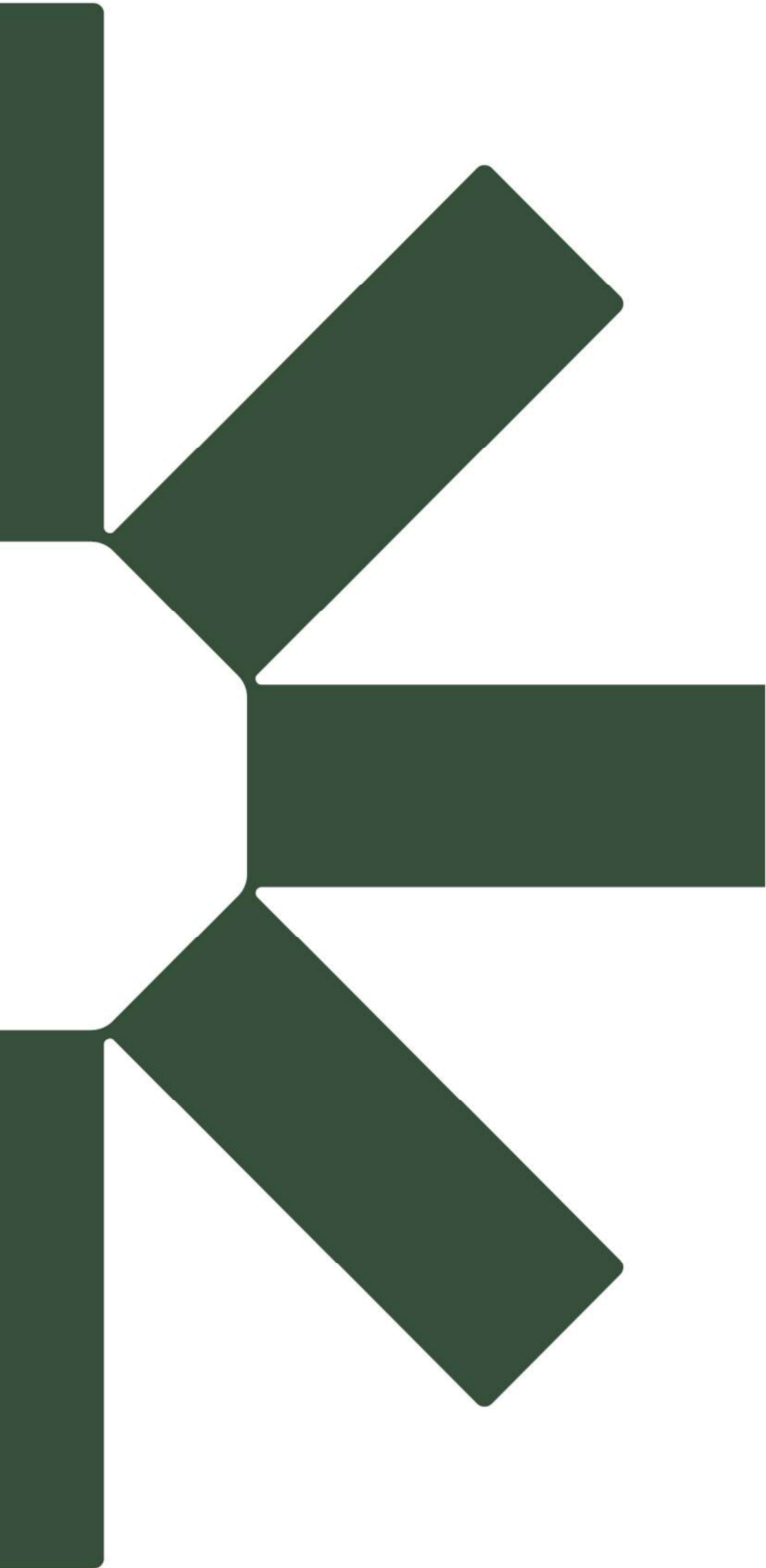


Figure 8 Building elements acoustic markup - Level 3 to 5, south side. Quiet House B.





Making Sustainability Happen

29 January 2026

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Attention: Anthony Rizzacasa
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U205, 1 Learoyd Street
Menora WA 6050

SLR Project No.: 675.073582.00001

**RE: Lot 288 (No. 5) Macrae Road, Applecross – Multiple Dwelling
Development
Acoustic Report – Development Application**

1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Griffin Group Pty Ltd (the Client) to provide an acoustic report suitable for the Development Application associated with the proposed multi-dwelling development at Lot 288 (No. 5) Macrae Road, Applecross.

This document outlines the acoustic comfort strategy and details the acoustic design that will be implemented to benefit future occupants of the building.

1.1 About the author

SLR Consulting Australia Pty Ltd (SLR) – Perth office is a member of the Association of Australian Acoustical Consultants. This may be verified by visiting the AAAC website 'WA' page at <https://aaac.org.au/wa>.

The author and reviewer of this report are qualified and experienced in the area of environmental noise assessment and who by their qualifications and experience are eligible to hold membership of the Australian Acoustical Society. This may be verified by visiting the AAS website and the 'Find a Member' tool at <https://www.acoustics.org.au/>.

1.2 Information sources

The following documents were used in this assessment:

1. Western Australia *Environmental Protection (Noise) Regulations 1997*;
2. National Construction Code, Building Code of Australia 2022, Volume One, Part F5 (NCC);
3. Australian Standard AS/NZS 2107:2016 – Acoustics – Recommended design sound levels and reverberation times for building interiors (AS 2107);
4. Green Star Buildings – Acoustic Comfort strategy.
5. Architectural drawing package from Urbanize architects current as per date of this report.



1.3 Scope of work

SLR was engaged to undertake the following:

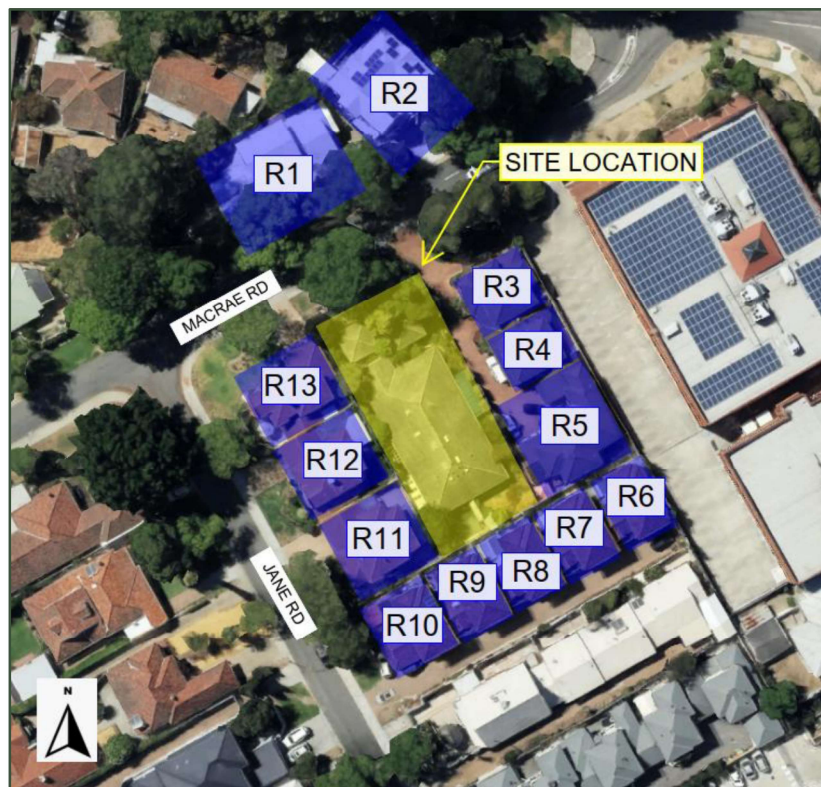
- Establish noise emission from the site. This will include any noise associated with new mechanical services plant associated with the building, waste services, carpark activity and rooftop terrace.
- Establish acoustic requirements for walls, floors, ceilings and services separation based on the requirements of the *National Construction Code* (residential buildings) as published by the Australian Building Codes Board, relevant Green Star guidelines and our previous experience on similar developments.
- Establish internal noise levels criteria for the development based on the requirements in relevant Green Star guidelines and AS/NZS 2107 *Acoustics – Recommended design sound levels and reverberation times for building interiors*.
- Identify any elements of the proposed works that require special acoustic treatment or attention for early resolution.
- Provide an acoustic DA report outlining all relevant requirements and recommendations for the development.

2.0 Project Overview

2.1 Site and surroundings

The proposed multi-residential development will be located at Lot 288 (No. 5) Macrae Road, Applecross. **Figure 1** shows the site location in the context of surrounding noise sensitive receptors (NSRs).

Figure 1 Site locality and NSRs



The project site is located within the Canning Bridge Activity Centre Plan area, within land designated Centre Zoning according to the City of Melville Local Planning Scheme No 6. It is surrounded by other residential premises.

2.2 Proposed development

The proposed residential development will consist of ground level parking with car stackers, eleven three-bedroom apartments and ten two-bedroom apartments over six floors, and a rooftop terrace. It is understood that the resident units are classified under the Building NCC as Class 2 (apartment building).

3.0 Environmental Noise Assessment

3.1 Environmental Protection (Noise) Regulations

Project noise emissions are addressed by state noise policy in the form of the *Western Australia Environmental Protection (Noise) Regulations 1997* (“EPNR”, “the Regulations”). To achieve compliance with this policy, noise levels at nearby residential areas are not to exceed defined limits referred to as Assigned Noise Levels. These limits are determined from consideration of prevailing background noise levels and ‘influencing factors’ that considers the level of commercial and industrial zoning in the locality. The influencing factor considers zoning and road traffic around the nearest sensitive receiver of interest, within a 100 m and 450 m radius.

A summary of the applicable noise limits is provided in **Table 1**.

Table 1 Summary of assigned noise levels

Part of premises receiving noise	Time of day	Assigned level, dB		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises at locations within 15 metres of a building directly associated with a noise sensitive use	0700 to 1900 hours Monday to Saturday (<i>‘Day’</i>)	45 + IF	55 + IF	65 + IF
	0900 to 1900 hours Sunday and public holidays (<i>‘Sundays’</i>)	40 + IF	50 + IF	65 + IF
	1900 to 2200 hours all days (<i>‘Evening’</i>)	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 Monday to Saturday and 0900 hours Sunday and public holidays (<i>‘Night’</i>)	35 + IF	45 + IF	55 + IF
Noise Sensitive premises at locations further than 15 metres from a building directly associated with a noise sensitive use.	All hours	60	75	80
Commercial premises	All hours	60	75	80
Industrial and utility premises	All hours	65	80	90

The specific assigned levels for each receiver are included in **Section 3.2** of this report.



If noise emitted from any premises when received at any other premises cannot reasonably be free of intrusive characteristics of tonality, modulation and impulsiveness, then a series of adjustments must be added to the emitted levels (measured or calculated) and the adjusted level must comply with the assigned level.

The adjustments are detailed in **Table 2** and are further defined in Regulation 9(1) of the Environmental Protection (Noise) Regulations 1997.

Table 2 Adjustments to the emitted levels

Noise characteristics	Definition	Adjustment of present (Note ¹)
Tones	Where the difference between the A weighted sound pressure level in any one third octave band and the arithmetic average of the A weighted sound pressure levels in the two adjacent one third octave bands is greater than 3 dB in terms of $L_{Aeq,T}$ where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as L_{ASlow} levels.	+5 dB
Modulation	A variation in the emission of noise that – Is more than 3 dB L_{AFast} or is more than 3 dB L_{AFast} in any one third octave band; Is present for at least 10% of the representative assessment period; and, Is regular, cyclic and audible.	+5 dB
Impulsiveness	Present where the difference between the L_{APeak} and L_{Amax} is more than 15 dB when determined for single representative event.	+10 dB

Note 1: Where noise emission is not music, these adjustments are cumulative to a maximum of 15 dB.

3.2 Assessed nearby noise sensitive receivers (NSR)

The approximate locations of each noise sensitive receptors to the site are shown in **Figure 1**. The receptors R1-R4 are 'highly sensitive' multi-residential premises, located adjacent to the site from north-west, south and south-east.

3.3 Project noise emission criteria

Influencing factors have been determined based on the proportion of industrial and commercial zoned land within 100 and 450 metres of the receptor, and the proximity of major and secondary roads within those distances, in accordance with the Schedule 3 of the regulations.

There is one major road within 450 m from the receptors. There is 8% of commercial use within 100 m of the receptors R1 and R2 and between 16% and 27% within 100m of receptors R3 to R13, and 10-12% of commercial use within 450 m of all the receptors. No industrial activity has been identified within the project area.

The noise receptors R1-R2 and R8-R13 are considered to have an influencing factor of 1 and receptors R3-R7 are considered to have an influencing factor of 2.

A summary of design assigned noise levels is therefore provided in the following **Table 3**.



Table 3 Project assigned noise levels

Part of premises receiving noise	Time of day	Assigned level, dB		
		L _{A10}	L _{A1}	L _{Amax}
R1 – R2, R8 – R13 Residential premises	0700 to 1900 hours Monday to Saturday ('Day')	46	56	66
	0900 to 1900 hours Sunday and public holidays ('Sundays')	41	51	66
	1900 to 2200 hours all days ('Evening')	41	51	56
	2200 hours on any day to 0700 Monday to Saturday and 0900 hours Sunday and public holidays ('Night')	36	46	56
R3 – R7, Residential premises	0700 to 1900 hours Monday to Saturday ('Day')	47	57	67
	0900 to 1900 hours Sunday and public holidays ('Sundays')	42	52	67
	1900 to 2200 hours all days ('Evening')	42	52	57
	2200 hours on any day to 0700 Monday to Saturday and 0900 hours Sunday and public holidays ('Night')	37	47	57

3.4 Environmental noise impact assessment

Detailed assessment of noise associated with the development will be undertaken on design stage of the project once details are finalised, and will include:

- Car park activity,
- Mechanical services, and
- Rooftop terrace noise emissions.

The following figures present the proposed layout for ground level, level 1 to 5 and roof level floor plans and indicative locations of noise sources associated with the development.



Figure 2 Ground level floor plan.

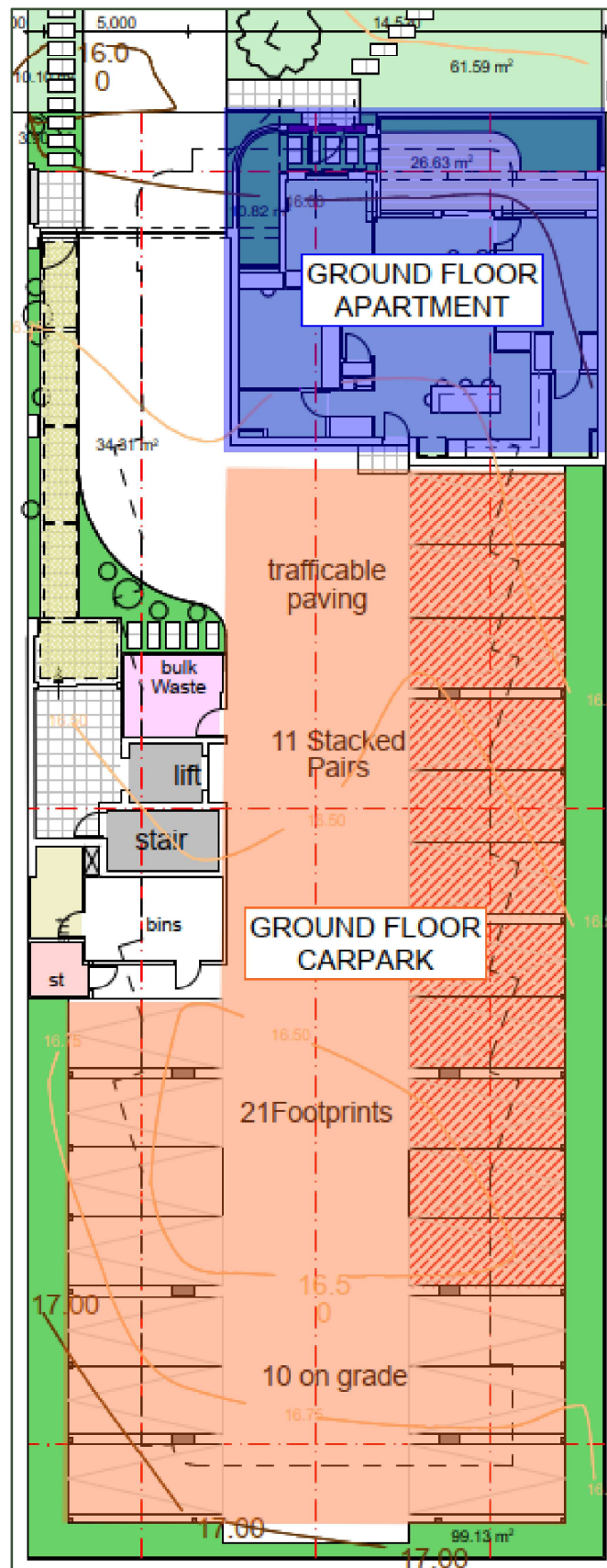


Figure 3 Level 1 to 5 floor plan.

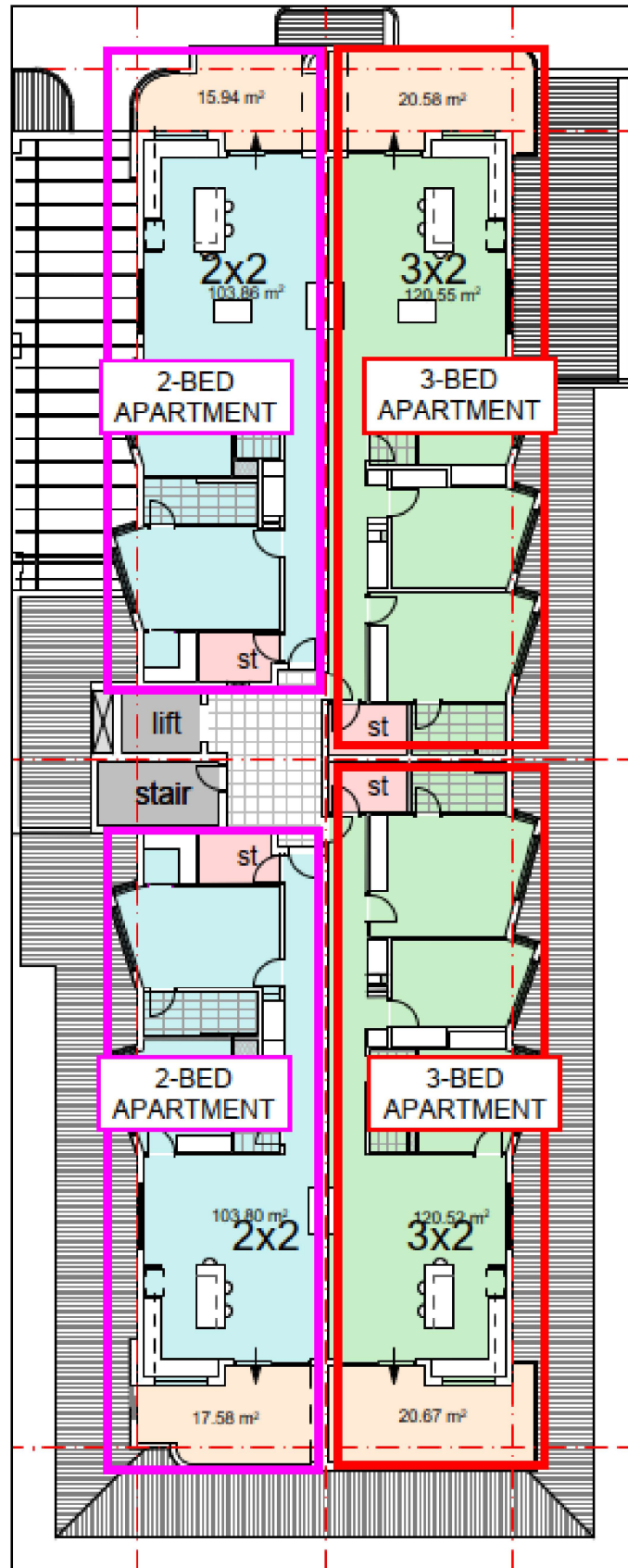
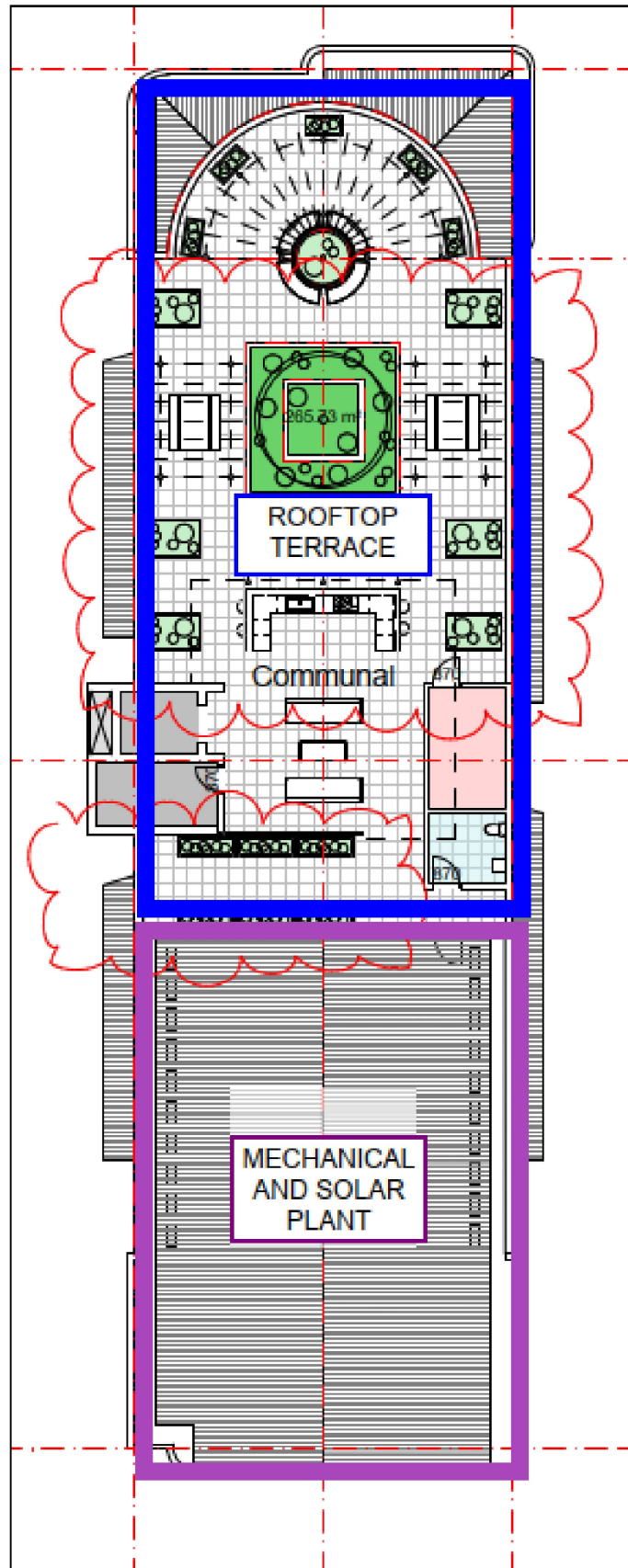


Figure 4 Roof level floor plan.



The following subsections present individual scenarios and preliminary assessment of their noise impact.

3.4.1 Carpark noise – vehicle movements and car stacker

Parking for residents will be located at the ground level of the building. There will be 32 parking bays provided, including 10 on grade and 11 double car stackers.

Each car stacker will be individually operated by residents via a hydraulic motor.

Parking will be naturally ventilated, screened with boundary fence and entry gate to all neighbouring premises.

Noise associated with vehicles moving within the premises and car stacker operation are estimated to be minimal due to duration being in order of several seconds, and screening effects from the boundary fence. Further noise assessment will be undertaken on the design stage of the project once all design and operation details are finalised, to ensure any noise impact to the noise sensitive receptors is appropriately mitigated.

3.4.2 Waste services

Regulation 14A provides requirements for such activities as the collection of waste, landscaped area maintenance and car park cleaning. Such activities can also be exempt from having to comply with Regulation 7 (the assigned levels described in Section 3.1), provided they are undertaken in accordance with Regulation 14A (2) as follows:

- during daytime hours, defined as 07:00 to 19:00 Monday to Saturday (excluding public holiday), or 09:00 to 19:00 on a Sunday or public holiday;
- in the quietest reasonable and practicable manner; and
- using the quietest equipment reasonably available.

In the case where specified works are to be carried outside daytime hours and their noise emissions are likely not to comply with Regulation 7, the works also need to be carried out according to a Noise Management Plan which has been approved by the local government authority CEO.

Accordingly, waste collection services are not assessed in detail.

3.4.3 Mechanical services

The mechanical services primary plant will be located at southern section of the roof. Some condenser units will be located at the residential balconies, only if required.

Solid parapet walls are proposed around the building perimeter to screen plant to minimise its impact to the noise sensitive receivers as well as on-site roof terrace. Details of screening height and exact location will be provided upon the detailed mechanical services noise assessment.

General recommendations for mechanical services noise emission mitigation are summarised below to assist in final selection on design stage of the project.

The mechanical services plant associated with the development must be designed, selected and installed so the noise emission complies with the project criteria. The mechanical services noise emission should be minimised as far as practicable using the following methods:

- All condenser units and exhaust fans should be facing away from the sensitive receptors, where possible.



- Plant equipment should be screened with appropriate acoustic louvres / barriers. It should be noted that the position and type of the louvre/barrier must suit mechanical requirements for airflow around the plant units.
- As far as practicable, noise from mechanical services should be free from tonality and impulsiveness.
- Vibration from any units would also need to be controlled appropriately to minimise structure borne noise.
- Balancing and maintenance of all plant equipment is to be undertaken in accordance with manufacturers recommendations.

It is a responsibility of an equipment installer and maintenance contractor, that all noise mitigation measures are implemented in order to minimise noise emissions from plant.

3.4.4 Rooftop terrace

The rooftop terrace will be located at northern section of the roof, as presented on Figure 4. The terrace will be for residents use only and will consist of various seating and dining areas with barbeque and TV, as well as herbs and vegetable garden. There will be a motorised louvered roof system installed over the TV and barbeque areas.

The proposed location of the terrace indicates that receivers are located at least four floor levels below the terrace level, therefore there will be no direct line of sight between the receivers and the source minimising any potential impact.

The noise associated with the rooftop terrace use during typical day, including patrons' noise and any noise associated with the TV, will be assessed on design stage of the project once the roof layout is finalised, to ensure any noise impact to the noise sensitive receptors is appropriately mitigated.



4.0 Acoustic Performance Design Criteria

The building is required to be designed and constructed to conform to the acoustic criteria.

The project is aiming to achieve two points of the Green Star Buildings Acoustic Comfort credit. The criteria have been applied to the project and are detailed below.

4.1 Internal noise levels

4.1.1 Australian Standard AS 2107

Criteria for continuous noise is drawn from Australian Standard AS 2107 *Acoustics – Recommended design sound levels and reverberation times for building interiors* (AS 2107). The design is required to include consideration of contributions from internal Mechanical, Electrical and Plumbing (MEP) plant equipment servicing the building.

The design must reasonably and practically remove tonality, impulsiveness and modulation from building services noise. Where these characteristics remain, the indoor design sound level in **Table 4** must be lowered by 5 dB.

Table 4 AS 2107 Recommended indoor design sound levels.

Type of Space	Continuous Noise Target, $L_{Aeq, 1hour}$ dB	Design maximum building services noise level
Houses and apartments in inner city areas		
Living areas	35 to 45	NR 35
Sleeping areas (nighttime)	35 to 40	NR 40
Work areas	35 to 45	NR 35
Common areas (foyer, lift lobby)	45 to 50	NR 40

4.1.2 Green Star Buildings

Internal ambient noise levels in the nominated areas must be no less than 5 dB below the lower range value and no greater than the upper range value relevant to the activity type in each space as recommended in AS/NZS 2107.

In residential buildings, to achieve the Internal Noise performance requirements of this credit, noise levels must not exceed recommended Sleep Disturbance criteria as defined in the NSW EPA Road Noise Policy 2011:

- Up to two noise events per night: maximum internal noise levels below 70 dB L_{Amax} ; and
- All other events: maximum internal noise levels below 55 dB L_{Amax} .

4.2 Impact Noise Transfer

Impact noise transfer measured in accordance with ISO 16283-2 through a floor where floors are located above nominated areas or adjacent spaces belonging to different tenancies which share a floor, must not exceed L_{nTw} of:

- 55 dB for floor above residential spaces,
- 60 dB for all other spaces.



These criteria have been applied to the project and are presented below along with the NCC requirements.

4.3 Acoustic Separation

4.3.1 Green Star Buildings and NCC 2022 F5

It is necessary to safeguard future occupants from illness or loss of amenity as a result of undue sound being transmitted between adjoining sole-occupancy premises and also from common spaces into sole-occupancy premises.

According to the Green Star Buildings, to achieve credits for Acoustic Comfort, the project must address the following noise transmission between enclosed spaces within the nominated area:

- All walls and floors (excluding riser walls) separating enclosed spaces must exceed the minimum NCC requirements by 5 points (excluding impact noise criteria above).
- Party walls separating open plan kitchens (where joinery units are fixed) from another open plan kitchen/living room shall be discontinuous in construction (in accordance with the NCC).
- Entry doors must have perimeter and threshold seals.

As applicable to this development, the following table presents minimum requirements based on the requirements of the NCC 2022 part F5 for a class 2 building and Green Star Building criteria.

Table 5 Summary of NCC 2022 Part F5 - Class 2 buildings and Green Star Building criteria

Construction	R_w	$R_w + C_{tr}$	$L_{n,w} + C_l$	Discontinuous
Walls separating habitable rooms in adjoining SOUs	-	≥ 55	-	-
Walls separating kitchens, toilets, bathrooms and laundries in adjoining SOUs	-	≥ 55	-	-
Walls between a bathroom, toilet, laundry or kitchen and a habitable room (other than a kitchen) in adjoining SOUs	-	≥ 55	-	Yes
Walls between a SOU and a public corridor, public lobby, stairway or the like or parts of a different classification	≥ 55	-	-	-
Walls between a SOU and a plant room or lift shaft	≥ 55	-	-	Yes
Walls or ceilings separating a duct, soil, waste or water supply pipe or storm water pipe from a habitable room	-	≥ 40	-	-
Walls or ceilings separating a duct, soil, waste or water supply pipe or storm water pipe from a kitchen or other non-habitable room	-	≥ 25	-	-
Floors between SOUs and between a SOU and a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification	-	≥ 55	≤ 55	-
Floors above any other areas	-	≥ 55	≤ 60	-

A discontinuous construction in **Table 5** means a wall having a minimum 20 mm cavity between two separate leaves, and:



- For masonry, where wall ties are required to connect leaves, the ties are of the resilient type, and
- For other than masonry, there is no mechanical linkage between leaves except at the periphery.

Mark-ups showing the NCC 2022 requirements for walls are available in **Appendix A**.

4.3.2 Walls

Party walls between tenancies must achieve minimum requirement of $R_w + C_{tr} 55$, with additional requirements for discontinuous construction for specific areas.

4.3.3 Floors

In order to comply with the requirements listed in Table 5, the floors separating SOUs from other SOUs must achieve an airborne sound insulation rating of $R_w + C_{tr} \geq 55$, and an impact sound insulation rating of $L_{n,w} + C_i \leq 55$.

4.3.4 Doors

According to NCC 2022 and Greenstar, all entry doors separating apartments from common areas to be minimum 44 mm solid core timber or equivalent performing product, and tightly fit to the frame with acoustic perimeter and threshold seals to achieve the $R_w 30$ minimum requirement.

4.3.5 Internal services

According to Part F5.6 of NCC 2022, if a duct, soil, waste or water supply pipe, including a duct or pipe that is located in a wall or floor cavity, serves or passes through more than one single-occupancy unit, the duct or pipe must be separated from the rooms of any single-occupancy unit by construction with an airborne $R_w + C_{tr}$ no less than:

- 40, if the adjacent room is a habitable room (other than a kitchen), or
- 25, if the adjacent room is a kitchen or non-habitable room.

4.4 Reverberation

This criterion does not apply to residential spaces.

5.0 Closure

I trust the above is satisfactory and please do not hesitate to contact me if you need any further information.

Regards,

SLR Consulting Australia Pty Ltd



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APPENDIX A
Sound Insulation Wall Markup



Figure 5 Sound insulation wall markup. Levels 1 -5, north.

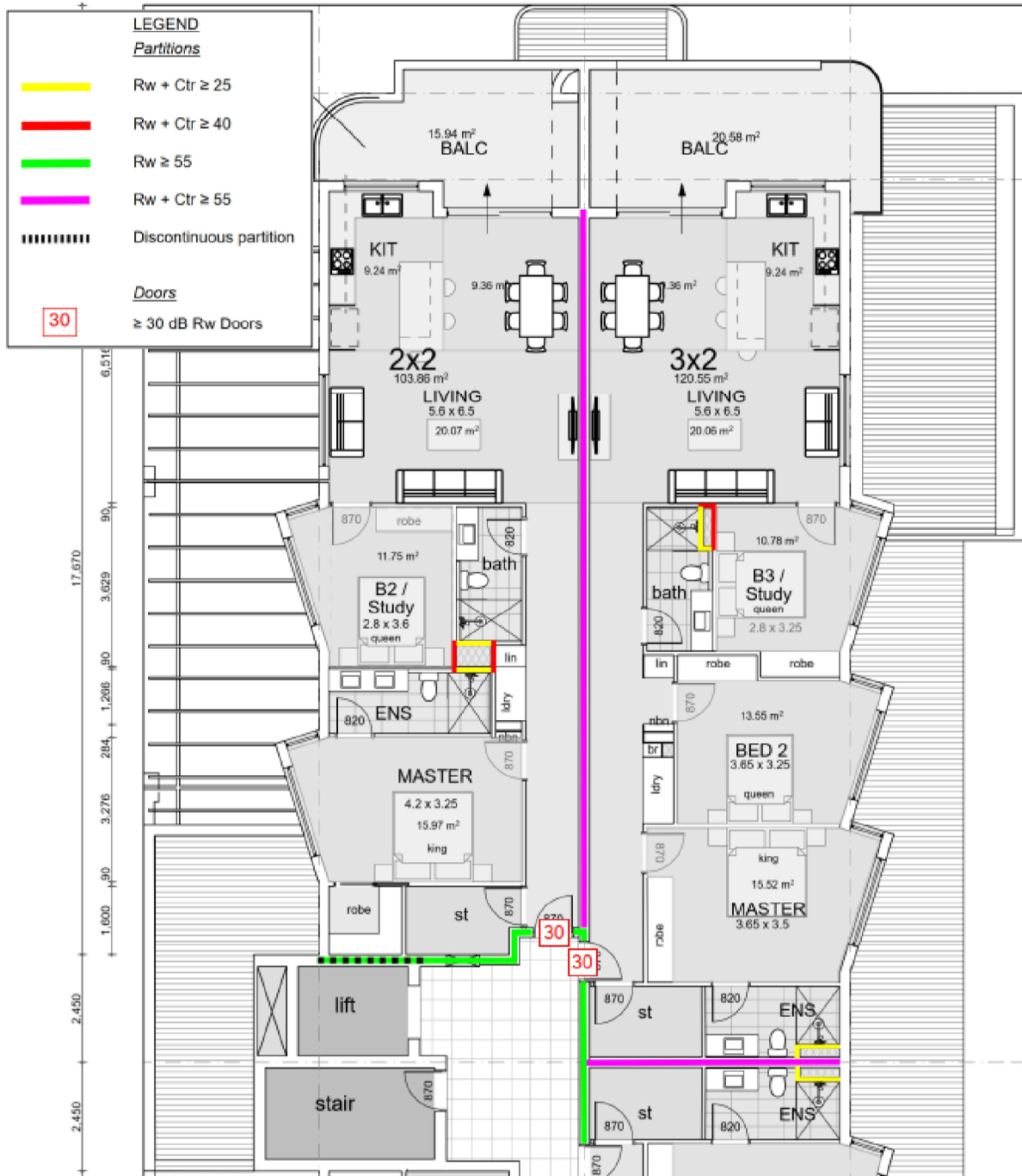


Figure 6 Sound insulation wall markup. Levels 1 -5, south.

