

419 Regency Road, Prospect

Minister's Specification SA 78B Assessment

S5880C3

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INTRODUCTION

A Minister's Specification SA 78B (SA 78B) assessment has been made of the proposed residential development at 419 Regency Road, Prospect.

The development comprises a four-level residential development, comprising a total of 11 apartments on 3 floor levels and car parking on ground level.

The assessment considers traffic noise ingress from Regency Road to the proposed apartments and determines the construction requirements for the apartments in order to satisfy the Minister's Specification SA 78B *Construction requirements for the control of external sound* (SA 78B).

The assessment has been based on the following:

- *iThink Design Studio* architectural drawings "39.2016 WD 01" through "39.2016 WD 19", all dated 19 November 2018;
- the Prospect City Council Development Plan, consolidated 13 February 2018; and,
- the requirements and deemed-to-satisfy approach of SA 78B.

CRITERIA

Development Plan

Regency Road is a designated "Type B" road in the Prospect City Council Development Plan (the Development Plan), and the subject site is located in a "designated area" (through the Noise and Air Emissions Overlay of the Development Plan). As such, the procedures of the SA 78B are mandatory for the assessment of traffic noise.

Ministers Specification SA 78B

SA 78B applies to *"all Class 1, 2, 3, 4 or 9c aged care buildings that are in a designated area (or adjacent to a designated sound source) identified on the Noise and Air Emissions Overlay in the relevant Development Plan"*, and establishes mandatory requirements for the building facade to adequately reduce noise inside the building.

SA 78B specifies acoustic treatment to dwellings based on the "Sound Exposure Category" (SEC) that the various facades of the dwelling fall under. The SECs range from 1 to 5, with SEC 1 requiring limited acoustic treatment and SEC 5 requiring extensive treatment. The SEC is determined based on the type of road, the separation distance from the road, and line of sight of the facade to the road.

For a "Type B" road with a designated speed limit of 60km/h, SA 78B specifies the following SECs to facades that have direct line of sight to the road:

Table 1: SA78B SECs for Type B road with 60km/h maximum speed.

Sound Exposure Category (SEC)	Separation from Type B Road (60km/h)
1	35 < 60m
2	20 < 35m
3	10 < 20m
4	< 10m
5	NA

The requirements of SA78B apply to the construction of external walls, external windows and doors, roofs and ceilings, and ventilation systems.

ASSESSMENT

The Sound Exposure Categories (SECs) at development site have been determined in accordance with Table 1 and are indicated on the figure in Appendix A.

Specific SECs at the facade of the dwellings, taking into consideration line of sight of the facade to the road, are shown on the figures in Appendix B.

Based on the above and the construction requirement of SA 78B (summarised in Appendix C), the following building constructions are recommended in order to satisfy SA 78B:

External Wall

To all habitable rooms, incorporate wall insulation between the pre-cast concrete panel and the plasterboard lining that are currently documented to the external walls.

External Windows and Glass Doors

Apartment	Room	Recommendation
1	All habitable rooms	6.38mm thick laminated glass.
2, 6, 10	Bedroom 1	Double glazing consisting of 8.5mm and 12.5mm thick <i>Vlam Hush</i> glass panes, separated by a 16mm air gap.
	Bedroom 2	Ensure that no external glass door is incorporated. Any external door should be a hinged solid door that achieves Rw 30 (see recommended construction below), and incorporate acoustic seals; and , Reduce the extent of glazing to no more than 60% of the floor area; and , Incorporate double glazing consisting of 8.5mm and 12.5mm thick <i>Vlam Hush</i> glass panes, separated by a 16mm air gap.
	Living/Dining	6.38mm thick laminated glass.
3, 5	Bedroom 1	10.38mm thick laminated glass.
	Bedroom 2	Double glazing consisting of 8.5mm and 12.5mm thick <i>Vlam Hush</i> glass panes, separated by a 16mm air gap.
	Living/Dining	6.38mm thick laminated glass.
4	Bedroom 1	Double glazing consisting of 8.5mm and 12.5mm thick <i>Vlam Hush</i> glass panes, separated by a 16mm air gap.
	Bedroom 2	Double glazing consisting of 8.5mm and 12.5mm thick <i>Vlam Hush</i> glass panes, separated by a 16mm air gap.

Apartment	Room	Recommendation
	Living/Dining	10.38mm thick laminated glass.
7	Bedroom 1	10.38mm thick laminated glass.
	Bedroom 2	6.38mm thick laminated glass.
	Living/Dining	6.38mm thick laminated glass.
8	Bedroom 1	Double glazing consisting of 8.5mm and 12.5mm thick <i>Vlam Hush</i> glass panes, separated by a 16mm air gap.
	Bedroom 2	10.38mm thick laminated glass.
	Living/Dining	10.38mm thick laminated glass.
9	Bedroom 1	6.38mm thick laminated glass.
	Bedroom 2	Double glazing consisting of 8.5mm and 12.5mm thick <i>Vlam Hush</i> glass panes, separated by a 16mm air gap.
	Living/Dining	6.38mm thick laminated glass.
	Study	6.38mm thick laminated glass.
11	Bedroom 1	Double glazing consisting of 8.5mm and 12.5mm thick <i>Vlam Hush</i> glass panes, separated by a 16mm air gap.
	Bedroom 2	6.38mm thick laminated glass.
	Living/Dining	10.38mm thick laminated glass.
	Study	10.38mm thick laminated glass.
All	All habitable rooms	Incorporate acoustic rated seals to all windows and external glass doors such that an airtight seal is provided all around when closed.

External Doors Other than External Glass Doors

Incorporate 40mm thick solid core door, or 43mm thick filled core door comprising 9mm thick MDF both sides of 25mm thick acoustic insulation with a minimum density of 32kg/m³, and incorporate acoustic rated seals to the door, installed and adjusted for an airtight seal all around the door. Examples of suitable seal selections are Raven "RP10si" (perimeter) and "RP8si" (bottom).

Roof and Ceiling

Construct the roof and ceiling of habitable rooms in the apartments on the Third Floor (i.e. Apartments 9, 10 and 11) as follows:

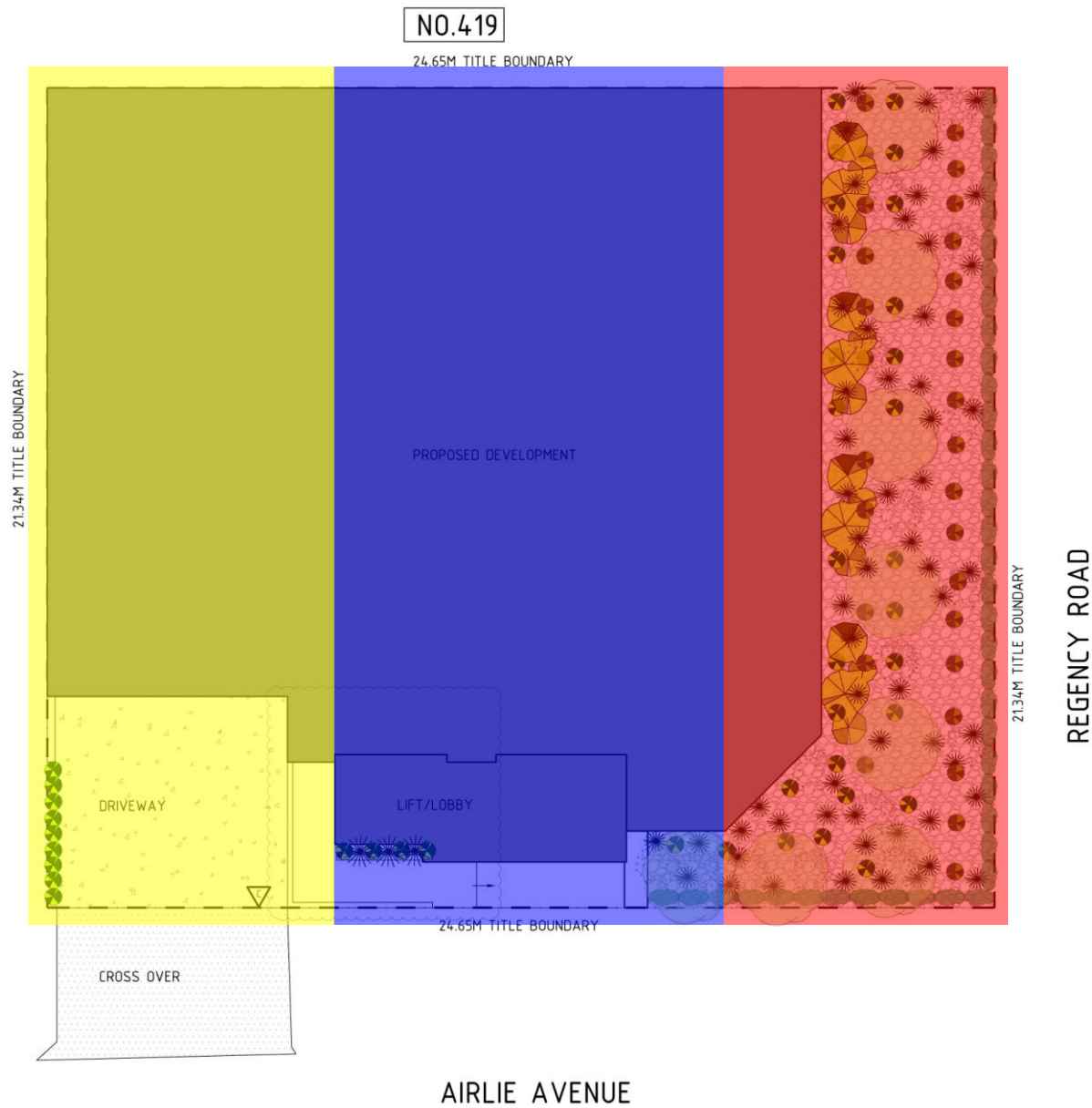
- sheet metal roof;
- minimum 185mm thick polyester insulation with a minimum density of 11kg/m³ on the ceiling;
- ceiling comprising the following plasterboard layers:

Apartment	Room	Ceiling Construction
9	All habitable rooms	1 x 10mm plasterboard
10	Bedroom 1 Bedroom 2	2 x 13mm fire-rated plasterboard fixed using furring channels
	Living/Dining	1 x 10mm plasterboard
11	Bedroom 1	2 x 13mm fire-rated plasterboard fixed using furring channels
	Bedroom 2	2 x 10mm plasterboard
	Living/Dining Study	1 x 10mm plasterboard

Ventilation System

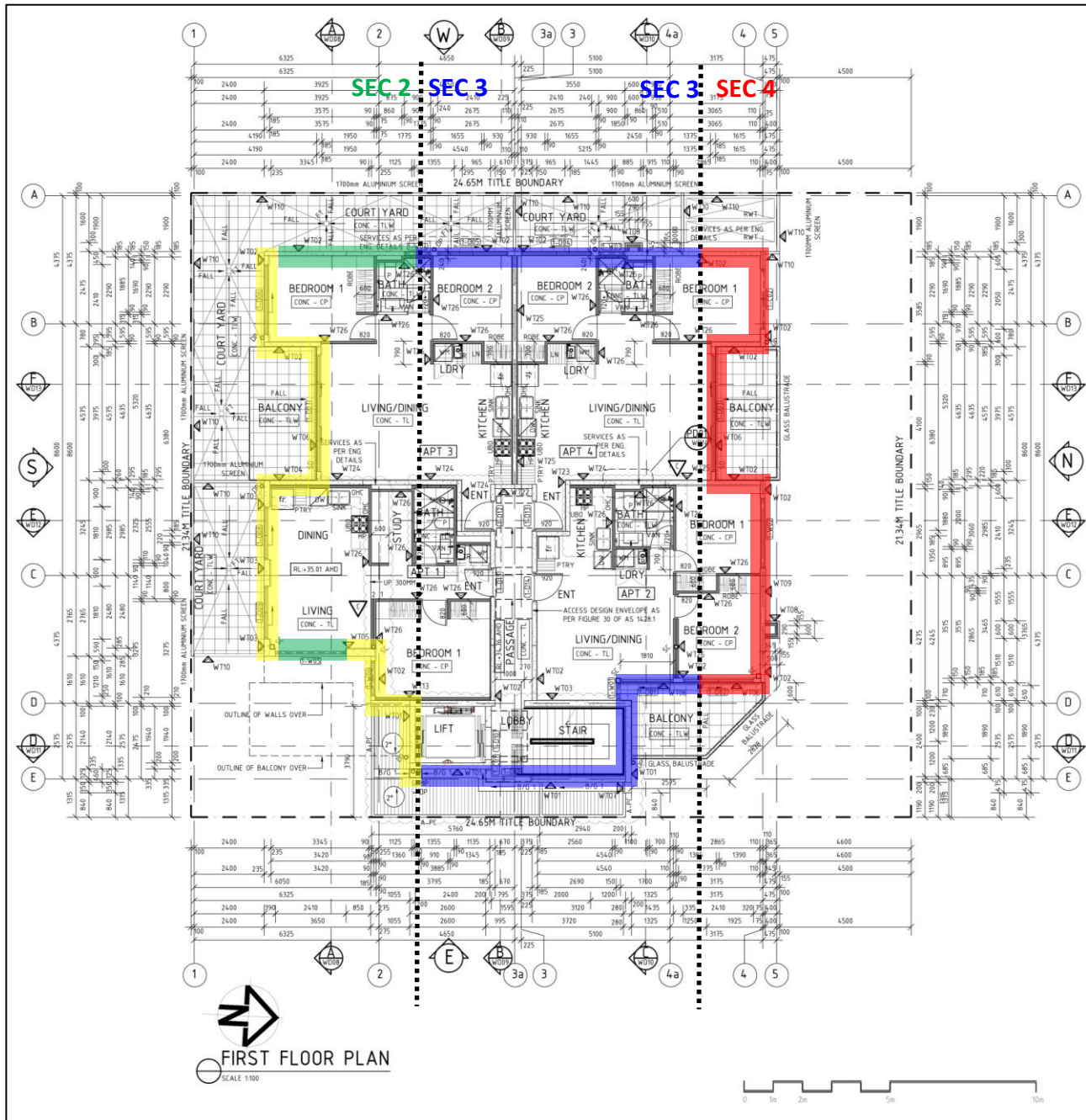
For Bedroom 1 and Living/Dining in Apartment 11; and Bedroom1 and Bedroom 2 in Apartment 10, a mechanical or non-powered system designed to achieve an Rw 40 across the outside path will be required. This will need to comprise the connection of any outside air into a ducted system via acoustically insulated ductwork.

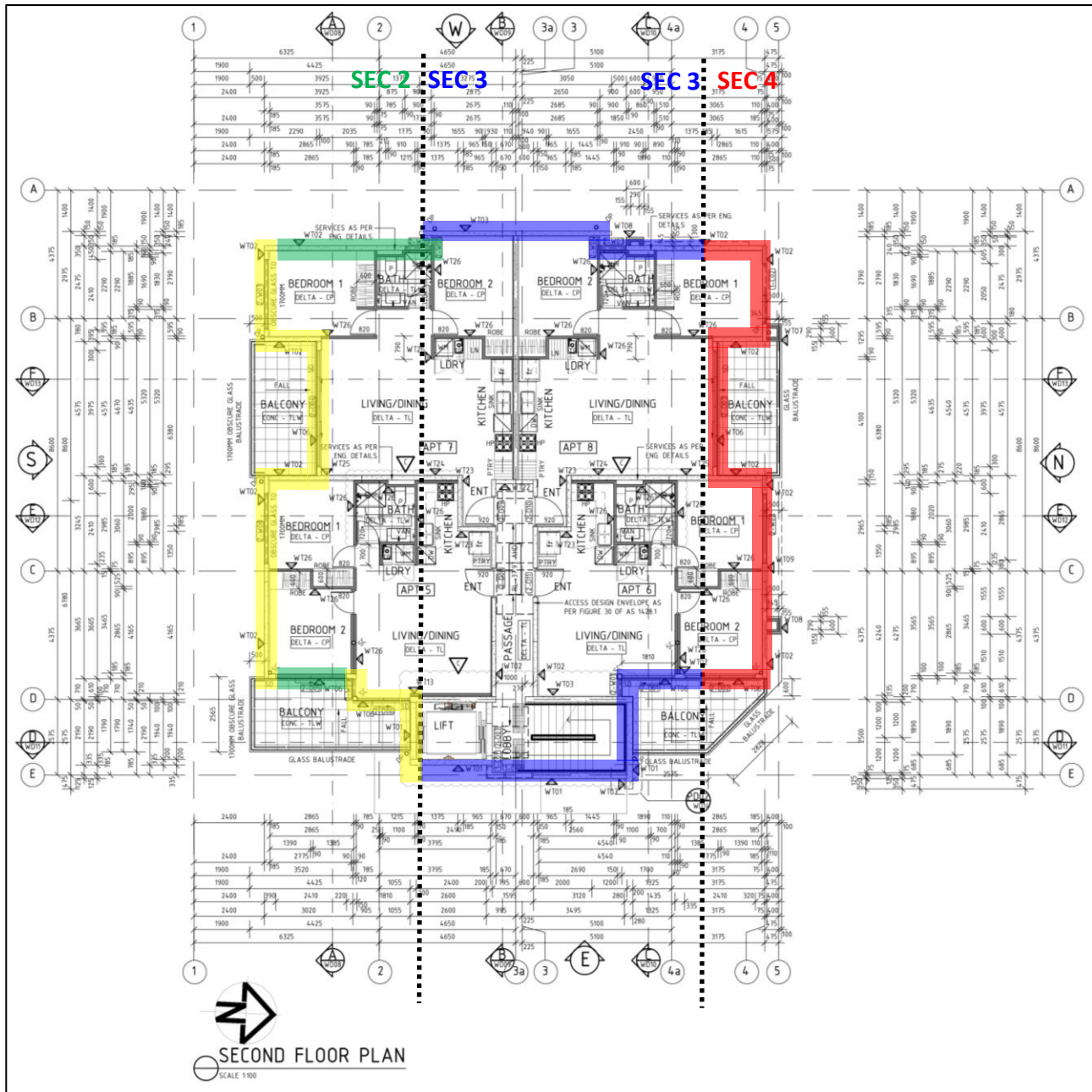
APPENDIX A: SOUND EXPOSURE CATEGORIES AT THE DEVELOPMENT SITE



LEGEND	
■	SEC 4
■	SEC 3
■	SEC 2

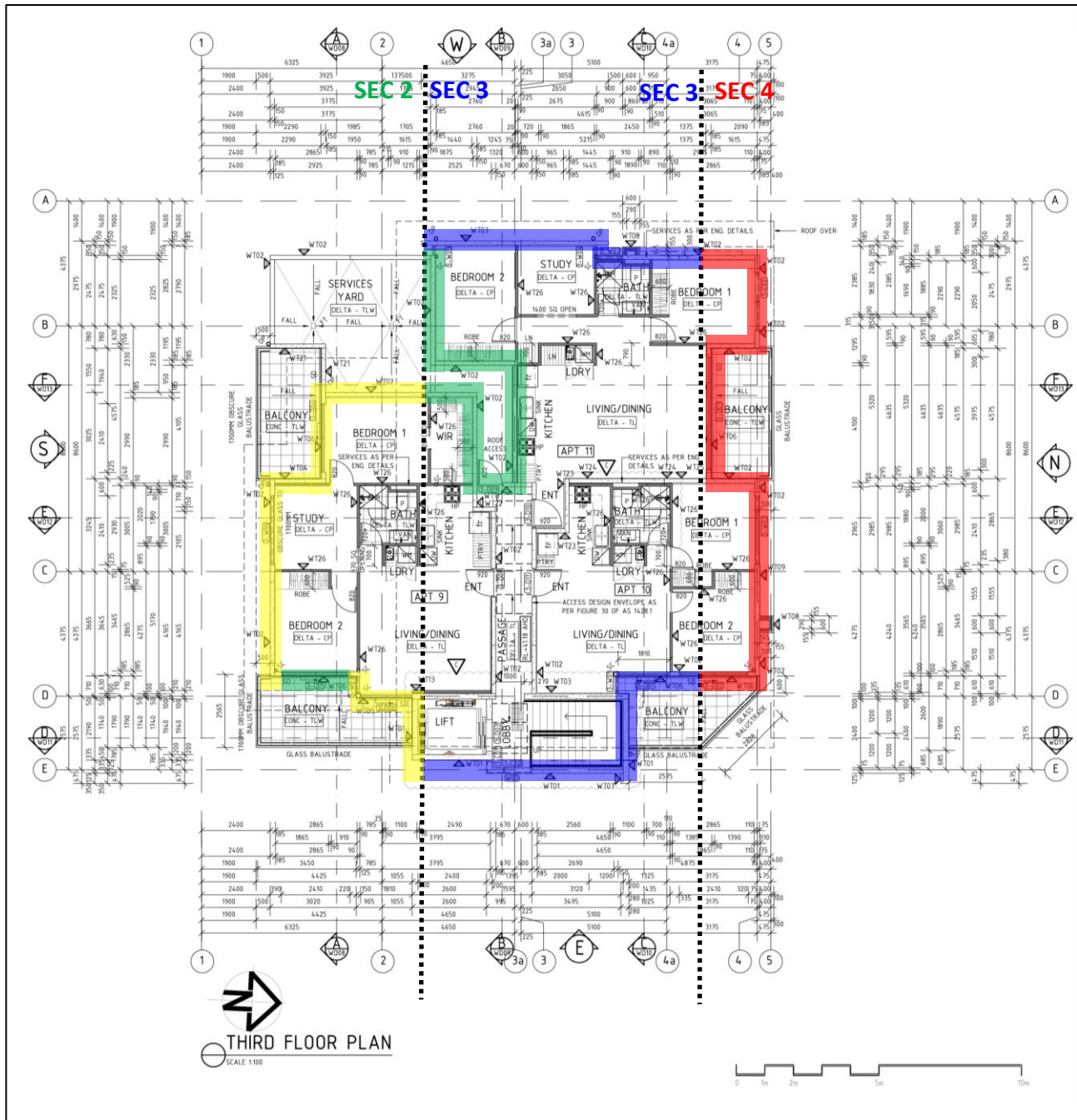
APPENDIX B: SOUND EXPOSURE CATEGORIES AT THE FACADE OF THE BUILDING





LEGEND

- SEC 4
- SEC 3
- SEC 2
- SEC 1



LEGEND

- SEC 4
- SEC 3
- SEC 2
- SEC 1

APPENDIX C: MINISTER'S SPECIFICATION SA 78B CONSTRUCTION REQUIREMENTS

Table C1: Minimum airborne sound attenuation ratings (R_W and $R_{W+C_{tr}}$) for *habitable rooms*.

Building Element	Acoustic requirements by Sound Exposure Category			
	1	2	3	4
Ground floor	Nil	R_W+C_{tr} 50	R_W+C_{tr} 50	R_W+C_{tr} 50
External walls	R_W+C_{tr} 45	R_W+C_{tr} 50	R_W+C_{tr} 50	R_W+C_{tr} 50
Windows and external glass doors	See Table C2	See Table C2	See Table C2	See Table C2 External glass doors are not permitted in bedrooms.
External doors other than external glass doors	Nil	R_W 27	R_W 30	R_W 30
Roof and ceiling	Nil	R_W+C_{tr} 35 for bedrooms only	R_W+C_{tr} 40 for bedrooms only R_W+C_{tr} 35 for other habitable rooms	R_W+C_{tr} 45 for bedrooms only R_W+C_{tr} 40 for other habitable rooms
Ventilation system	Openable windows. Note: A ventilation system provided in addition to openable <i>windows</i> must have a minimum R_w 40	Openable windows. Note: A ventilation system provided in addition to openable <i>windows</i> must have a minimum R_w 40	Openable windows. Note: A ventilation system provided in addition to openable <i>windows</i> must have a minimum R_w 40	A mechanical or non-powered system with an R_w 40. Note: Openable windows provided in addition to the ventilation system must comply with Table C2 . A ventilation system provided in addition to openable <i>windows</i> must have a minimum R_w 40

Table C2: Minimum airborne sound attenuation ratings ($R_{W+ Ctr}$) for closed windows and external glass doors to *habitable rooms*.

Room	Area of glazed element as a percentage of the floor area of the room	Sound Exposure Category			
		1	2	3	4
(a) Bedroom	Not more than 20%	25	28	31	34
(b) A non-habitable room attached to (a)	More than 20% but not more than 40%	28	31	34	#
	More than 40% but not more than 60%	31	34	#	#
	More than 60% but not more than 80%	34	#	#	#
	More than 80%	37	#	#	#
(c) Habitable room, other than a bedroom and an enclosed kitchen.	Not more than 20%	22	25	28	31
	More than 20% but not more than 40%	25	28	31	34
	More than 40% but not more than 60%	28	31	34	#
(d) A non-habitable room attached to (c)	More than 60% but not more than 80%	31	34	#	#
	More than 80%	34	#	#	#

- Windows and external glass doors are outside the scope of the Deemed-to-Satisfy Provisions and must comply with *B5 Verification Method* in SA 78B.