

# 134-136 Goodwood Road

## Noise Assessment

July 2018

S5702C2

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## INTRODUCTION

An acoustic assessment has been made of the proposed residential apartments located at 134-136 Goodwood Road, Goodwood.

The proposed development comprises two levels of residential apartments which front Goodwood Road. The site is located 100 meters south of the tram line amongst existing commercial land uses. The site locality is shown in Appendix A.

The assessment has considered the ingress of tram and traffic noise into the apartments against the Development Plan requirements for appropriate residential amenity.

The assessment has been based on:

- *DKO Architecture's* Feasibility Study titled "Goodwood Road, Goodwood", pages 1-17, dated 20 June 2018; and,
- Noise measurements of the existing acoustic environment on Goodwood Road conducted on 10-13 July 2018.

## CRITERIA

### Development Plan

The proposed development site is located within the Neighbourhood Centre Zone of the Unley (City) Council Development Plan. The Development Plan has been reviewed and the following provisions are considered relevant to the noise assessment.

### ***General Section – Interface Between Land Uses***

#### OBJECTIVES

- 1 *Development located and designed to minimise adverse impact and conflict between land uses.*
- 2 *Protect community health and amenity from adverse impacts of development.*

#### PRINCIPLES OF DEVELOPMENT CONTROL

4. *Residential development adjacent to non-residential zones and land uses should be located, designed and/or sited to protect residents from potential adverse impacts from non-residential activities.*

### ***General Section – Medium and High Rise Development (3 or More Storeys)***

#### OBJECTIVES

- 2 *Residential development that provides a high standard of amenity and adaptability for a variety of accommodation and living needs.*
- 4 *Development that integrates built form within high quality landscapes to optimize amenity, security and personal safety for occupants and visitors.*

#### PRINCIPLES OF DEVELOPMENT CONTROL

#### Design and Appearance

5. *Balconies should be integrated into the overall architectural form and detail of the development and should:*
  - (b) *be designed and positioned to respond to (...) acoustic conditions to maximise comfort and provide visual privacy;*

The noise sources which have been assessed in the vicinity of the site are traffic on Goodwood Road and tram movements on the nearby rail corridor. The appropriate criteria for noise intrusion into an apartment from road and rail corridors can be derived from the relevant provisions of the Development Plan and the contemporary State Government approach provided by the Minister's Specification SA 78B. The western portion of the development interfaces with a school. The noise from children playing is rarely of concern particularly where the school is an existing known activity in the environment and to future purchasers. No further assessment of the school has been made.

#### Minister's Specification SA 78B

The intent of *Minister's Specification SA 78B* (SA78B) is to protect the occupants of residential buildings from the sound intrusion of road and rail corridors and from mixed use activity. To this end, SA78B establishes "performance requirements" to be met by a development.

SA78B introduces mandatory requirements under the Building Code of Australia (BCA) depending primarily on "designation" in the Development Plan. The development site is not designated; nonetheless SA78B provides the most contemporary objective noise criteria, which satisfy the general intent of the Development Plan provisions. Therefore it is proposed that the criteria of SA78B be adopted for this project. The design basis of SA78B is to provide a facade which achieves the internal sound criteria shown in Table 1.

**Table 1:** SA 78B internal sound criteria for road and rail sound intrusion.

Type of room	Internal sound criteria		Applicable time period
	Building design target averaged over the total number of such rooms in the building	Maximum allowable for individual rooms in the building	
Bedroom	30 dB(A) $L_{eq, 9hr}$	35 dB(A) $L_{eq, 9hr}$	Night (10pm to 7am)
Habitable room, other than a bedroom	35 dB(A) $L_{eq, 15hr}$	40 dB(A) $L_{eq, 15hr}$	Day (7am to 10pm)

## ASSESSMENT

The noise impact from traffic and tram movements at the proposed site has been determined from measurements of the existing environment at the site over a 3 day period between 10 July and 13 July 2018. Measurements were taken on Goodwood Road at a position equivalent to level 1 of the proposed apartments. The logging location is shown in Appendix A.

Noise levels within all of the proposed apartments have subsequently been predicted using a noise propagation model in the SoundPlan noise modelling software, which was calibrated using the measured results for traffic and tram noise on Goodwood Road. The model takes into account the shielding and reflections from nearby structures, and the separation distance from the road and rail corridors. Based on the model, the following noise levels are predicted at the development façades:

*Table 2: Highest predicted external noise levels.*

Facade	Level 1		Level 2	
	Day	Night	Day	Night
East	67 dB(A)	63 dB(A)	63 dB(A)	59 dB(A)
North and South	64 dB(A)	60 dB(A)	64 dB(A)	60 dB(A)

Internal noise levels were then predicted based on the proposed site plan and façade constructions.

The following acoustic treatments are required in order to achieve the Minister's Specification design criteria throughout the development. The following recommendations are based on the openable windows or doors (including sliding doors) incorporating acoustic seals which ensure the suite is airtight when closed:

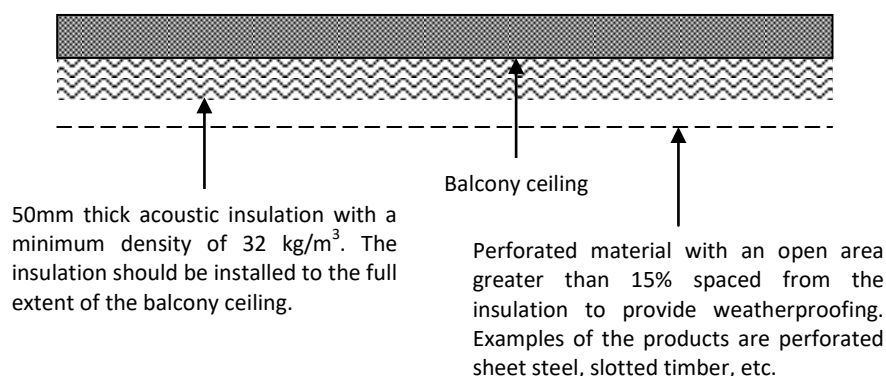
- Construct the glazed sections of the apartment façades shown in **GREEN** in Figure 2 from 10.5mm VLam Hush glass (or similar) with a minimum transmission loss as shown in Table 3;
- Construct the glazed sections of the apartment façades shown in **ORANGE** in Figure 3 from 10.38mm laminated glass (or similar) with a minimum transmission loss as shown in Table 3;
- Construct the glazed sections of the apartment façades shown in **RED** in Figure 2 and Figure 3 from 6.38mm laminated glass (or similar) with a minimum transmission loss as shown in Table 3;

**Table 3:** Minimum required façade transmission losses.

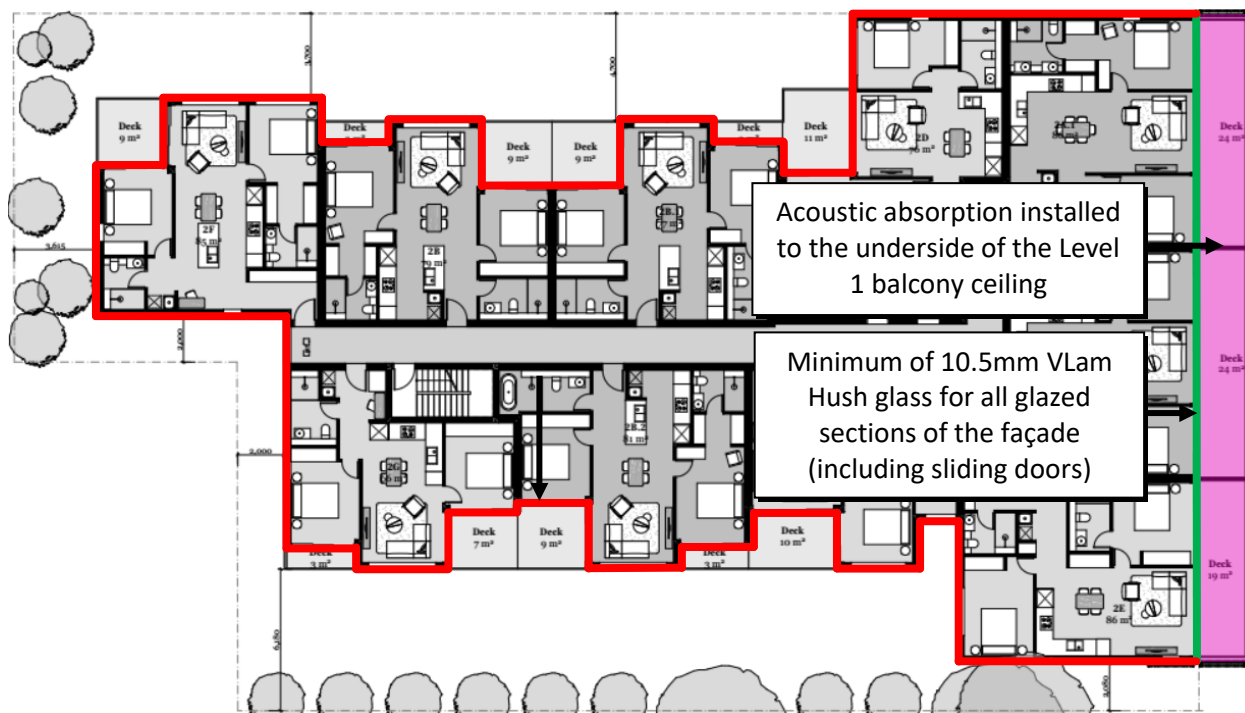
Façade Construction	Octave Band Centre Frequency, Hz						
	63	125	250	500	1000	2000	4000
10.5mm VLam Hush glass	21	27	31	26	40	40	47
10.38mm laminated glass	20	26	27	33	35	37	45
6.38mm laminated glass	14	20	24	31	35	33	37
100mm precast concrete	37	37	36	45	52	59	62

- Construct all non-glazed sections of the façades which are directly exposed to Goodwood Road from precast concrete (or an equivalent construction) with a minimum transmission loss as shown in Table 3. Sections of the façade which are not exposed, such as the rear apartments, may implement light weight constructions provided such constructions do not degrade the acoustic performance of the glazing (a separate assessment should be conducted if proposed);
- Install acoustic absorption material, such as 50mm thick polyester insulation with a minimum density of  $32\text{kg/m}^3$  in accordance with Figure 1, or a proprietary weather proof product with an “NRC” rating of 0.8 or greater (“Stratocell Whisper” or similar), to the full extent of the Level 1 balcony ceiling as indicated in **PINK** in Figure 1.

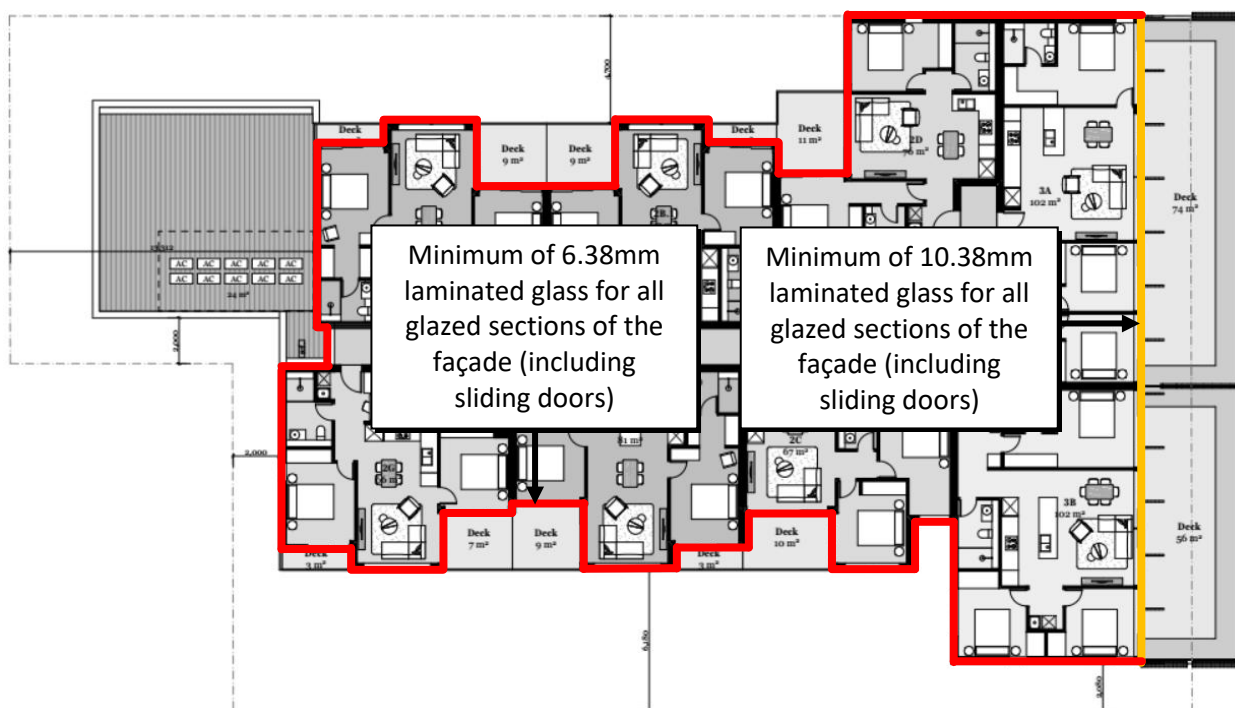
**Figure 1:** Balcony absorption construction detail.



**Figure 2: Level 1 minimum required constructions and acoustic treatment.**



**Figure 3: Level 2 minimum required constructions and acoustic treatment.**





## CONCLUSION

An acoustic assessment has been made of the proposed residential apartments located at 134-136 Goodwood Road, Goodwood.

The assessment has considered the ingress of tram and traffic noise on the occupants of the apartments.

The predicted noise levels within the apartments will achieve the adopted criteria of *Minister's Specification SA 78B* subject to the recommended measures in this report, comprising;

- specific façade constructions; and,
- installation of acoustic absorption to the Level 1 balcony ceiling.

It is therefore considered that the apartments have been designed to *protect residents from potential adverse impacts, provide a high standard of amenity, and respond to acoustic conditions to maximise comfort*, thereby achieving the relevant provisions of the Development Plan related to external road and rail noise.

**APPENDIX A:** Proposed development site locality.

