

Perception Planning

Acoustic Assessment – Proposed Subdivision 150 Gundy Road, Scone NSW.

Relationships Attention Professional Trust



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1. Introduction

1.1 Background

RAPT Consulting has been engaged to undertake an acoustic assessment as part of a development application for a proposed subdivision at 150 Gundy Road, Scone NSW. Based on feedback received from Upper Hunter Shire Council, an acoustic assessment is required for the proposal as shown below:

2. Prior to commencement of the consent the proponent must submit an acoustic assessment to the Consent Authority that determines what noise attenuation measures (if any) will be required for future dwellings (particularly Lots 101,102, 103, 116, 201, 202, 203, 204, 205, 206, 301, 302, 303, 304, 305, 306 and 307) in relation to noise sources from Gundy Road. Where noise attenuation measures are required a Restriction on the Use of Land shall be registered on the title of the relevant lots that requires such measures to be implemented prior to any occupation of the dwelling.

The site location and the surrounding area is provided in Figure 1 and the abovementioned Lot Locations are shown in Figure 2 below.



Figure 1 Aerial Photograph of Site and Surrounding Area

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Figure 2 Lot Locations



1.2 Limitations

The purpose of the report is to provide an independent acoustic assessment to support the proposal.

It is not the intention of the assessment to cover every element of the acoustic environment, but rather to conduct the assessment with consideration to the prescribed work scope.

The findings of the assessment represent the findings apparent at the date and time of the assessment undertaken. It is the nature of environmental assessments that all variations in environmental conditions cannot be assessed and all uncertainty concerning the conditions of the ambient environment cannot be eliminated. Professional judgement must be exercised in the investigation and interpretation of observations.

In conducting this assessment and preparing the report, current guidelines for noise were referred to. This work has been conducted in good faith with RAPT Consulting's understanding of the client's brief and the generally accepted consulting practice.

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2. Existing Environment

To ascertain ambient noise levels, traffic information contained in the *Gundy Road, Scone Residential Subdivision Traffic Impact Assessment October 2017* was reviewed and utilized to calculate traffic noise levels at nearest lots to Gundy Road.

The Calculation of Road Traffic Noise (CoRTN) method of traffic noise prediction was used. The CoRTN method accommodates the following factors affecting traffic noise.

- Posted Speed;
- % Heavy Vehicle traffic;
- Roadway Gradient;
- Topographic features;
- Receiver / Source distance and heights;
- Intervening Ground Cover;
- Reflections from buildings.

The standard prediction procedures were modified in the following ways, in accordance with the Roads and Maritime guidelines:

 LAeq values were calculated from the LA10 values predicted by the CoRTN algorithms using the well-validated approximation LAeq,1hour = LA10,1hr – 3 (NSW RTA, 2001).

The results of the calculations are provided in Table 1.

Table 1 Predicted Traffic Noise Levels

Descriptor	Nearest Lots for Proposal
Predicted L _{Aeq(15hr)}	57 dB(A)
Predicted L _{Aeq(9hr)}	53 dB(A)



3. Guidelines

3.1 Development Near Rail Corridors and Busy Roads

The Department of Planning Guideline "Development near Rail Corridors and Busy Roads – Interim Guideline" (Guideline) Section 3.5 of the guideline specifies the internal noise criteria outlined in Table 2 Below.

Table 2 Internal Noise Goals

Type of Occupancy	Noise Level	Time Period
Sleeping areas / Bedrooms	35dB(A) Windows Closed	Night 10:00pm to 7:00am
Other Habitable Rooms (excluding garages, kitchens bathrooms and Hallways)	40dB(A) Windows Closed	Any Time

The guidelines outlined above originated from the Rail Infrastructure Corporation (RIC) publication Consideration of Rail Noise and Vibration in the Planning Process" (2003) where it is specific that the criteria apply with windows and doors closed. If noise levels with windows or doors open exceed these criteria by more than 10 dBA, the design of the ventilation for these rooms should be such that occupants can leave windows closed, if they so desire.



4. Internal Noise Objectives

The NSW Environmental Noise Management Manual specifies that standard window glazing of a building will typically attenuate the external noise levels by at least 20dB(A) with the windows closed and 10 dB(A) with the windows open (allowing for natural ventilation). This means that an external noise level of 60 Leq dB(A) during the day and 55 Leq dB(A) night would result in compliance with the internal noise goals outlined in Table 2.

The predicted internal noise levels for standard façade glazing are presented in Table 3

Type of Occupancy	Predicted Ambient Noise Level	Internal Noise Level	Noise Goal Level	Time Period
Sleeping areas / Bedrooms	53 dB(A)	33 dB(A)	35dB(A) Windows Closed	Night 10:00pm to 7:00am
Other Habitable Rooms (excluding garages, kitchens bathrooms and Hallways)	57 dB(A)	37 dB(A)	40dB(A) Windows Closed	Any Time

Table 3 Internal Noise Goal Comparison

The predicted internal noise levels indicate internal noise goals may comply for habitable rooms and for bedrooms.

4.1 Mitigation Measures

Based on the predicted results, windows with direct line of sight to traffic noise, sleeping area / bedroom would need to attenuate at least 18 dB(A) of the traffic noise (53 calculated - 35 acceptable). The façade of any living areas would need to attenuate at least 17 dB(A) (57 – 40). Figure 3 is a reproduction of Figure B2 from the Guideline showing a typical situation of a dwelling adjacent to a busy road.





Figure 3 Traffic Noise Reduction for Different Construction Materials

Figure 3 shows a traffic noise level of 68 dB(A) at windows directly facing a busy road. The figure shows that this noise may be reduced by 30 dB(A) by the sound transmission loss associated with construction adhering at a minimum, to "Scenario B". While compliance with standard construction may be expected, it is recommended the façade of any bedrooms are recommended to be constructed with consideration to Specification B from the Guideline particularly for windows which are the weakest link acoustically speaking. For living areas it is recommended the facades as a minimum be constructed with consideration to Specification to Specification A from the Guideline. Specification A and B from the guideline are outlined below.

Specification A

Windows	standard 4mm monolithic glass with standard weather seals on all windows	(Rw 25)
Doors	30mm solid core timber – lounge room aluminium framed glass sliding door – lounge and dining rooms	(Rw 24)
Walls	brick-veneer and standard plasterboard on timber studs with insulation in cavity	(Rw 52)
Roof	tiled roof and standard plasterboard ceiling with insulation	(Rw 43)
Floor	concrete slab	

Note: 'Rw' is the weighted sound reduction index of a building element

Figure 4 Specification A



Specification B

Windows	10.38mm laminated glass with acoustic seals on all bedroom windows, standard 4mm monolithic glass with standard seals on all other windows	(Rw 35)
Doors	30mm solid core timber - lounge room aluminium framed glass sliding door - lounge and dining rooms	(Rw 24)
Walls	brick-veneer and standard plasterboard on timber studs with insulation in cavity	(Rw 52)
Roof	tiled roof and standard plasterboard ceiling with insulation	(Rw 43)
Floor	concrete slab	

Note: 'Rw' is the weighted sound reduction index of a building element

Figure 5 Specification B

The above relates to facades with a full line of sight to the road. Figure 3 also shows windows which are on facades perpendicular to the road. The noise impacting on these windows is consequently shielded from 50% of the traffic noise by the building structure, and noise levels are 2-3 dB below the traffic noise level for windows which have direct line of sight to the traffic. Figure 3 also demonstrates that as the distance from the road increases resulting noise levels at other windows shown in the figure decrease as well.

Ventilation Requirements

The Guideline also qualifies that if internal noise levels with windows and doors open sufficiently to provide adequate ventilation exceed the criteria by more than 10 dB(A) the design of the ventilation of these rooms should be such that occupants can leave windows closed, if they so desire, while meeting the ventilation requirements of the Building Code of Australia. This equates to an internal noise level, with windows open, of 45 dB(A) Leq during the night and 50 dB(A) Leq during the day.

While the results of the assessment suggest these noise levels may be achieved with windows open, it is recommended that the project be designed such that ventilation requirements are satisfied with consideration to the Building Code of Australia for occupants of the lots of concern may leave their windows closed if they so desire.



5. Conclusion

This acoustic assessment has been undertaken as part of a development application a proposed subdivision at 150 Gundy Road, Scone NSW. The assessment particularly focussed on proposed future dwellings on Lots 101,102, 103, 116, 201, 202, 203, 204, 205, 206, 301, 302, 303, 304, 305, 306 and 307) in relation to noise sources from Gundy Road.

Based on the results of the assessment, it is expected compliance with all noise goals for internal use can be achieved provided design measures similar to what has been outlined in Section 4.1 of this report are investigated and implemented.

Should you have any further questions regarding this report, please do not hesitate to contact Greg Collins on 0488512224 or greg@raptconsulting.com.au.

Thank you,

They Collins

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