

MEMORANDUM

670.10602 M8 Ginninderra Drive Options 20140925.docx

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Dear Steve

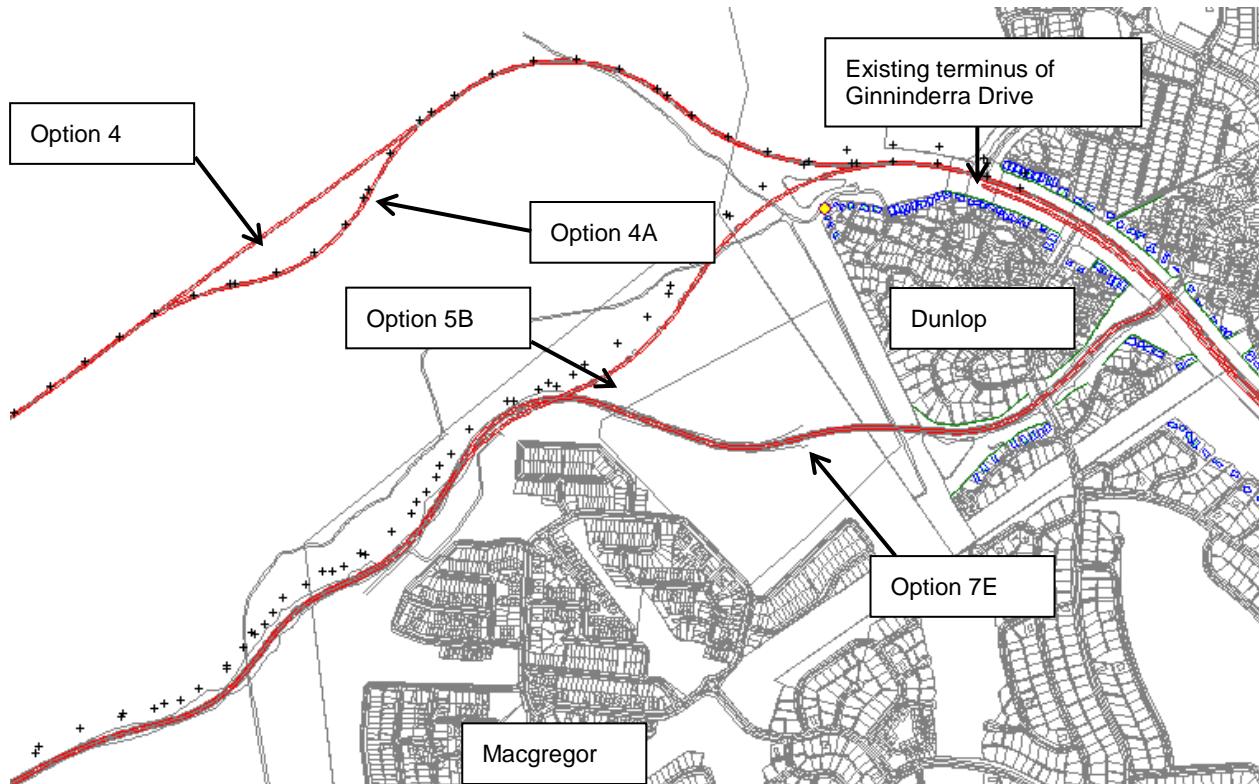
West Belconnen
Ginninderra Drive Extension Options 4, 4a, 5b and 7e
Acoustic Assessment

1 Introduction

SLR is pleased to present the results of an assessment of the relative noise impacts of currently tabled options for the Ginninderra Drive extension. This memo is a revision of SLR document ref 670.10602 M4, (13 June 2014), which looked at extension options 4, 4A and 5B. The revision adds extension option 7E to the comparison. All four alignments are indicated in **Figure 1**.

It is understood that the proposed extension will be a single carriageway (one lane each direction) roadway. The purpose of this assessment is to determine the relative levels of noise impact to existing residential properties from the different extension options.

Figure 1 Ginninderra Drive Extension Options Included in Noise Impact Study



2 Planning Guideline

There are currently no legislative policies or guidelines within the ACT that specifically address road traffic noise during operation of a road.

The previous *Draft Noise Management Guidelines (1996)* provided guidance in the assessment of traffic noise to sensitive areas. These guidelines were repealed by the Planning and Development Act 2007-24, s428 (2).

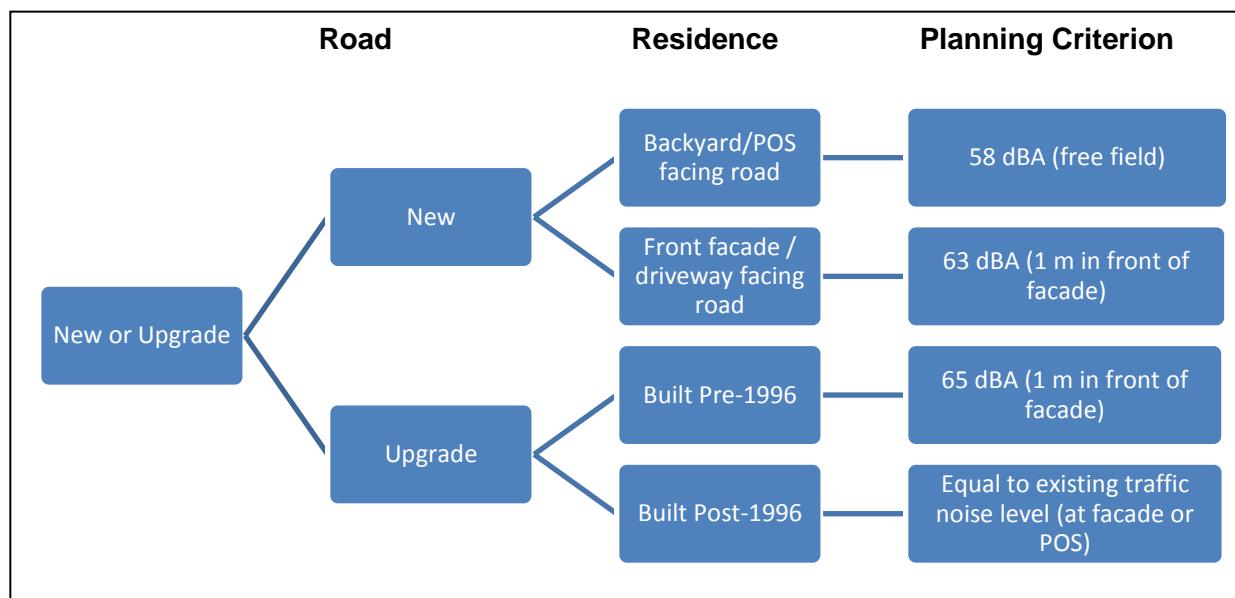
Nevertheless, the Guidelines provide a point of reference, and numerous road projects (both existing and still in development) have been assessed under the repealed 1996 Guidelines in the ACT. The criteria and methodology provided in this document are broadly consistent with criteria used in other Australian States and Territories.

Section 3 of the Draft Guidelines provides road traffic noise criteria based on the land / building usage as well as the type of road development. Based on our interpretation of the 1996 Guidelines and discussions with the ESDD Transport and Planning Section, the noise planning guidelines applicable are dependent on the following conditions:

- Whether or not the road, after development, is considered to be upgrade/changes of existing road/carriageway, or a new road (including new carriageway/duplication on an existing road corridor);
- Whether the potentially affected noise-receiving properties were built pre- or post-1996 (the date of the draft guidelines); and
- Whether the property has front façade/driveway or backyard/private open space (POS) facing the road.

The applicable noise planning guidelines are determined using the process indicated in the flow chart in **Figure 2**. This approach has been agreed with the ESDD Transport and Planning Section.

Figure 2 Flowchart for Determination of Noise Planning Guideline Values– Sensitive Receivers



The potential Ginninderra Drive extension will be regarded by ESDD as a 'new road'. Based on a review of the aerial photography of the existing residential areas (Macgregor and Dunlop) potentially impacted by the extension, properties generally have private open space (POS) facing the potential new road.

Therefore, the planning guideline of **LA10(18hour) 58 dBA** at each property boundary has been used for this assessment.

3 Road Options - Relative Noise Impact Assessment

3.1 Modelling Parameters

The noise assessment was based on year 2041 morning (AM) peak traffic flows provided by AECOM. The modelled parameters are summarised in **Table 1**.

Table 1 Modelling Parameters and Assumptions

Item	Model Assumption
18-hour traffic flow	10,355
Percentage of heavy vehicles	5%
Traffic speed	80km/hr
Road surface	Dense grade asphalt (DGA)
Existing backyard fences	Approximately 1.2m high to all houses facing the new alignment

3.2 Results

The results of the noise modelling associated with each option are presented graphically in **Appendix A**.

In general, the predicted LA10(18hour) noise levels associated with options 4, 4A and 5B are similar at the existing properties in Dunlop. The predicted noise levels exceed the applicable planning guideline a small number of properties, as summarised in **Table 2**. Route Option 7E passes much closer to a number of receivers near to the existing Ginninderra Drive alignment, and as such has a generally higher impact.

All residential properties in Macgregor were predicted to be within the applicable planning guideline.

Table 2 Number of Properties Predicted to Exceed Planning Guideline

Extension Option (see Figure 1)	Number of Properties For Which an Exceedance of the Noise Planning Guideline is Predicted
Route Option 4	12
Route Option 4A	12
Route Option 5B	13
Route Option 7E	40

Therefore, from an acoustic perspective, the following conclusions can be drawn:

- Options 4, 4A and 5B have very similar noise impact for existing residential properties in Dunlop. Approximately 12-13 properties were predicted to exceed the planning guideline.
- Options 4 and 4A are equivalent in terms of noise impact.
- In relative terms, Option 5B generates higher noise levels at the receivers than Option 4 or 4A, as the Option 5B alignment is located closer to the residential blocks. However, this higher noise level is not predicted to exceed the planning guideline value, hence the relatively similar overall noise impact.
- Option 7E was predicted to produce the worst noise impact of the currently tables options for the existing residential properties in Dunlop. Approximately 40 properties were predicted to exceed the planning guideline.

3.3 Possible Mitigation Options

3.3.1 Options 4, 4A and 5B

Where exceedances of the noise planning guidelines are predicted, the level of exceedance is relatively small (of the order 2-3dBA).

The following mitigation options could be considered to reduce the potential noise levels to the 12-13 receivers at Dunlop to within the planning guideline:

- **Speed Reduction** – A reduction in posted speed limit from 80km/h to 60km/h would normally be expected to reduce traffic noise levels by around 1 to 2 dBA. A further reduction to 40km/h could be expected to yield a further 1 dBA, but this is not expected to be workable in this case.
- **Quieter road surface** – stone mastic asphalt (SMA) and open graded asphalt (OGA) can provide road traffic noise reduction of around 2 dBA relative to 'standard' dense graded asphalt (DGA).
- **Roadside noise barrier** – A noise barrier (approximately 2m high from road level) built along the southern edge of the new carriageway would provide at least 5 dBA of noise reduction at the residential properties, possibly more. The height and location of the barrier would need to block any direct line of sight between road traffic and the residential properties.
- **Extent of mitigation** - If any of the above noise mitigation options are pursued, they would need to be applied to an angle of view of the road of at least 160° when viewed from a residence. This would mean around 300 to 350m of the extension, measured from the intersection with the existing Ginninderra Drive (approximate distance, subject to detailed design).

3.3.2 Option 7E

The levels of exceedance of the planning guideline at the 40 potentially affected properties are up to approximately 8 dB. If this route option is pursued, the ambient noise environment at the identified receivers is likely to undergo a significant change.

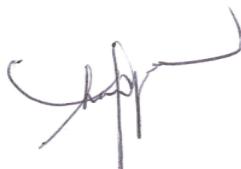
The particular local ground topography is expected to mean that it would be difficult to achieve more than around 5dBA from roadside noise barriers in this location without increasing these to an excessive height.

It may be possible to make noise barriers more effective by locating them closer to the receivers, but these may need to be impractically high or close to the receivers to be effective (as noted in **Table 1**, 1.2m high fences have already been assumed at the rear yards of the receiver properties).

As such it is likely that roadside barriers in combination with a speed reduction and/or quiet road surface one or more of the mitigation strategies discussed in **Section 3.3.1** would be required to meet the noise planning guideline in this area.

We trust this information meets your current requirements. Please feel free to contact us if you wish to discuss any part of this advice.

Yours sincerely



ZHANG LAI
Senior Consultant

