



HEGGIES

REPORT 10-3015-R4

Revision 1

**Vincentia Residential Development
Western Precinct
Noise Assessment
Naval College Road**

PREPARED FOR

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Vincentia Residential Development

Western Precinct

Noise Assessment

Naval College Road

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DOCUMENT CONTROL

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Appendix A Daytime Noise Contours with and without mitigation

Appendix B Night-time Noise Contours with and without mitigation



1 INTRODUCTION

An urban development is currently under construction, located north of the intersection of Naval College Road and The Wool Road, Vincentia. The urban development will comprise retail, commercial and residential uses. The site is bordered to the east by an existing leisure centre, to the north and west by bushland, and rural residential to the south on the opposite side of Naval College Road. Further east and opposite The Wool Road is Vincentia High School and Primary School.

Previously Heggies Pty Ltd (Heggies) conducted a noise assessment of the urban development in report 10-3015-R1 '*Vincentia Master Plan Noise Impact Assessment*'. It is proposed to further develop a narrow strip of land in the Western Precinct between the approved development footprint and Naval College Road. This report assesses the traffic noise impact of Naval College Road on the proposed residential lots.

2 NOISE CRITERIA

2.1 Traffic Noise

The Department of Environment Climate Change and Water's (DECCW) Environmental Criteria for Road Traffic Noise (ECRTN) presents the NSW Government's noise design goals for the assessment of road traffic noise.

The ECRTN document presents recommended road traffic noise criteria for various types of road and land use developments. Naval College Road is considered a 'collector' road and the relevant criteria relating to new residential land use developments affected by collector road traffic noise is summarised in **Table 1**.

Table 1 DECCW's Guidelines for Road Traffic Noise at Residences

Type of Development	Criteria		Where Criteria are Already Exceeded
	Day (7am to 10pm)	Night (10pm to 7am)	
New residential land use developments affected by collector traffic noise.	LAeq(1hour) 60 dBA	LAeq(1hour) 55 dBA	Where feasible and reasonable, existing noise levels should be reduced to meet the noise criteria via judicious design construction of the development. Locations, internal layouts, building materials and construction should be chosen so as to minimise noise impacts.
Land use developments with potential to create additional traffic on collector road.	LAeq(1hour) 60 dBA	LAeq(1hour) 55 dBA	Where feasible and reasonable, existing noise levels should be mitigated to meet the noise criteria. via judicious design construction of the development. In all cases, traffic arising from the development should not lead to an increase in existing noise levels by more than 2 dB.
Definitions:	New residential development affected by traffic noise – addresses the acceptable level of road traffic noise impact for new residential developments. Land use developments with potential to create additional traffic – addresses the acceptable level of traffic noise impact for existing residences.		



3 ROAD TRAFFIC NOISE ACOUSTICAL MODELLING

3.1 General

To assess the potential impact of traffic noise on the proposed residential lots computer modelling of the site and surrounding areas has been conducted using the “SoundPLAN” software. In assessing road traffic noise, the “Calculation of Road Traffic Noise” (CORTN) procedure algorithms were adopted for the analysis. This procedure is recommended by the Roads and Traffic Authority of NSW. The calculated noise levels are determined by taking into account:

- overall traffic volumes;
- vehicle speed;
- percentage of heavy vehicles;
- distance between roadway and the receiver;
- nature of the intervening ground ; and
- intervening features such as proposed commercial buildings and topography which can provide acoustical shielding.

Two scenarios have been modelled:

- LAeq(1hour) daytime noise levels; and
- LAeq(1hour) night-time noise levels

There are two main residential ‘groups’ facing Naval College Road (referred to as the western lots of the Western Precinct and the eastern lots of the Western Precinct).

Single point calculations were carried out at each lot at the expected location of the closest residential facade, nominally set back 5 metres from the Western Precinct lot boundary. The two scenarios have been developed based on the expected future traffic flow predictions and expected increases in night-time traffic used in report 10-3015-R1 as provided in the Transport Reports prepared by Masson Wilson Twiney of June 2004 and November 2005,.

For each of the above two scenarios noise contours have also been generated at heights of 1.5 m above a nominal ground floor level with the results presented graphically in **Appendix A1** and **Appendix B1** for daytime and night-time respectively.

4 DISCUSSION AND CONTROL MEASURES

4.1 Traffic Noise Modelling Results

Daytime single point calculations indicate noise levels range from 64 dBA to 66 dBA at western lots and from 63 dBA to 67 dBA at the eastern lots. These noise levels exceed the ECRTN target of 60 dB LAeq(1hour) by 3 dBA to 7 dBA. The corresponding daytime traffic noise contours at a height of 1.5 m above the nominal ground floor level are presented in **Appendix A1**.

In accordance with the guiding principles of the RTA’s Environmental Noise Management Manual, there should be further consideration of noise mitigation for these receivers.

Night-time single point calculations indicate noise levels range from 61 dBA to 62 dBA at western lots and from 60 dBA to 64 dBA at the eastern lots. These noise levels exceed the ECRTN target of 55 dB LAeq(1hour) by 5 dBA to 9 dBA. The corresponding night-time traffic noise contours at a height of 1.5 m above the nominal ground floor level are presented in **Appendix B1**.



In accordance with the guiding principles of the RTA's Environmental Noise Management Manual, there should be further consideration of noise mitigation for these receivers.

4.2 Complying Barrier – Road Traffic Noise

A noise wall was modelled at the southern lot boundaries (located approximately 20 m to 25 m north of Naval College Road). The noise wall was also extended to the north at each end lot for approximately 15 metres. The barrier height was adjusted to determine requirements for compliance with the ECRTN criteria for new residential development. To comply, for single storey residential receivers, the required noise wall height is in the order of 3.2 m for all the western lots and the eastern lots, except for the 3 'middle' eastern lots (proposed Lots 604, 605 and 606) where a wall height of 3.4 m is required. Daytime and Night-time traffic noise contours including noise barriers are presented in **Appendix A2** and **Appendix B2** respectively.

For double-storey residential receivers, the required wall height is in the order of 5.2 m, and 5.4 m for the 3 'middle' eastern lots. Walls of the order of 5.2 m to 5.4 m in height are not considered aesthetically viable.

The noise wall can be constructed from a combination of earth mound and solid wall to achieve the height required. For example a 3.2 m high wall can be achieved using a 1.2 m high earth mound and 2 m high solid fence.

4.3 Architectural Treatments

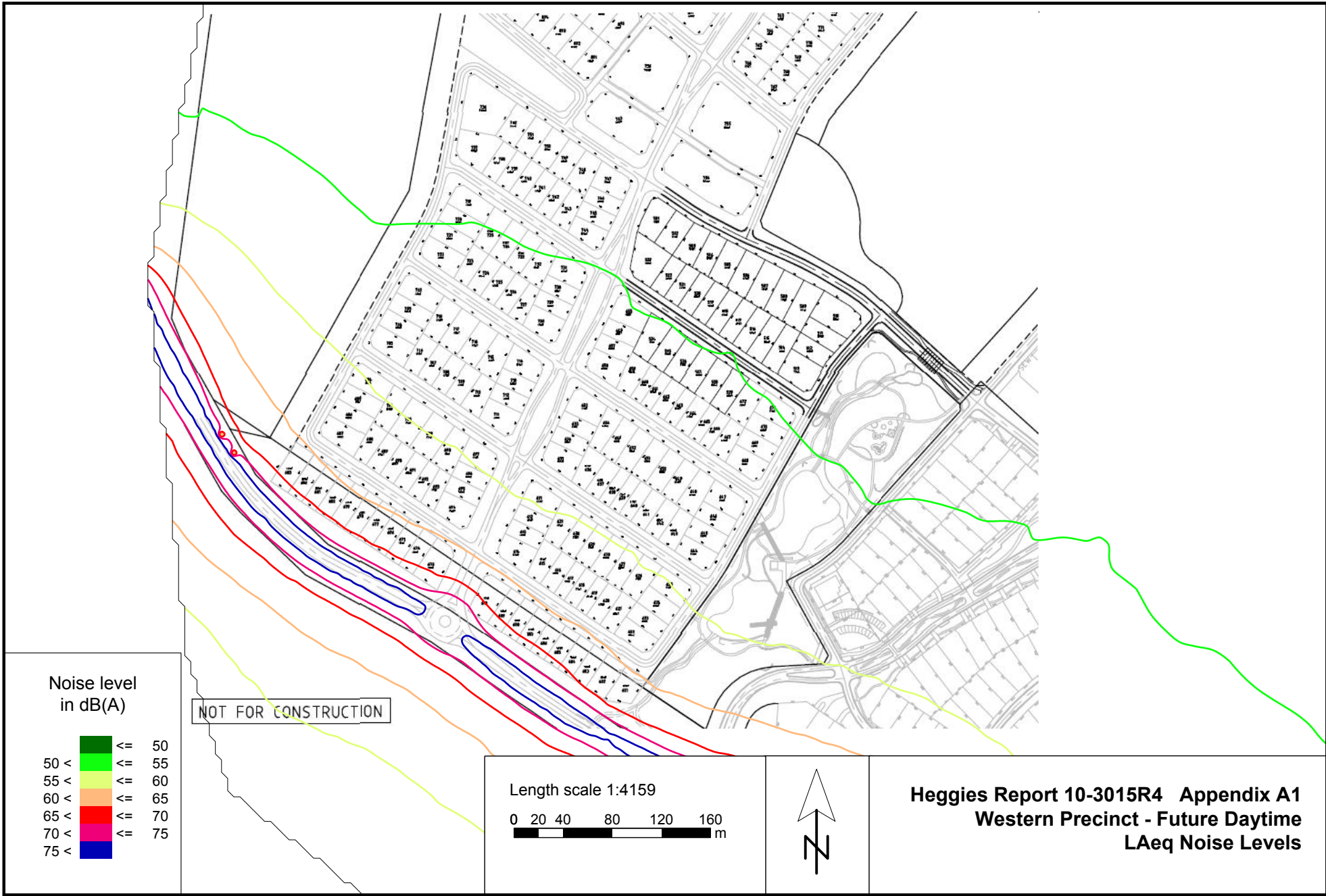
Whilst the preferred form of mitigation is noise walls for single storey dwellings, as this maintains the amenity of outdoor areas and does not constrain architectural design, an alternative to noise walls is architectural treatments at the dwellings.

Architectural treatments aim to ensure that satisfactory internal noise levels are achieved, as a minimum. As design goal exceedances are 10 dBA or lower, the provision of mechanical ventilation (complying with Building Code of Australia requirements) to allow windows to be kept shut to minimise noise intrusion should be adequate.

Another form of mitigation to be considered is planning the layout of the site and location of habitable rooms within the dwellings to minimize traffic noise impact. For example designing habitable rooms to not face the roadway directly and/or the provision of external solid boundary fences or walls to provide individual shielding. These techniques can be applied, however their use is limited when applied to two storey (or higher) residences.

Regardless of the techniques employed, attenuation of external noise is required and recommended during the detailed design of the dwellings on site. Noise mitigation measures should include:

- Consideration of the use of mechanical ventilation to enable windows to be kept shut; or
- Dwelling layout and/or the use of solid boundary fences to shield bedroom and sensitive living areas from traffic noise sources.

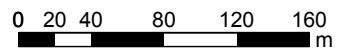


Noise level
in dB(A)

50 <	≤	50
55 <	≤	55
60 <	≤	60
65 <	≤	65
70 <	≤	70
75 <	≤	75

NOT FOR CONSTRUCTION

Length scale 1:4159



Heggies Report 10-3015R4 Appendix A1
Western Precinct - Future Daytime
LAeq Noise Levels

