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# Proposed Reconfiguration Of a Lot and Material Change of Use 144 South Deebing Creek Rd, Deebing Heights

## TRAFFIC NOISE IMPACT REPORT

Prepared for

**DeebDev Pty ltd**

**27th August 2009**

Report No. 0909101

*Inquiries about this report should be directed to John Cristaudo at our Brisbane office on (07) 3391 5096 or email: decibel@acenet.net.au*

# 1.0 INTRODUCTION

This report is submitted in response to a request by JF &P Pty Ltd, on behalf of DeebDev Pty Ltd, for a traffic noise impact assessment of a proposed lot reconfiguration of a site located at 144 South Deebing Creek Rd. This report forms part of a response to an Information Request issued by the Ipswich City Council and the Department of Main Roads on the 21st November 2009.

On-site noise logging was conducted, and through modelling, predictions of future road noise impacts in the year 2019 were produced. Based upon these predicted levels, recommendations regarding acoustic fences have been specified.

## 1.1 The Proposal

The proposal is to develop a 30.35 ha site near the corner of South Deebing Creek Road and South West Transport Corridor (extensions to the Centenary Highway) at Deebing Heights to produce 130 home sites, a location for a new shopping centre and multi-unit dwellings, and a large area of park land.

It is intended that the site will be developed in four stages starting with the first stage along the South Deebing Creek frontage of the site (western boundary of the development) and gradually progress across the site eastward. The first stage of the development will consist of a mixture of detached and multi unit residential sites. The second stage will be similar to the first but also included the development of a shopping centre site. While stages 3 and 4 will consisted of lots for detached dwellings.

Access to the site will be via an extension to Siddans Rd that will run through the site. Siddans Rd connects with South Deebing Creek Road which in turn allows access to the new South West Transport Corridor. The South West Transport Corridor in an extension to the Centenary Highway and has only recently been opened. This new road provides a link from Springfield Lakes area through to Yamato and the Cunningham Highway. Construction of this road through Deebing Heights is expected to be the catalyst for development in the area leading to significant growth in the population. This growth in population is also expected to be reflected in significant growth in traffic volumes on the roads in this area. In this report the potential for these increases in traffic volume to produce traffic noise that will impact the proposed development will be examined.

The topography of the site tends to slope away to the rear where Deebing Creek flows. At present there are some buildings on the site although the vast majority of the site is grazing land and remnant vegetation. The buildings on site will be removed to allow development of the site and the remnant vegetation on site will be persevered through the incorporation of extensive parks land in the development.

A site plan is included in the appendix of this report.

# 2.0 EQUIPMENT

## 2.1 Road Traffic Noise Assessment

The following equipment was used to record transport noise impacting onto the site:

- Bruel Kjaer 4231 Calibrator;
- Larson Davis Environmental Noise Logger.

# 4.0 NOISE CRITERIA

## 4.1 Road Traffic Noise

As this development is adjacent to a State-controlled road i.e. the South West Transport Corridor, reference must be made to Main Roads Manual *Road Traffic Noise Management: Code of Practice* when assessing this application. The criteria set out in the Manual for Habitable floors of Residential Properties are:

- 63 dB(A) $L_{10}$ (18 hour)* or less, where existing levels are measured at the local government deemed-to-comply dwelling setback distance are greater than 40 dB(A) $L_{90}$ (8 hour) between 10 pm and 6am; or
- 60 dB(A) $L_{10}$ (18 hour)* or less, where existing levels are measured at the local government deemed-to-comply dwelling setback distance are less than or equal to 40 dB(A) $L_{90}$ (8 hour) between 10 pm and 6am; or
- Where the above criteria cannot be met, internal maximum design criterion levels specified in AS/NZS 2107.

The Main Roads Manual *Road Traffic Noise Management: Code of Practice* also stated criteria relating to balconies and formal external open space. These criteria are:

- 63 dB(A) $L_{10}$ (18 hour)* or less, where existing levels are measured at the local government deemed-to-comply dwelling setback distance are greater than 45 dB(A) $L_{90}$ (18 hour); or
- 60 dB(A) $L_{10}$ (18 hour)* or less, where existing levels are measured at the local government deemed-to-comply dwelling setback distance are less than or equal to 45 dB(A) $L_{90}$ (18 hour);

* Note external levels stated are façade corrected.

The relevant maximum internal design criterion levels specified in *ASNZS 2107- Recommended design sound levels and reverberation times for building interiors* mentioned under the Habitable Floors criteria of the Main Roads Manual *Road Traffic Noise Management: Code of Practice* are presented in the table below.

| Type of Occupancy / Activity | Recommended Design Sound Level, $L_{Aeq}$, dB(A) | |
|---|---|---|
| 7. RESIDENTIAL BUILDINGS | Satisfactory | Maximum |
| Houses and apartments near major roads – | | |
| Living areas | 35 | 45 |
| Sleeping areas | 30 | 40 |
| Work areas | 35 | 45 |
| Apartment common areas (e.g. foyer, lift lobby) | 45 | 55 |

**Table 1:** Internal noise limits for residential dwellings from Australian/New Zealand Standard AS/NZS 2107:2000 *'Acoustics - Recommended design sound levels and reverberation times for building interiors*

# 5.0 RESULTS & CALCULATIONS

## 5.1 Road Traffic Noise

### 5.1.1 Measured Levels Logger Survey

The table below presents measured road traffic noise levels measured at the logger measurement location which was near the corner of South Deebing Creek Road and the South West Transport Corridor. As the logger was placed in the easement adjacent to the development there were no buildings in the vicinity and as such measurements can be regarded as free field and therefore do not include a 2.5 dB façade reflection. The $L_{10,18hr}$ noise level was measured as approximately 57 dB(A). Graphical presentation of the logger measured noise levels are presented in the appendix to this report.

| Descriptor | Time Period | Measured Level dB(A) |
|---|---|---|
| $L_{A10,18hr}$ | 6:00am to 12:00pm | 57 |
| $L_{A90,18hr}$ | 6:00am to 12:00pm | 39 |
| $L_{A90,8hr}$ | 10:00pm to 6:00am | 30 |

**Table 1:** Measured road traffic noise levels at proposed site.

### 5.1.2 Existing and Future Traffic Flows

Existing traffic flows South Deebing Creek Road were determined from traffic counts conducted on behalf of Decibell Consulting on the 27th August 2009. This data has been presented below:

Year 2009 Traffic Flow:

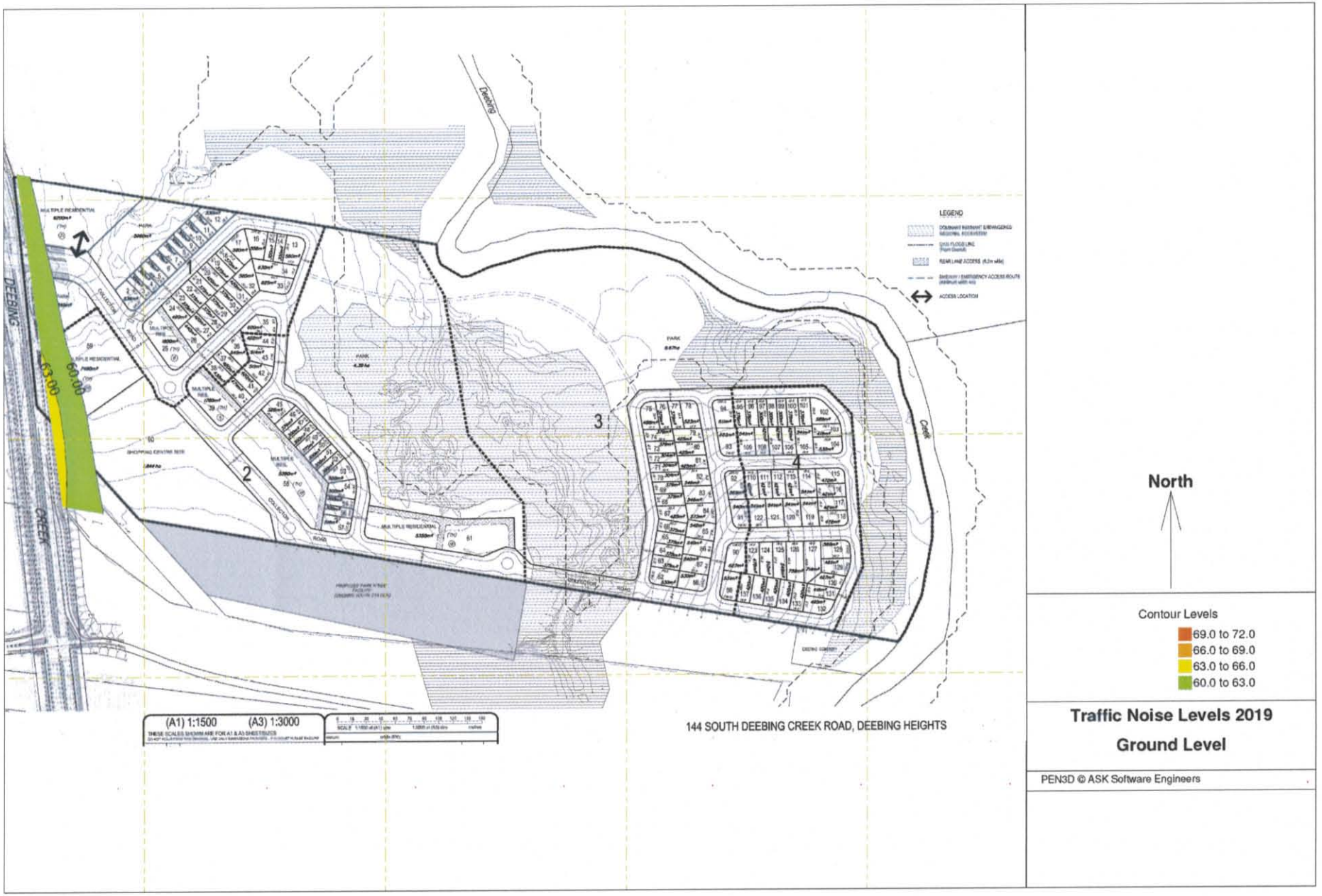
South Deebing Creek Rd: 1130 vehicles per 18 hour, 1 % HV

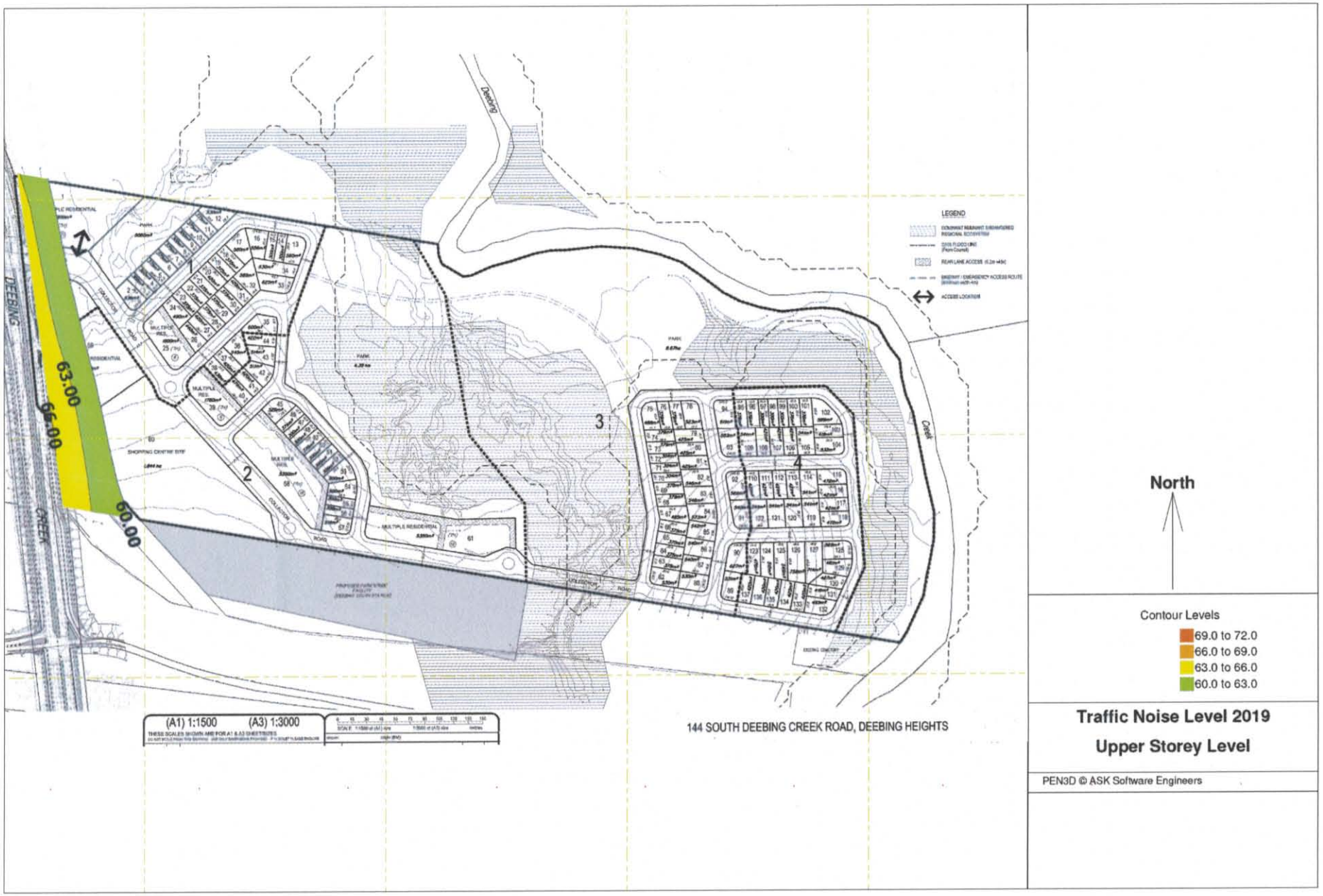
The South West Transport Corridor (SWTC) has only been in operation for a number of months and as such AADT counts are not yet available. However Department of Main Roads have installed a number of traffic counters to record traffic volumes along the SWTC. On of these is located near where Deebing Creek flows under the SWTC. For modelling proposes in this report traffic counts recorded during the week of noise monitoring by department of Main Roads at this location will be used. This data has been presented below:

Year 2009 Traffic Flow:

SWTC Eastbound: 2563 vehicles per 18 hour, 11 % HV

SWTC Westbound: 2471 vehicles per 18 hour, 14 % HV


DEEBING CREEK
63.00
60.00
LEGEND
ACCESS LOCATION
(A1) 1:1500 (A3) 1:3000
144 SOUTH DEEBING CREEK ROAD, DEEBING HEIGHTS
North
Contour Levels
69.0 to 72.0
66.0 to 69.0
63.0 to 66.0
60.0 to 63.0
Traffic Noise Levels 2019
Ground Level
PEN3D © ASK Software Engineers


DEEBING
CREEK
63.00
66.00
69.00
LEGEND
North
Contour Levels
69.0 to 72.0
66.0 to 69.0
63.0 to 66.0
60.0 to 63.0
(A1) 1:1500 (A3) 1:3000
144 SOUTH DEEBING CREEK ROAD, DEEBING HEIGHTS
Traffic Noise Level 2019
Upper Storey Level
PEN3D © ASK Software Engineers

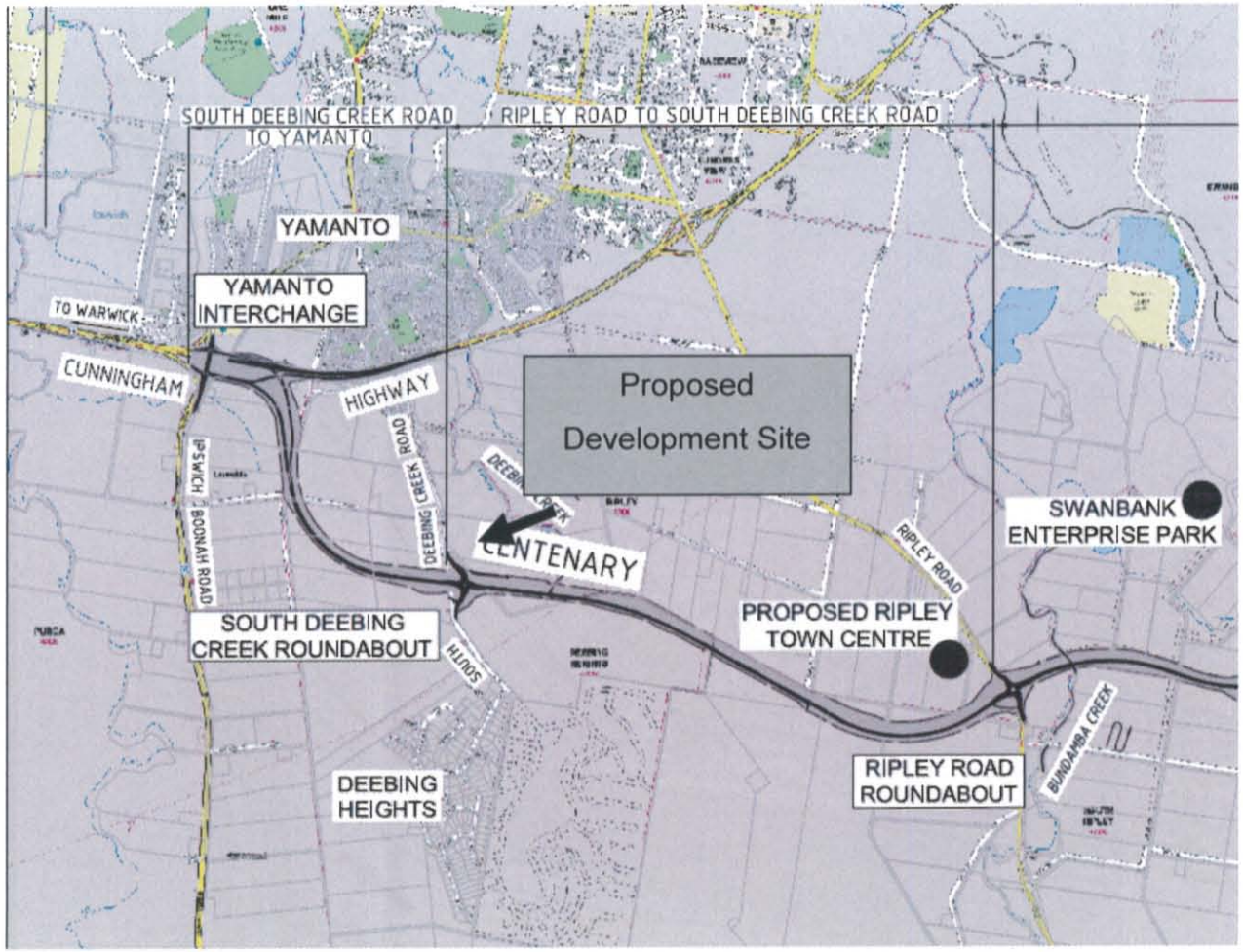
# 6.0 RECOMMENDED ACOUSTIC TREATMENTS

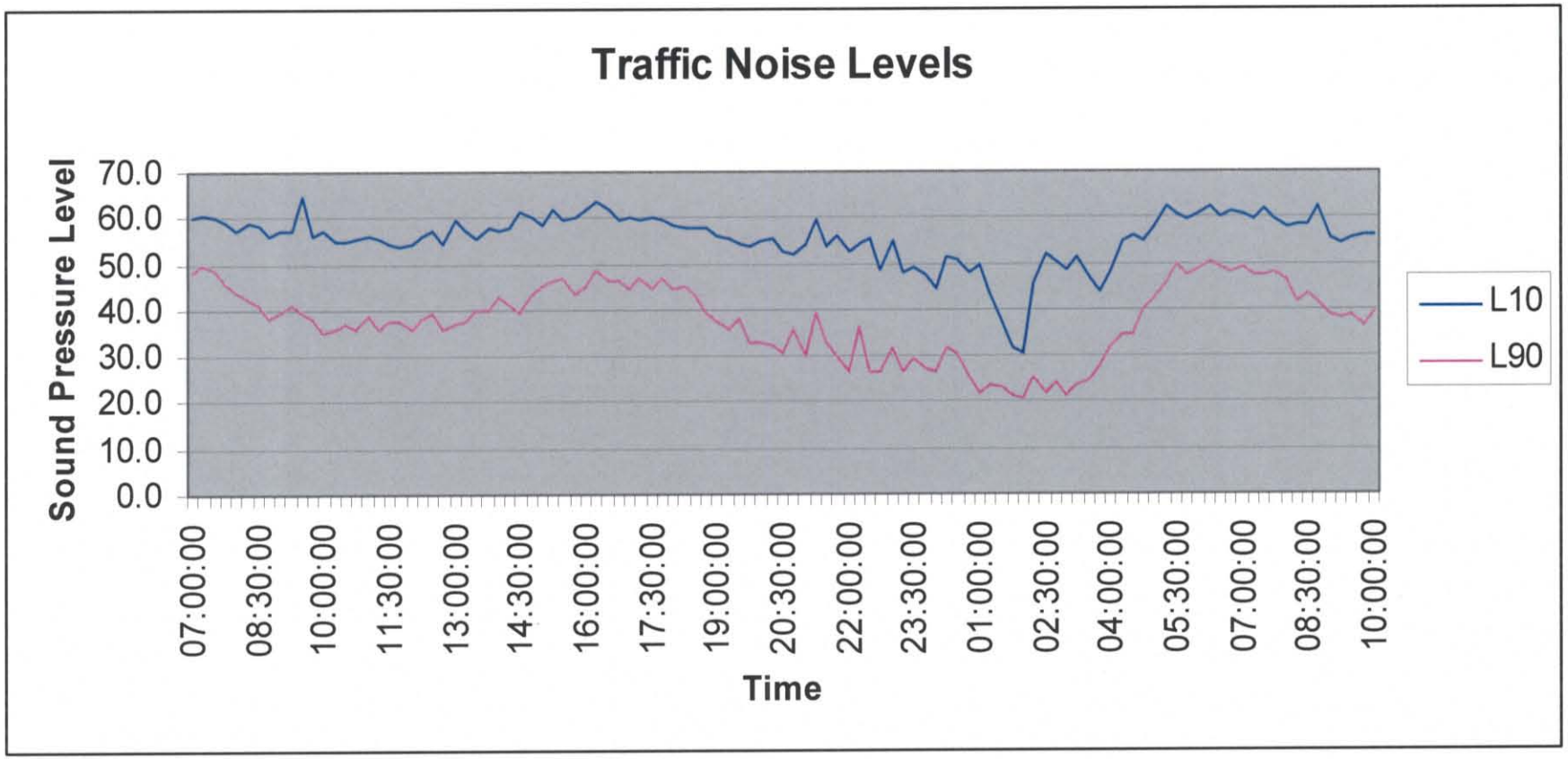
Referring to the two noise contour plots produced by the PEN 3D 2000 model it can be seen that no part of the 60 dB(A) $L_{10,18hr}$ noise contour at both ground and upper storey levels runs through any of the detached dwelling home sites, proposed new Lots 2 to 24 (inclusive), 26 to 38 (inclusive), 40 to 57 (inclusive) and 62 to 130 (inclusive). Can also be seen that no part of the 60 dB(A) $L_{10,18hr}$ noise contour at both ground and upper storey levels runs through Multiple Residential sites on the proposed new Lots 25, 39, 58 and 61. This means that no part of these lots will experience traffic noise in excess of the criteria level required by the Department of Main Roads *Road Traffic Noise Management: Code of Practice* even allowing for ten years traffic growth along South Deebing Creek Road and the South West Transport Corridor. Hence no measures are required to mitigate traffic noise levels for these lots.

However the same noise contour plots produced by the PEN 3D 2000 model indicate that the 60 dB(A) $L_{10,18hr}$ noise criteria will be exceeded at ground and upper storey levels on Lots 1 and 59. These two lots have been set aside for future multiple residential development and are located towards the South Deebing Creek Rd frontage of the site. Although traffic noise levels on these two lots exceed the Department of Main Roads *Road Traffic Noise Management: Code of Practice* given the proximity of these lots to South Deebing Creek Rd it most likely that the traffic noise experienced at these lots is produced by this road and not the South West Transport Corridor. In order to mitigate traffic noise in any future residences that are likely to be built on these Lots it is recommended that a covenant be registered over the two lots requiring any residential buildings constructed on them be designed in accordance with *AS 3671- Road Traffic Noise Intrusion-Building Siting and Construction* to contain sufficient sound proofing such that they would meet the recommended internal noise levels contained within *AS2107-Recommended design sound levels and reverberation times for building interiors* and that this covenant be registered on by behalf of Ipswich City Council and not the Department of Main Roads as the most likely source of traffic noise affecting these Lots is South Deebing Creek Road and not the South West Transport Corridor.

# APPENDIX

**Proposed Development Site Sketch No. 1**
**PLAN VIEW**




Traffic Noise Levels
Sound Pressure Level
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
07:00:00
08:30:00
10:00:00
11:30:00
13:00:00
14:30:00
16:00:00
17:30:00
19:00:00
20:30:00
22:00:00
23:30:00
01:00:00
02:30:00
04:00:00
05:30:00
07:00:00
08:30:00
10:00:00
Time
L10
L90

# POINT CALCULATIONS

Pen3D2000 V1.9.8

Project Code:Pen

Project Description: PEN noise model

File:C:\dB consulting\Noise Jobs\144 South Deebing Creek Rd, Deebing Hts\144 South Deebing Cr 2.PEN

File Description: logger 2009

Sunday 30 Aug, 2009 at 09:25:34

## CoRTN Calculations

All road segments included. Segmentation angle: 10degrees. Road elevations apply.

| Receptor | X Posn | Y Posn | Height | L10(18hour) |
|---|---|---|---|---|
| | (m) | (m) | (m) | (dB(A)) |
| logger | -61.6 | 316.2 | 1.5 | 58.1 |

1

## 07-166 DEEBING DEVELOPMENTS
## SUMMARY OF TRAFFIC FORECASTS

1. AADT on SWTC in 2031:

   - West of Deebing Creek I/C: 12,800vpd (EB) and 12,200vpd (WB) – 6.3% CVs
   - East of Deebing Creek I/C: 13,800vpd (EB) and 13,300vpd (WB) – 7.5% CVs
   - Source: SKM Model

2. AADT on South Deebing Creek Road in 2031 with SWTC in place:

   - South of SWTC: 15,500vpd (two-way – assume 50:50 split) – 3% CVs
   - Source: SKM Model

3. AADT on ramps at South Deebing Creek Road / SWTC I/C in 2031:

   - Eastbound on-ramp: 5,400vpd – 3% CVs
   - Off-ramp from east: 5,400vpd – 3% CVs
   - Westbound on-ramp: 4,300vpd – 3% CVs
   - Off-ramp from west: 4,300vpd – 3% CVs
   - Source: SKM Model

4. AADT on South Deebing Creek Road at 2031 without the SWTC in place:

   - South of SWTC: 6,800vpd (two-way – assume 50:50 split) – 3% CVs
   - Source: APC estimate based on full development of Deebing Heights and Kelly Consolidated estates (say 735 lots in total + traffic to/from a nine hole golf course and 10% "internal" trips)

Notes:

a) The SKM model uses the original BSTM CV module, not the later BSTM CV module based on growthed observed CV matrices.

b) The CV percentages from the SKM model are from the EMME/2 model and may not coincide with the percentages adopted for noise or pavement design assessment.

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