



Decibell Consulting *pty Ltd*

**Reconfiguring of a Lot
(2 into 26)
156 – 170 Pitt Rd,
Burpengary**

TRAFFIC NOISE IMPACT REPORT

Prepared for

156 Pitt Pty Ltd

6th July 2022

Decibell Report No. 2207008

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1.0 INTRODUCTION

This report is submitted in response to a request by Mecone Pty Ltd, on behalf of 156 Pitt Pty Ltd for an traffic noise impact assessment of the proposed reconfiguration of a Lot located at 156-170 Pitt Rd, Burpengary. This report seeks to address *Item 13 Acoustic* of the Information Request issued by the Moreton Bay Regional Council in relation to the development on the 25th May 2022.

On-site noise logging and attended noise measurement were conducted, and through modelling, predictions of noise impacts on the proposed development have been produced. Based upon these predicted levels, recommendations regarding acoustic treatments and management practices have been specified.

1.1 The Proposal

The proposal is to reconfigure 2 lots located at 156-170 Pitt Rd, Burpengary to yield 24 new residential Lots and a detention basin. The proposed Lots will 266 m² and 460 m² in area.

Presently located on the site are two dwellings and associated out buildings. These will be removed to allow the development of the site. A drainage easement will also be developed along the southern and eastern boundaries of the development.

The site fronts directly onto Pitt Road. This road is a sub-arterial road within the Moreton Bay Regional Council Road network. In this report potential traffic noise impacts on the development from this road will be considered.

For further details of the development layout refer to appendix for the site plans.

2.0 EQUIPMENT

2.1 Existing Ambient Noise Assessment

The following equipment was used to record existing ambient noise levels at the site:

- Bruel & Kjaer 4231 Calibrator;
- Rion NL 21 Environmental Noise Logger.

3.0 MEASUREMENT PROCEDURE

3.1 Traffic Noise Measurement

A noise logger was located on site and used to conduct measurements. The logger was positioned along the front boundary of the site adjacent to the Pitt Road. This location was chosen as it afforded a clear view of the Pitt Rd and would best quantify traffic noise levels at the site. As the logger was located clear of any building on site measurements recorded by the logger can be regarded as free field. The location of the logger is marked on aerial photograph below.



Figure 1: Logger Measurement Location

The logger was set to record noise statistics in 15 minute blocks continually over 48 hours in consecutive periods from Wednesday 29/06/22 to Friday 1/06/22. Traffic noise level measurements were conducted generally in accordance with Australian Standard AS1055 2018 “Acoustics – Description & Measurement of Environmental Noise”.

The operation of the sound level measuring equipment was field calibrated before and after the measurement session and was found to be within 0.1 dB of the reference signal. All instrumentation used in this assessment hold current calibration certificate from a certified NATA calibration laboratory.

Weather conditions during the survey were fine, with light winds and temperatures ranging from 11° C to 21° C over the measurement period.

4.0 NOISE CRITERIA

4.1 Road Traffic Noise

Pitt Road is classified as a sub-arterial road under the Moreton Bay Regional Council *Planning Scheme*. The Moreton Bay Regional Council *Planning Scheme Policy 6.16-Noise* traffic noise is required to be assessed where the development is located within:

- a) 50 meters of a current or future designed sub arterial;
- b) 100 meters of a current or future designed arterial road; or
- c) 150 meters of a highway or railway; or
- d) Extractive resource transport buffer;

The assessment of traffic noise is to be in accordance with *MP 4.4 – Building in a Transport Noise Corridor* from the Queensland Development Code. The assessment is to identify the noise category applicable to each lot in the proposed development for both lower and upper levels. Noise categories are defined in Schedule 3 of MP 4.4.

In the assessment method set out in *MP 4.4* the applicable noise category for a particular part of the building is determined from Table 1 of Schedule 3 of *MP 4.4 – Building in a Transport Noise Corridor* from the Queensland Development Code and relates to the measured or predicted noise level 1m from the façade of the proposed or existing building. This table has been reproduced below and details noise levels relating to the various *Noise Category Levels*:

Table 1 – Noise Category Levels

Noise Category	Level of Transport noise *($L_{A10,18hr}$) for State- controlled roads and designated local government roads
Category 4	≥ 73 dB(A)
Category 3	68 – 72 dB(A)
Category 2	63 – 67 dB(A)
Category 1	58 – 62 dB(A)
Category 0	≤ 57 dB(A)

* Measured at 1m from the façade of the proposed or existing building

Under the Code, once the relevant Noise Category has been determined for a particular building or level of a particular building a specific minimum Rw rating for each building component must be achieved from Schedule 1 of the code in order to meet the requirements of *Acceptable Solution A1*. Schedule 1 of the Code has been reproduced in the Appendix of this report.

In addition the assessment is to address the requirement for residential development to have private open space that meets the Environmental Criteria identified in Department of Transport and Main Roads *Policy for Development on land affected by Environmental Emissions from Transport and Transport Infrastructure Version 2*. The Criteria for assessment for private open space from the *Policy* is contained in Table 3. The portion of the table relation to road noise has been reproduced below:

Development type	Location within Development	Environmental Criteria
Accommodation Activities	Private Open Space	<p style="text-align: center;"> ≤ 57 dB(A) L10 (10hr) free field (measured L90 (18 hour) free field between 6 am and 12 midnight ≤ 45 dB(A)) </p> <p style="text-align: center;"> ≤ 60 dB(A) L10 (10hr) free field (measured L90 (18 hour) free field between 6 am and 12 midnight > 45 dB(A)) </p>

Table 3: External Noise Criteria for New Sensitive Development

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 over the two day period at the logger measurement location. The logger's location was away from any building that may have influenced measurements. Measurements therefore can be regarded as free field and as not including the +2.5 dB façade reflection. The $L_{10,18hr}$ noise level was measured as approximately 66 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)
$L_{A10,18hr}$	6:00 am to 12:00 pm	66
$L_{A90,18hr}$	6.00 am to 12.00 pm	46

Table 2: Measured road traffic noise levels at proposed site.

5.1.2 Existing and Future Traffic Flows

The traffic flows for Pitt Rd were obtained from counts conducted by the Department of Transport and Main Roads conducted at the intersection of Pitt Rd and Old Gympie Rd. Predicted traffic flows for the years 2032 are based on an annual growth rate of 3 % p.a.. Existing and predicted traffic volumes are presented below:

Existing Traffic Flows:

Pitt Rd: 7100 vehicles per 18 hour, 5 % HV

Predicted Traffic Flows Year 2031:

Pitt Rd: 9540 vehicles per 18 hour, 5 % HV

5.1.3 Modelled Noise Levels – Existing Situation

Road traffic noise predictions were conducted using PEN 3D 2000, a CoRTN based model produced by Ask Software Engineers, and deemed acceptable by the Department of Transport and Main Roads. To verify the road traffic noise prediction model, the $L_{A10,18hr}$ traffic noise levels were calculated and compared to the measured noise levels. The following assumptions were made in the verification of the noise model:

- The road surfaces were assumed to be dense graded asphalt;
- The source line of traffic noise on both road is 0.5m above the road surface;
- The traffic speeds along the Pitt Rd are 60 km/hr as signed;

A print out of the calculations performed by the model is included in the appendix to this report. The results are compared to the measured value in the table below.

Predicted $L_{A10,18hr}$	Measured $L_{A10,18hr}$
65.8	66.1

Table 3: A Comparison of Predicted and Measured Traffic Noise Levels at the Logger Location

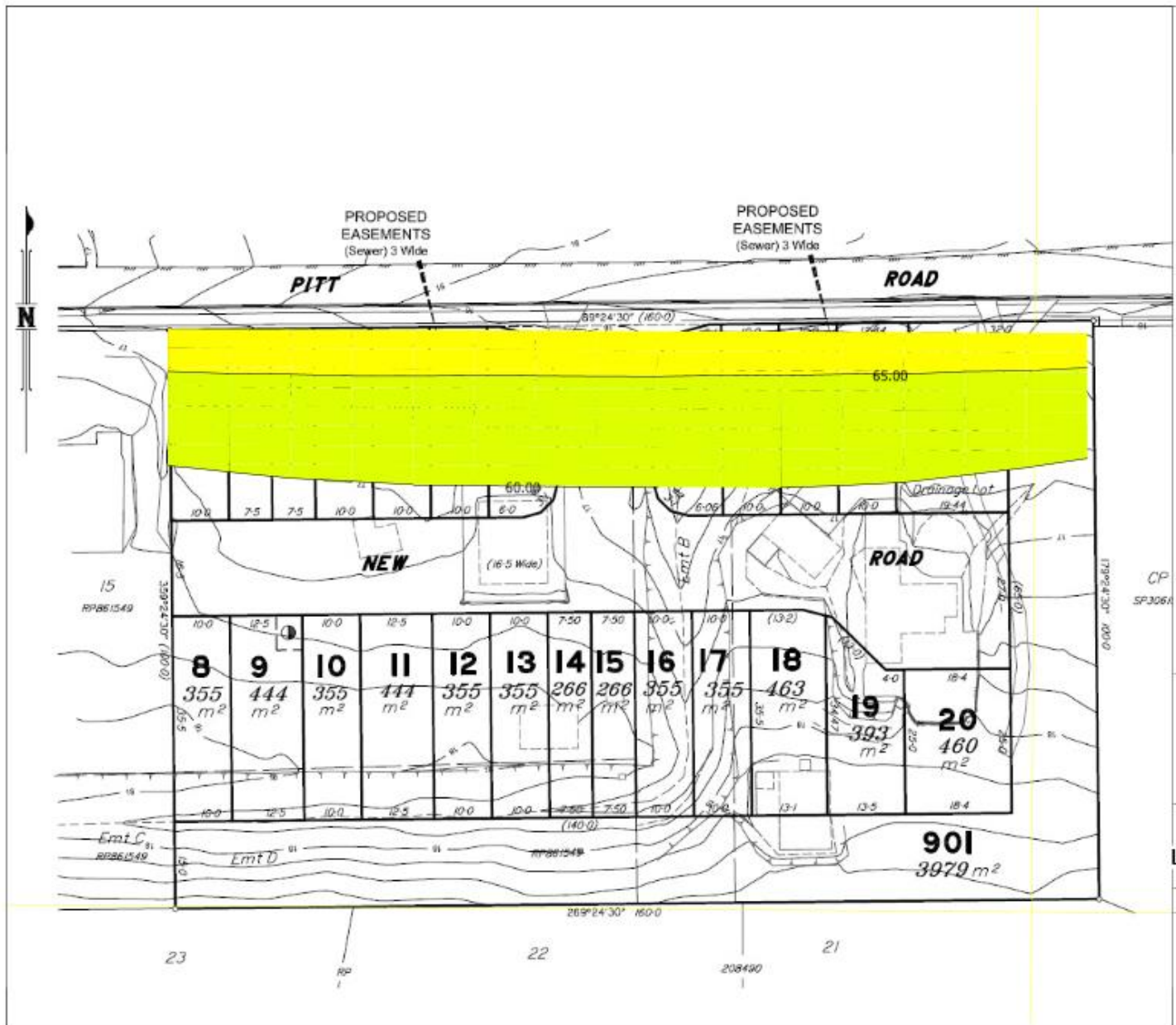
This is within the allowable +/-2 dB variation under the CoRTN methodology

5.1.4 Modelled Noise Levels – Year 2032

If the validity of the model is now accepted, the predicted increased traffic flows for the year 2032 can be input into the PEN 3D 2000 model to predict the ultimate traffic noise impacts. The predicted ultimate traffic noise level $L_{A10,18hr}$, in the year 2032 at the measurement location is 67.1 dB(A).

In order to best present the results of modelling the PEN 3D 2000 model will firstly be used to map the 60 dB(A) $L_{10,18hr}$ free field noise contour. This relates to the outdoor noise criteria identified in Department of Transport and Main Roads *Policy for Development on land affected by Environmental Emissions from Transport and Transport Infrastructure Version 2*. In addition to this, the noise contours relating to the MP 4.4 – *Building in a Transport Noise Corridor* from the Queensland Development Code were mapped and presented on the pages following the free field noise contours. Ground level receivers are assumed to be 1.8 m above ground level.

The noise contour maps produced by modelling are included in the next few pages of this report.



Contour Levels

- 75.0 to 80.0
- 70.0 to 75.0
- 65.0 to 70.0
- 60.0 to 65.0

Traffic Noise levels 2032
L10 18 hr Outdoor Free Field Levels

PEN3D © ASK Software Engineers

6.0 RECOMMENDED ACOUSTIC TREATMENTS

6.1 Traffic Noise

Results of traffic noise modelling are contained in Section 5.1 of this report. The traffic noise contour map details the of traffic levels noise at the site against the criteria for outdoor recreation space from Department of Transport and Main Roads *Policy for Development on land affected by Environmental Emissions from Transport and Transport Infrastructure Version 2*. Examining this mapping it can be seen that traffic noise levels over only the front portion of the site adjacent to Pitt Road will exceed the criteria level for outdoor recreation space from Department of Transport and Main Roads *Policy for Development on land affected by Environmental Emissions from Transport and Transport Infrastructure Version 2*. In order to mitigate traffic noise it is proposed to construct a 2.0 m high noise barrier along the front boundary of Lots 1 to 7 and Lots 21 to 24 and this barrier would be returned for a distance of 10 m at the ends. The location of the barriers is shown on the diagram below.

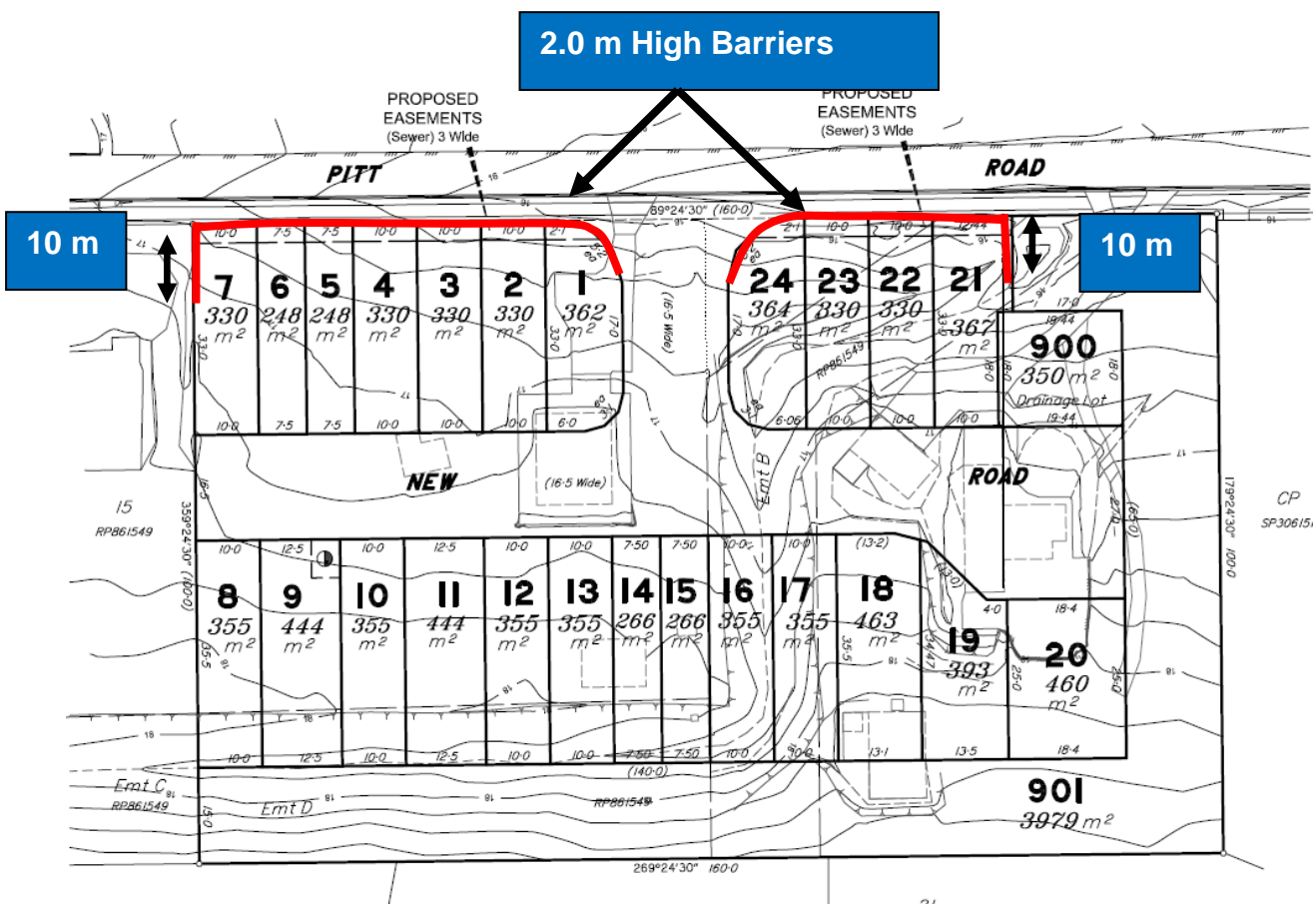


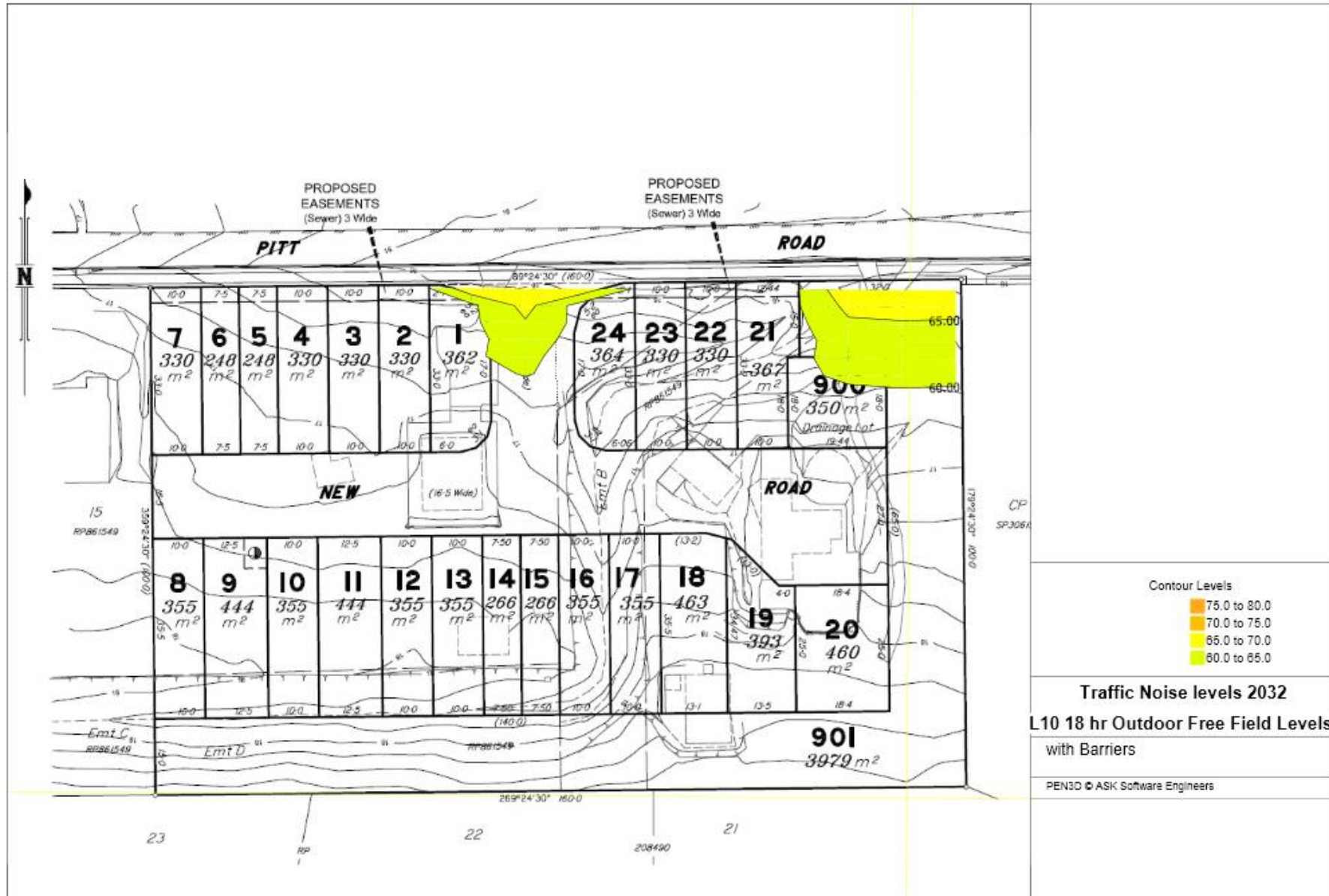
Figure 2: Location of Proposed acoustic fences

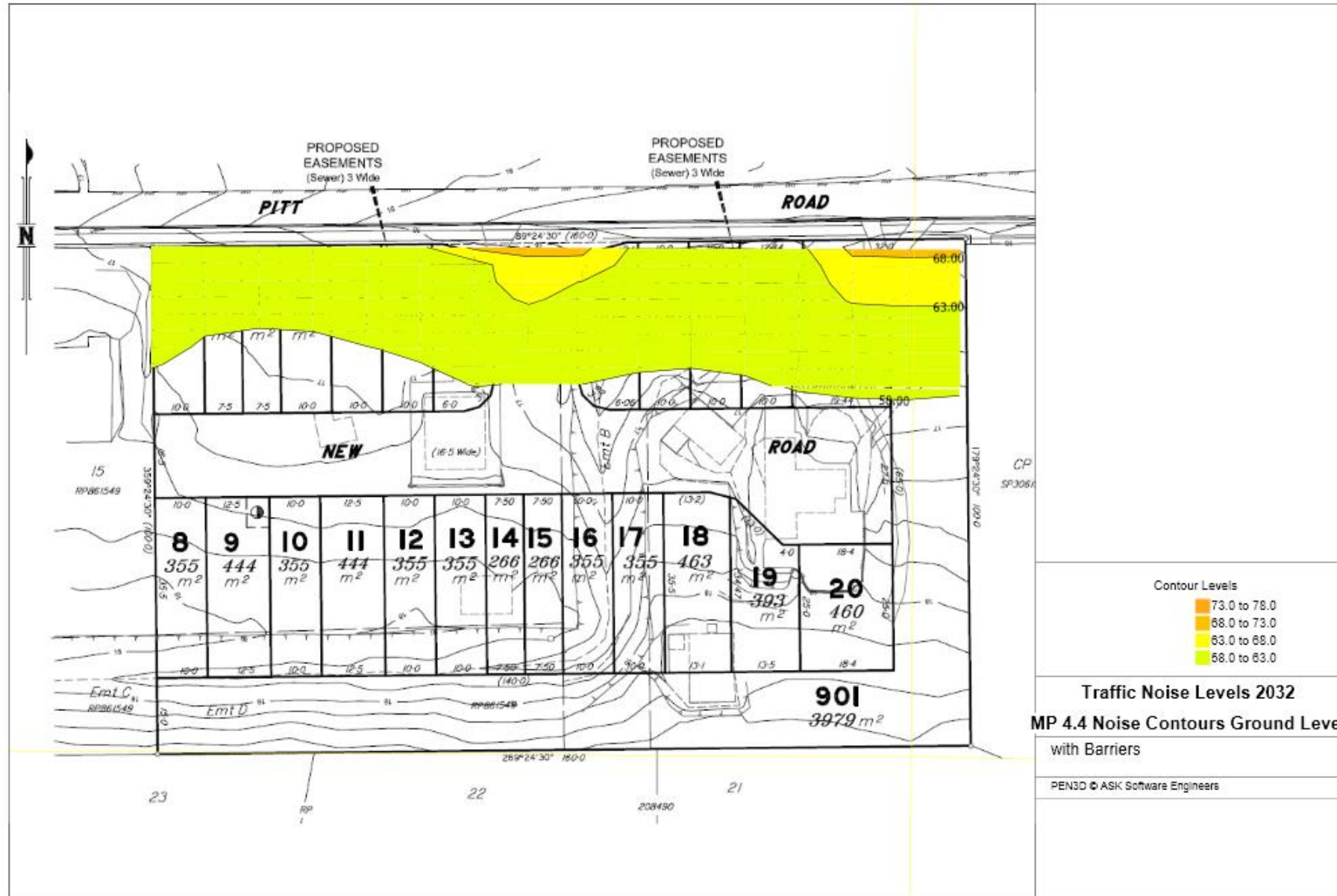
The proposed acoustic barrier would be gap free and constructed of an aesthetically pleasing weather resistant material which achieves a surface density of at least 12 kg/m².

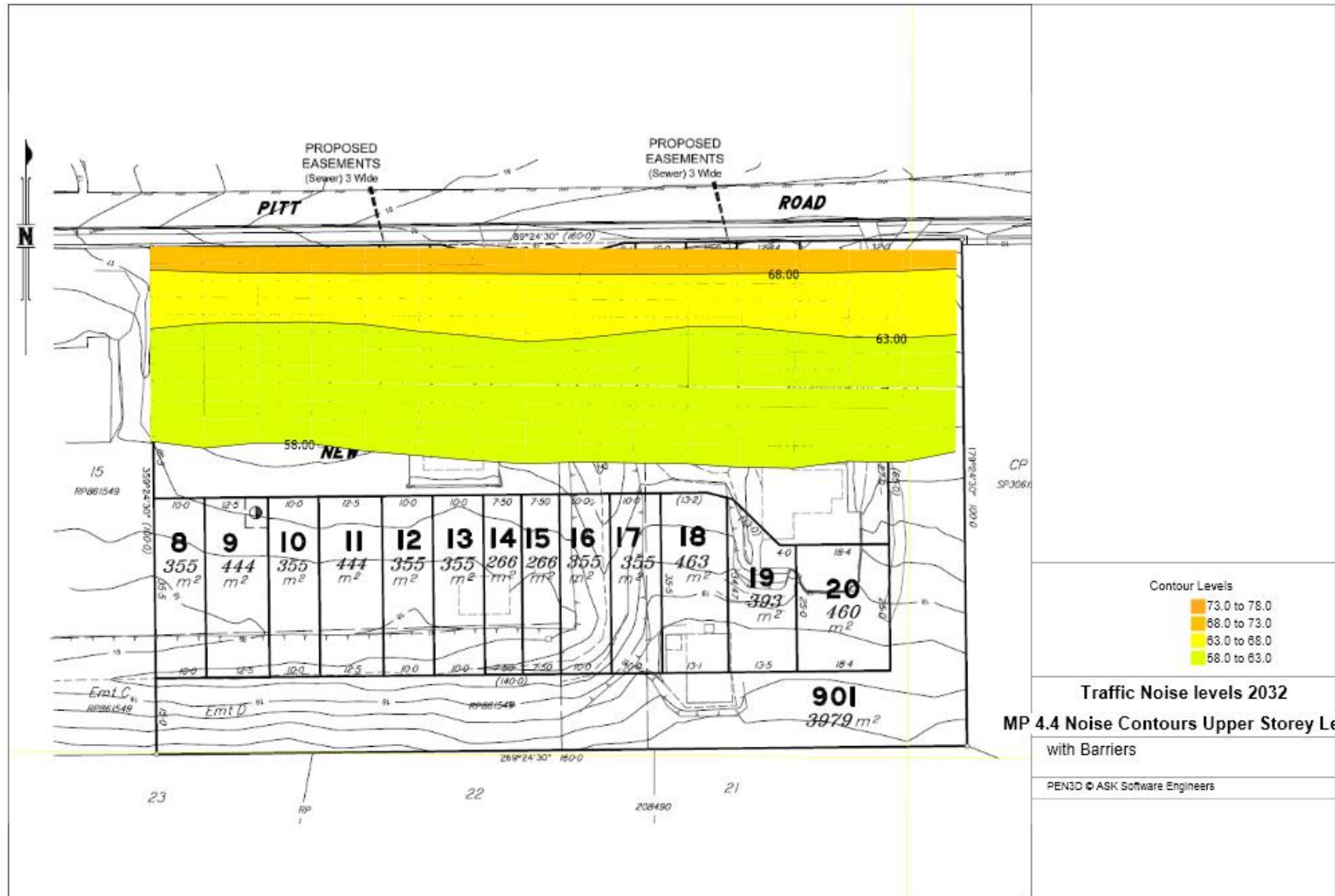
The three noise contour maps have been produced allowing for the mitigation provide by the proposed acoustic barrier and included over the next three pages. The first of these details the traffic noise in the outdoor areas of the development in relation to criteria for outdoor recreation space from Department of Transport and Main Roads *Policy for Development on land affected by Environmental Emissions from Transport and Transport Infrastructure Version 2*. This modelling shows that the proposed acoustic barriers will successfully mitigate traffic noise levels in the outdoor area to below the criteria levels.

The two noise contour maps following are related to *Noise Categories* from the *MP 4.4 – Building in a Transport Noise Corridor* from the Queensland Development Code. Contour mapping relating to the *Noise Categories* from the *MP 4.4* have been mapped at ground and upper storey level. This mapping shows that the Lots within the development where traffic noise level can be classified into a Category other than Category 0. To insure that the requirements of the *Queensland Development Code MP 4.4- Building in a Transport Noise Corridor* are carried through into the construction of future dwellings on these Lots it is recommended that a Property Note be recorded against this lot identifying it as affected by traffic noise. These Property Notes would state that:

- Lot 1 to 7 and 21 to 24 has been identified as being impacted by traffic noise this has resulted in the lot as being classified into Noise Level Category 1-2 of Mandatory Part 4.4 of the Queensland Development Code. Further Assessment by a suitably qualified acoustic expert to determine the required acoustic treatment to dwellings constructed on the lot should be undertaken in order to meet the requirements of Noise Level Category 1-2 of Mandatory Part 4.4 of the Queensland Development Code.







7.0 DISCUSSION & CONCLUSIONS

An assessment of traffic noise impacts on the site from Pitt Rd against the requirements of the Moreton Bay Regional Council *Planning Scheme Policy 6.16-Noise* was undertaken in this report.

Traffic noise levels in outdoor areas of the development were firstly assessed against the criteria levels for outdoor areas from Department of Transport and Main Roads *Policy for Development on land affected by Environmental Emissions from Transport and Transport Infrastructure Version 2*, as required by the Moreton Bay Regional Council *Planning Scheme Policy –Noise 6.1* This assessment determined that the traffic noise levels in outdoor areas over a portion of the site adjacent to Pitt Rd would exceed the criteria level. In order to mitigate traffic noise it is proposed to construct a 2.0 m high noise barrier along the front of Lots 1 to 7 and Lots 21 to 24 and this barrier would be returned for a distance of 10 m at the ends. The location of the barrier is shown on the diagram in Section 6.1 of this report.

Traffic noise impacts were also modelled against the *Noise Category* levels from *MP 4.4 – Building in a Transport Noise Corridor* from the Queensland Development Code. This modelling was presented in Section 6.1 of the report in the form of noise contour mapping. Based on these noise contour maps, the future construction of dwellings on each of the lots, at both ground and upper level were classified into one of the *Noise Category* levels from *MP 4.4 – Building in a Transport Noise Corridor* from the Queensland Development Code. This mapping shows that the Lots within the development where traffic noise level can be classified into a Category other than Category 0. To insure that the requirements of the *Queensland Development Code MP 4.4- Building in a Transport Noise Corridor* are carried through into the construction of future dwellings on these Lots it is recommended that a Property Note be recorded against this lot identifying it as affected by traffic noise. The recommended property note for these Lots is detailed in Section 6.1 of this report.

Subject to our calculations, and the inclusion of the proposed noise barrier and recommended property note relating to construction of future dwellings on the lots of the development, Decibell Consulting believe that development will comply with the requirements of the *MP 4.4 – Building in a Transport Noise Corridor* from the Queensland Development Code, the criteria levels for outdoor areas from Department of Transport and Main Roads *Policy for Development on land affected by Environmental Emissions from Transport and Transport Infrastructure Version 2* and the Moreton Bay Regional Council – *Planning Scheme Policy – Noise 6.1* and should be approved.

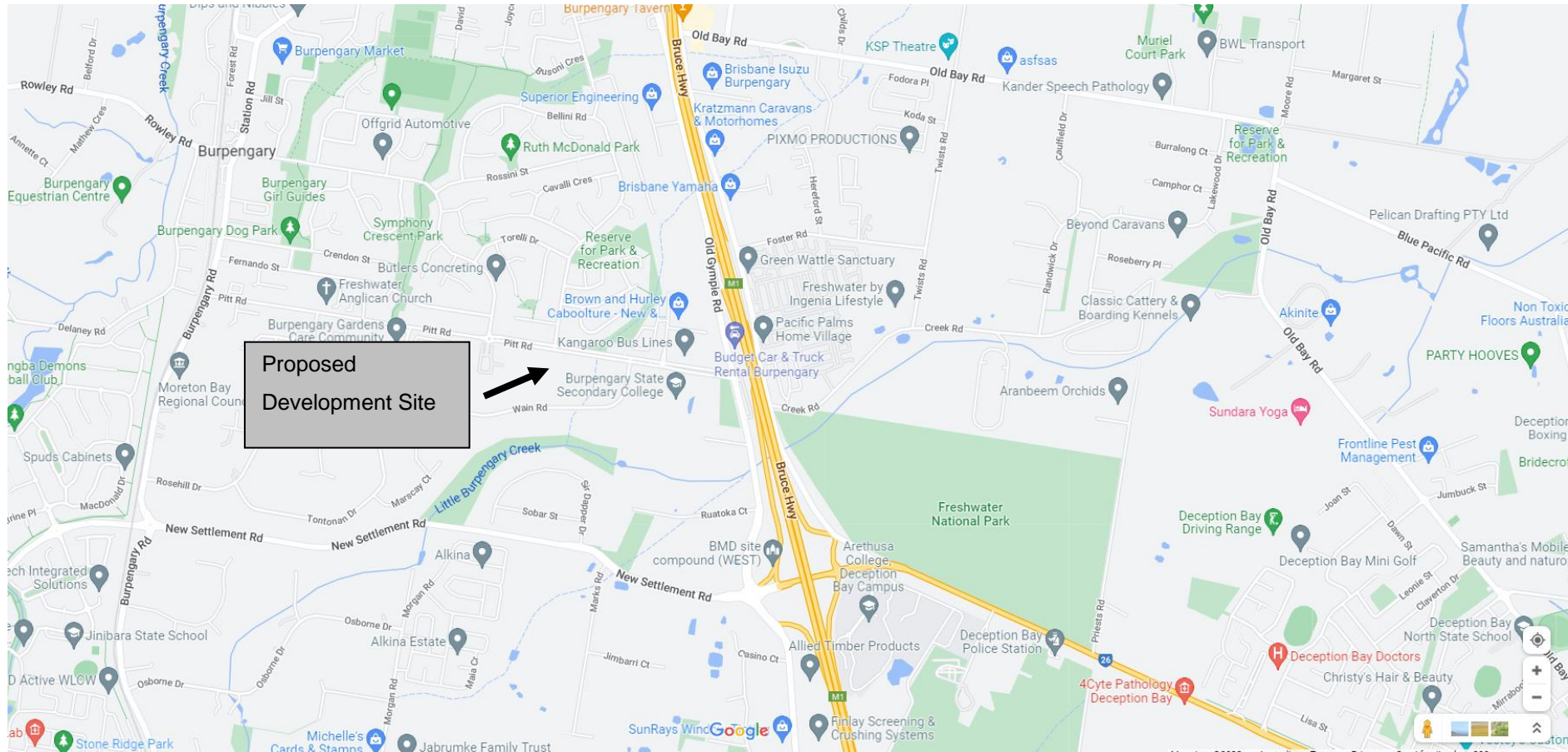
Report Compiled by:



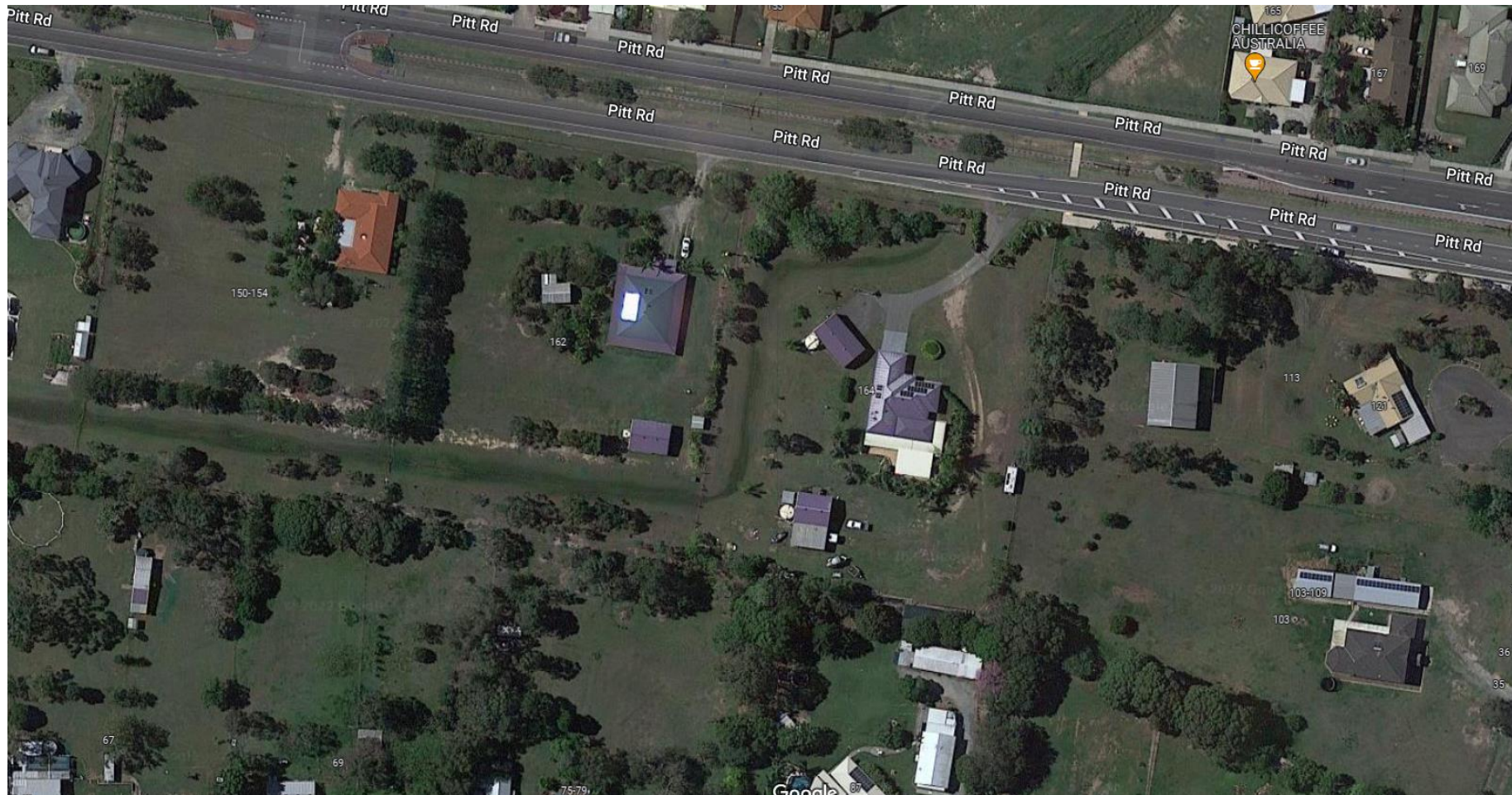
John Cristaudo BE RPEQ MAAS
Decibell Consulting

APPENDIX

Sketch No.1 -Location of Proposed Development Site



Sketch No.2 – Aerial Photograph of Site



Note: The title boundaries as shown hereon were not marked at the time of survey and have been determined by plan dimensions only, and not by field survey.

JOB No. 10403-4 DRAWN LF CHK HJC

CLIENT: FREEDOM ROAD DEV. DATE: 27/06/2022

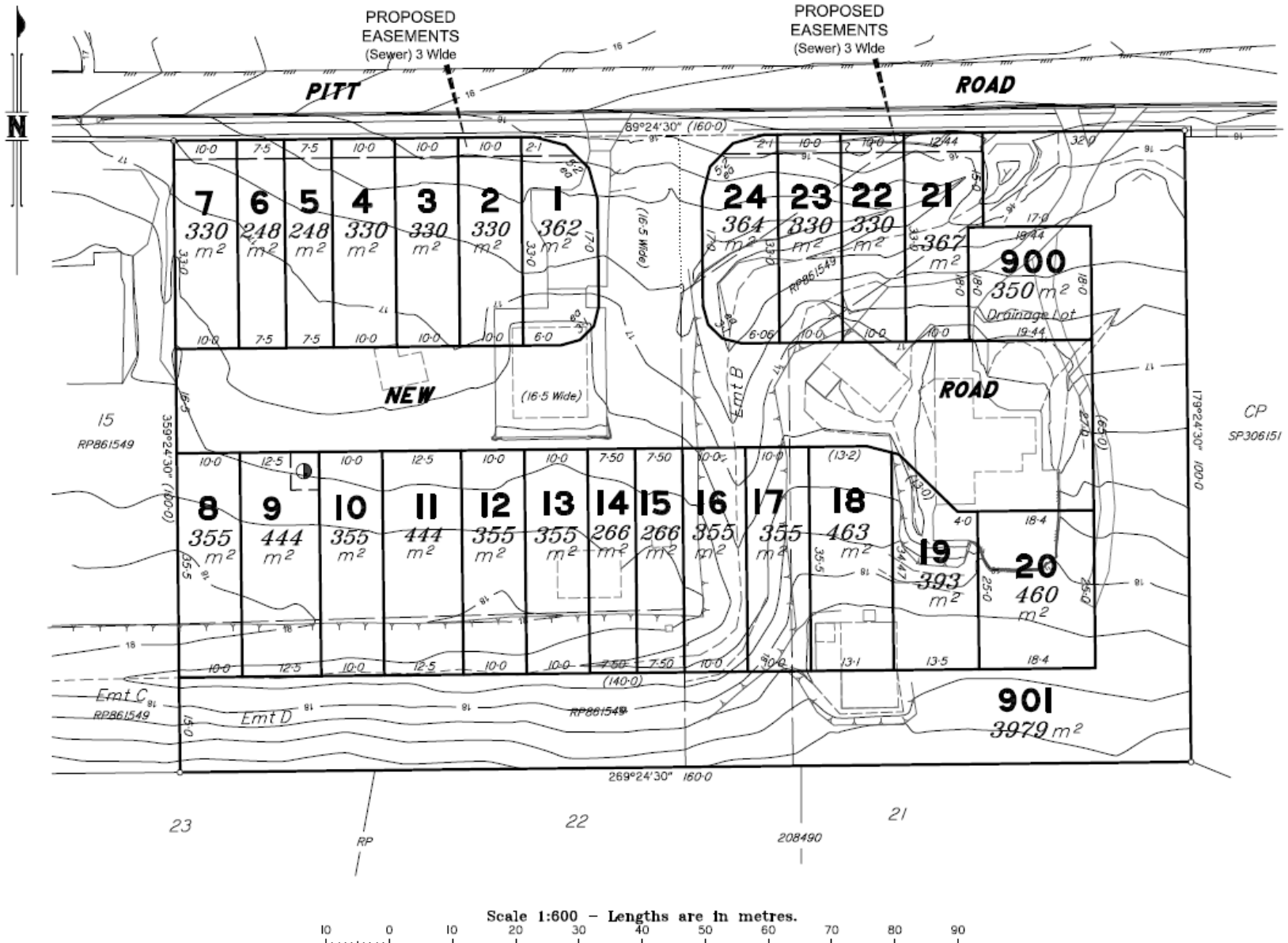
LOCAL AUTHORITY: MORETON BAY R. C.



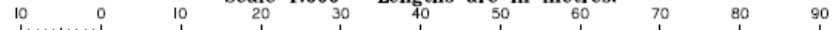
Brisbane & Sunshine Coast - Ph. 5422 0200
 South Burnett & Western Downs - Ph. 4162 2647
 admin@onesurveyors.com.au

PLAN OF PROPOSED
 SUBDIVISION

Lots 16 & 17 on RP861549
 156-170 Pitt Rd, BURRONGARY



Scale 1:600 - Lengths are in metres.



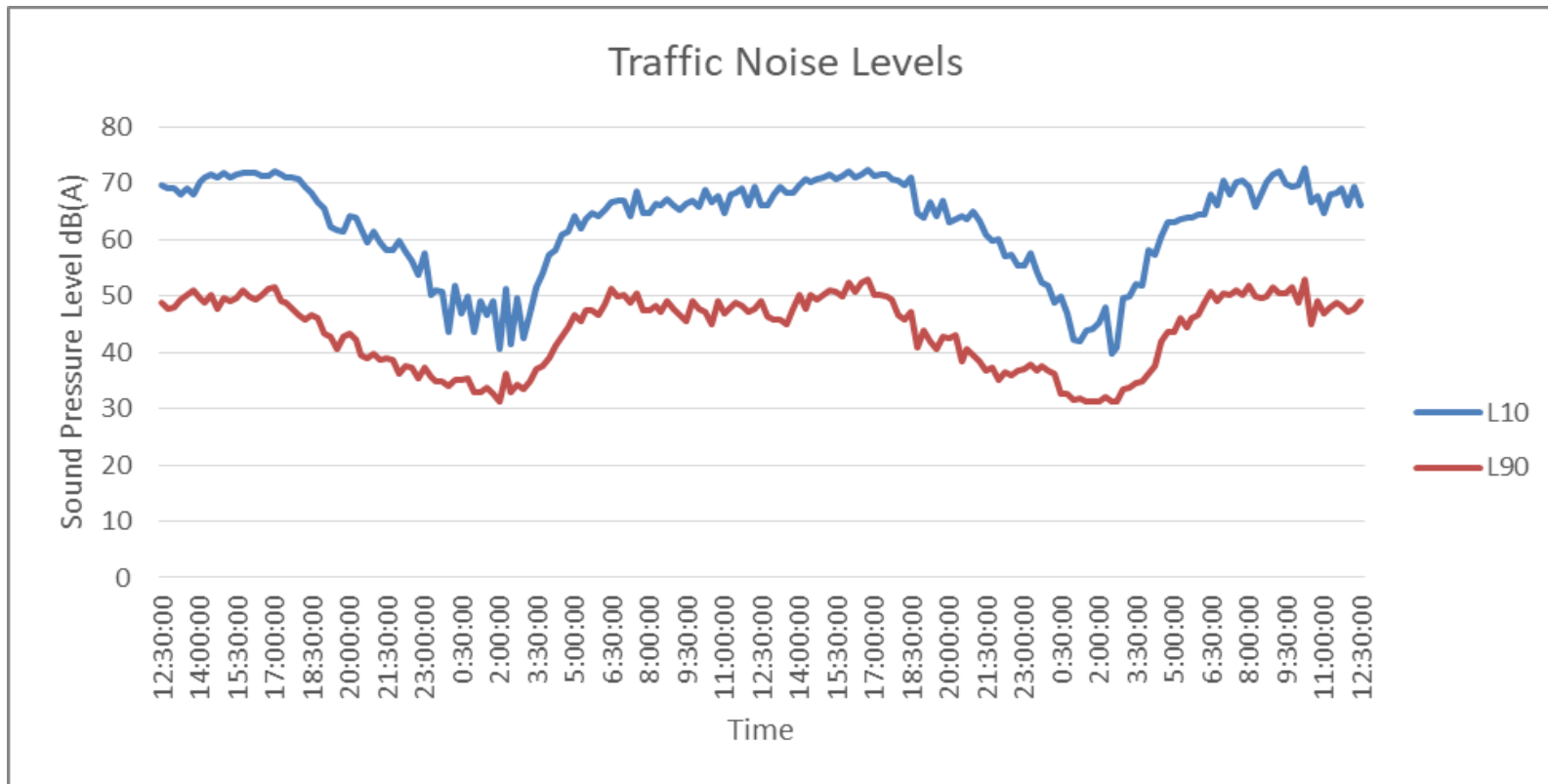
Sheet 1 of 1

Schedule 1

Noise category	Minimum transport noise reduction (dB (A)) required for habitable rooms	Component of building's external envelope	Minimum R_w required for each component
Category 4	40	Glazing	43
		External walls	52
		Roof	45
		Floors	51
		Entry doors	35
Category 3	35	Glazing	38 (where total area of glazing for a <i>habitable room</i> is greater than 1.8m ²)
			35 (where total area of glazing for a <i>habitable room</i> is less than or equal to 1.8m ²)
		External walls	47
		Roof	41
		Floors	45
		Entry doors	33

Noise category	Minimum transport noise reduction (dB (A)) required for habitable rooms	Component of building's external envelope	Minimum R_w required for each component
Category 2	30	Glazing	35 (where total area of glazing for a <i>habitable room</i> is greater than 1.8m ²)
			32 (where total area of glazing for a <i>habitable room</i> is less than or equal to 1.8m ²)
		External walls	41
		Roof	38
		Floors	45
		Entry doors	33
Category 1	25	Glazing	27 (where total area of glazing for a <i>habitable room</i> is greater than 1.8m ²)
			24 (where total area of glazing for a <i>habitable room</i> is less than or equal to 1.8m ²)
		External walls	35
		Roof	35
		Entry Doors	28
Category 0	No additional acoustic treatment required – standard building assessment provisions apply.		

TRAFFIC NOISE MODELLING



POINT CALCULATIONS

Pen3D2000 V1.9.8

Project Code:Pen

Project Description: PEN noise model

File:C:\dB consulting\Noise Jobs\156-170 Pitt st Burpengary\156 pitt Rd Burpengary.PEN

File Description: Logger 2022

Tuesday 05 Jul, 2022 at 14:35:32

CoRTN Calculations

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

Receptor	X Posn (m)	Y Posn (m)	Height (m)	L10(18hour) (dB(A))
logger	132.8	100.5	1.5	65.8

POINT CALCULATIONS

Pen3D2000 V1.9.8

Project Code:Pen

Project Description: PEN noise model

File:C:\dB consulting\Noise Jobs\156-170 Pitt st Burpengary\156 pitt Rd Burpengary.PEN

File Description: Logger 2032

Tuesday 05 Jul, 2022 at 14:56:29

CoRTN Calculations

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

Receptor	X Posn (m)	Y Posn (m)	Height (m)	L10(18hour) (dB(A))
logger	132.8	100.5	1.5	67.1

