



119 Marion Street, Bankstown

Noise Impact Assessment

Robdeon Dental Pty Ltd

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CONTENTS

1	INTRODUCTION	4
1.1	Background	4
1.2	Project site	4
1.3	Scope of this report	5
2	EXISTING ENVIRONMENT	6
2.1	Land uses	6
2.2	Ambient noise survey	8
3	NOISE CRITERIA	10
3.1	Operational noise criteria	10
3.1.1	Canterbury-Bankstown Development Control Plan (DCP) 2023	10
3.1.2	NSW EPA Noise Policy for Industry (NPfI) 2017	10
3.1.3	Intrusive noise impacts – residential receivers	10
3.1.4	Protecting noise amenity	11
3.1.5	Corrections for annoying noise characteristics	12
3.1.6	Low frequency noise correction	12
3.1.7	Project specific noise trigger levels	13
3.2	Operational road traffic noise	15
4	OPERATIONAL NOISE IMPACTS	16
4.1	Noise from Mechanical Services	16
4.2	Modelling methodology	16
4.3	Operational site noise emissions	16
4.3.1	Source noise levels	17
4.4	Predicted site operational noise impacts	19
4.5	Road traffic noise	20
5	CONCLUSION	21
APPENDIX A.	ACOUSTIC TERMINOLOGY	22
APPENDIX B.	AMBIENT NOISE MONITORING	23
APPENDIX C.	OPERATIONAL NOISE CONTOURS	24

Figures

Figure 1	Site location.	4
Figure 2	Sensitive receiver locations	7
Figure 3	Noise logger locations	8
Figure 4	Land zoning.	14
Figure 5	Noise source layout – Operational scenario.	18

Tables

Table 1	Sensitive receiver ID	6
Table 2	Measured ambient noise levels, dB(A).	9
Table 3	Intrusive noise criteria, dB(A)	11



Table 4	Amenity noise levels, dB(A).....	12
Table 5	Project specific noise trigger level, $L_{Aeq,15minute}$ dB(A).	15
Table 6	Road noise criteria.	15
Table 7	Single event source noise level, L_{Aeq} SWL.....	17
Table 8	Predicted operational noise impacts, $L_{Aeq,15minute}$, dB(A).	19

1 INTRODUCTION

1.1 Background

Pulse White Noise Acoustics Pty Ltd (Pulse White Noise Acoustics) has been engaged to undertake an acoustic assessment for the proposed general dental practice to be located at 119 Marion Street, Bankstown NSW 2200.

The land of the proposed general practice is currently an existing, single storey residential house, with a separate shed / building located within the rear of the property.

This assessment includes an acoustic investigation of the potential for noise impacts from the operation of the general dental practice. This includes an assessment of noise emissions relating from the proposed carparking spaces located within the development site and noise resulting from mechanical services / plant associated with the development.

1.2 Project site

The project site is located at 119 Marion Street, Bankstown NSW 2200, approximately 950 m to the west of the Bankstown train station.

Figure 1 Site location.





It is anticipated that the proposed operational hours of the general dental practice will be limited to the daytime period (7:00 am – 6:00 pm) only.

1.3 Scope of this report

Pulse White Noise Acoustics (PWNA) has been engaged to undertake a Noise Impact Assessment (NIA) for the development. This NIA is required to support the Development Application and address potential noise impacts which may be generated by the proposed development.

This report:

- Identifies the existing noise sensitive receivers,
- Presents details about existing noise environment,
- Identifies the applicable NSW noise and vibration policies and applicable operational design criteria,
- Assesses the sites operational noise impacts in accordance with the applicable NSW policies; and
- Provides noise management measures to provide ongoing compliance with the sites noise criteria.

This report makes reference to the architectural plans by Medibuilt dated 07/05/2025, reference: J – Issue for DA.

2 EXISTING ENVIRONMENT

2.1 Land uses

The project site is located at 119 Marion Street, Bankstown. Noise sensitive receivers are located along the eastern, northern and western boundaries of the project site.

The existing ambient noise environment for the nearest noise sensitive receivers is controlled by noise associated with the surrounding road networks (specifically Marion Street) and general residential suburban noises.

The receivers in this report are considered representative of the closest off-site receivers for the proposed redevelopment. The noise sensitive receivers which have been considered in this assessment are listed in Table 1 and illustrated in Figure 2 below.

Table 1 Sensitive receiver ID.

Receptor ID	Address	Receiver Height (m)	Type of Receiver
R01 - A	121 MARION STREET BANKSTOWN	1.5 m, 4.5 m	Residential (R2)
R01 – B	121 MARION STREET BANKSTOWN	1.5 m, 4.5 m	Residential (R2)
R02 – A	115 MARION STREET BANKSTOWN	1.5 m	Residential (R2)
R02 – B	115 MARION STREET BANKSTOWN	1.5 m	Residential (R2)
R03	7 GAIL PLACE BANKSTOWN	1.5 m	Residential (R2)

Figure 2 Sensitive receiver locations



2.2 Ambient noise survey

Background noise logging was undertaken at one location between 20 February and 27 February 2025. The noise logger location, illustrated below in Figure 3 was selected to measure the existing noise environment representative of the potentially most affected sensitive receivers.

Figure 3 Noise logger locations.



The Rating Background Noise Level (RBL) is the background noise level used for assessment purposes at the nearest potentially affected receiver. It is the 90th percentile of the daily background noise levels during each assessment period, being daytime, evening and night-time. The L_{Aeq} is the ambient noise level (logarithmically averaged) over the period.

The standard measurement periods used in NSW for site noise impacts are:

- Daytime – 7 am to 6 pm
- Evening – 6 pm to 10 pm
- Night-time – 10 pm to 7 am

Presented in Table 2 is a summary of the ambient and RBL noise levels measured over the entire measurement period. Noise logging charts are presented in Appendix B. These noise levels are used throughout the assessment to determine the existing noise environment and establish appropriate site-specific noise criteria.



Table 2 Measured ambient noise levels, dB(A).

ID	Address	Rating background level			Ambient noise level, $L_{Aeq,period}$		
		Daytime	Evening	Night	Daytime	Evening	Night
NL01	119 Marion Street, Bankstown See Figure 3.	45	45	39	54	55	49



3 NOISE CRITERIA

3.1 Operational noise criteria

3.1.1 Canterbury-Bankstown Development Control Plan (DCP) 2023

Following a review of the current Canterbury-Bankstown Development Control Plan (2023), we note that the document does not contain any applicable numerical acoustic criteria for the assessment of noise emissions from mechanical plant / carparking activities for developments of this kind. As such, in the absence of any other applicable requirements, the objectives listed in the NSW EPA 'Noise Policy for Industry' (NPfI) 2017 will be adopted.

3.1.2 NSW EPA Noise Policy for Industry (NPfI) 2017

Responsibility for the control of noise emissions in New South Wales is vested in Local Government and the NSW Environment Protection Authority (EPA).

The EPAs NSW Noise Policy for Industry (NPfI) provides guidance on appropriate noise levels for external noise emissions from fixed facilities on surrounding sensitive receivers. The NPfI criteria for industrial noise sources have two components:

- Controlling the intrusive noise impacts for residents and other sensitive receivers in the short term; and
- Maintaining noise level amenity of defined land uses for residents and sensitive receivers in other land uses.

The intrusiveness noise level protects against significant changes in noise, while the amenity noise level seeks to protect against cumulative noise impacts from industry. Together, these levels are used to assess the potential impact of noise and assess reasonable and feasible noise mitigation measures. Project noise trigger levels are developed through this process. They are not used directly as regulatory limits.

The NPfI requires a project to take consideration of other industrial noise sources in setting amenity noise objectives. In cases of a new development where there are no existing industrial sources, the NPfI accepts a default of the amenity noise level minus 5dB to take account of future industrial sources.

For this project, the default amenity noise level minus 5 dB adjustment will be used to account for cumulative noise sources.

3.1.3 Intrusive noise impacts – residential receivers

The intrusiveness noise level protects against significant changes in noise levels and is applicable to residential receivers only. The criterion is defined by the formula below:

$$L_{Aeq,15min} = \text{rating background noise level} + 5 \text{ dB}$$

The RBL is the average background noise level over a measurement period of at least one week. Using the RBL results in the intrusiveness criterion being met for 90% of the time. Adjustments are to be applied to the level of noise produced by the source that is received at the assessment point where the noise source contains annoying characteristics such as tonality or impulsiveness.

To determine the intrusiveness period shoulder period, a similar approach has been taken as the other time periods. The shoulder periods RBL is determined from the 90th percentile of the L_{A90} noise levels over the measurement period.

Presented below in Table 3 is a summary of the measured RBL and corresponding intrusiveness level for each time period.

Table 3 Intrusive noise criteria, dB(A).

Location	Rating background level			Intrusive noise level, $L_{Aeq,15min}$		
	Daytime	Evening	Night-time	Daytime	Evening	Night-time
NL01	45	45	39	50	50	44

3.1.4 Protecting noise amenity

The amenity noise level seeks to protect against cumulative noise impacts from industry. The amenity trigger level is primarily defined based on the zoning of the sensitive receiver

The NPfI uses project noise trigger levels measured over a 15-minute time period, assessed as an $L_{Aeq,15min}$. To account for converting $L_{Aeq,period}$ to $L_{Aeq,15min}$, the NPfI accepts a default conversion factor of $L_{Aeq,15min} = L_{Aeq,period} + 3$ dB.

To ensure industrial noise levels do not gradually increase with new developments, a minus 5 dB correction is applied to the amenity noise level. The amenity noise levels have been presented in Table 4.

Table 4 **Amenity noise levels, dB(A).**

Receiver	Noise amenity area	Time of day	Recommended amenity noise level
Residential	Rural	Day	50
		Evening	45
		Night	40
	Suburban	Day	55
		Evening	45
		Night	40
	Urban	Day	60
		Evening	50
		Night	45
Hotels, motels, caretakers' quarters, holiday accommodation, permanent resident caravan parks	5 dB(A) above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day		
School classroom	All	Noisiest 1-hour period	35 internal
Hospital ward	All	Noisiest 1-hour period	35 internal 50 external
Place of worship	All	When in use	40 internal
Passive recreation	All	When in use	50
Active recreation	All	When in use	55
Commercial	All	When in use	65
Industrial	All	When in use	70
Industrial interface	Add 5 dB(A) to recommended noise amenity area		

3.1.5 Corrections for annoying noise characteristics

Table C1 of the NPfI provides corrections for tonality, intermittency, irregularity or dominant low-frequency content. These corrections are to be added to the measured or predicted noise levels at the receiver before comparison with the project noise trigger levels. NPfI also provides adjustments for duration that can increase the project noise criterion for unusual or one-off high-noise level events.

3.1.6 Low frequency noise correction

A difference of 15 dB or more between the C- and A-weighted noise measurements, identifies the potential for an unbalanced spectrum and an increased likelihood of low frequency noise annoyance.

The difference between C- and A-weighted noise levels is typically used as a screening tool to determine if further investigation is required. Where further investigation confirms significant low frequency content, a low frequency noise correction is applied to the predicted or measured noise levels.



The NPfI identifies that the corrections should “reflect external assessment locations”, or sensitive receiver locations so the existing noise environment should be considered.

3.1.7 Project specific noise trigger levels

Presented below in Figure 4 is an illustration of the land zoning in the area and the nearest noise sensitive receivers.

Figure 4 Land zoning.



All of the residential receivers are located in an R2 – low density residential zoned area. The NPfI considers these areas to be the suburban amenity area.

The NPfI characterises the suburban residential area noise environment as an area with an acoustical environment that is:

an area that has local traffic with characteristically intermittent traffic flows or with some limited commerce or industry. This area often has the following characteristic: evening ambient noise levels defined by the natural environment and human activity.

Presented below in Table 5 is a summary of the project specific noise trigger levels.

Table 5 Project specific noise trigger level, $L_{Aeq,15\text{minute}}$ dB(A).

Receiver	Time period	RBL	Intrusiveness ¹	Amenity ²	Overall ³
Residential	Daytime	45	50	53	50
	Evening	45	50	43	43
	Night-time	39	44	38	38

Note 1 The amenity noise level has been reduced by 5 dB(A) to account for other industrial noise sources and increased by 3 dB(A) to convert from $L_{Aeq,period}$ to $L_{Aeq,15\text{minute}}$

Note 2 The overall PNTL is the more stringent of the intrusiveness and amenity criteria

3.2 Operational road traffic noise

Commercial developments have the potential to generate additional road traffic and associated noise impacts from the vehicles accessing the site. The EPAs Road Noise Policy provides guidance on appropriate noise criteria which should be considered.

Presented below are the applicable noise criteria for road traffic on sub-arterial roads. Access routes for vehicles accessing the site at 119 Marion Street, Bankstown, is limited to Sub-arterial roads only.

Table 6 Road noise criteria.

Road category	Type of project / land use	Assessment criteria, dB(A)	
		Daytime 7am-10pm	Night-time 10pm-7am
Freeway /arterial / sub-arterial	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq,15\text{hour}}$ 60 (external)	$L_{Aeq,9\text{hour}}$ 55 (external)

Where the predicted noise levels with the project indicate likelihood to exceed the noise criteria presented in Table 6, it is considered not reasonable and feasible to provide noise mitigation measures if the project does not increase noise by greater than 2.0 dB. A change of 2 dB to 3 dB in road traffic noise is often considered to be indiscernible.

4 OPERATIONAL NOISE IMPACTS

4.1 Noise from Mechanical Services

As part of the proposal, only the selections of the external condenser unit have been made. The external mechanical condenser unit has been considered within the operational scenario of the proposed development.

Mechanical Services Equipment – Detailed selections of the proposed mechanical plant and equipment to be used on the site are not available at this time. All future new plant and equipment associated with the expansion are to be acoustically treated to ensure the noise emission levels at all surrounding receivers comply with noise emission criteria detailed within this report. Experience with similar projects indicated that it is both possible and practical to treat all mechanical equipment such that the relevant noise levels are achieved. Examples of the possible acoustic treatments to mechanical equipment includes the following:

- Supply and Exhaust Fans – location of fans within the building and treated using internally lined ductwork or acoustic silencers.
- General supply and exhaust fans – general exhaust and supply fans such as toilet, kitchen, lobby and other small mechanical fans can be acoustically treated using acoustic flex ducting or internal lined ducting.
- Air conditioning equipment – Condenser equipment will be required on the site to service the required air conditioning of the future spaces. This will include the requirement for external condenser equipment which could be located externally to the building on the rooftop carpark, next to the existing mechanical plant systems.
- Once selections of the required condenser units are completed acoustic treatment including screening, or the location of the equipment can be undertaken to ensure the relevant noise level criteria is achieved.

Details of the required mechanical services equipment and acoustic treatments to ensure the relevant noise level criteria is achieved will be provided as part of the CC submission of the project.

Experience with similar projects indicates that the acoustic treatment of all services items proposed for the site is both possible and practical such that the relevant noise level criteria at all surrounding receivers is achieved.

4.2 Modelling methodology

Noise generated by the site has been modelled using SoundPLAN v9.1, using the ISO9613 noise modelling algorithm. This algorithm was selected to calculate the worst-case downwind noise propagation, calculating the reasonable worst case noise impacts.

4.3 Operational site noise emissions

The proposed facility includes five (5) on grade carparking spaces for staff, visitors, and accessibility needs visitors.

Typical noise associated with on grade carparking activities have been considered, including car door slamming and engine startups. Traffic noise due to the typical operations of the general dental practice have also been considered.

Carpark activities noise emission over a 15-minute period from the site is assessed against the established NPfI project trigger noise levels at the nearby noise sensitive receivers.

The external condenser unit has also been considered within the assessment to be continuously operational.

Traffic volume generation has been presented in the PDC Consultants Pty Ltd traffic report: Traffic Impact Assessment 119 Marion Street, Bankstown, dated 6 March 2025 (ref: 25.028r01v01).



This report provides the following traffic volumes predictions:

- AM peak hour site traffic generation – 4 vehicle trips per hour (2 in / 2 out);
- PM peak hour site traffic generation – 4 vehicle trips per hour (2 in / 2 out).

This equates to a conservative, worst-case scenario of 4 vehicle trips per 15-minute period.

The following noise sources have been considered within the assessment:

- 4 x light vehicle movements (manoeuvring through the carpark at a maximum speed of 10 km/h), sound power level of 81 dB(A).
- 8 x light vehicle door closures, sound power level of 92 dB(A), a time correction has been applied to this source of 1 second per closure.
- 4 x light vehicle engine startups, sound power level of 94 dB(A), a time correction has been applied to this source of 1 second per startup.

The location of these noise sources is illustrated in Figure 5 below for the operational noise scenario.

4.3.1 Source noise levels

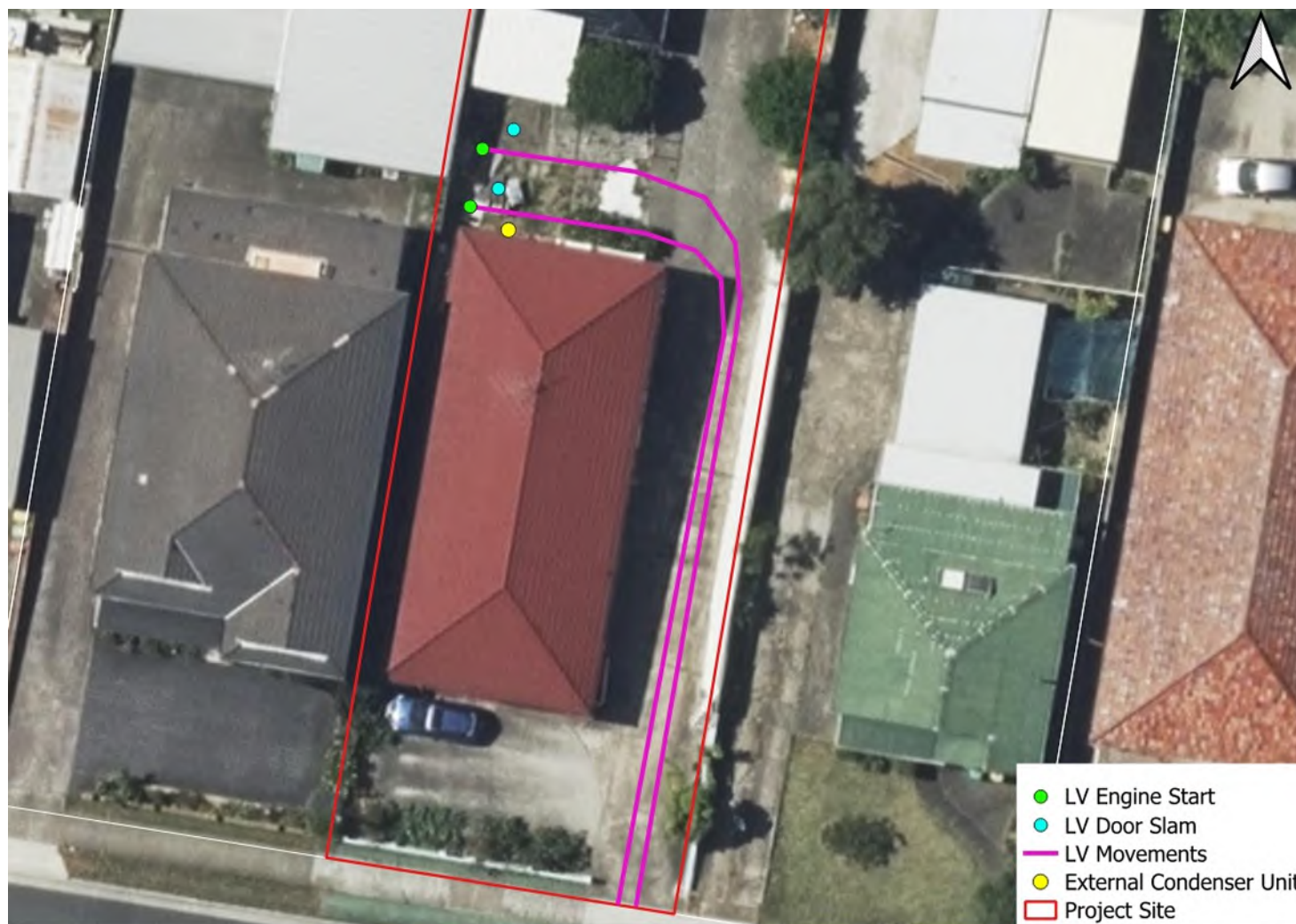
Presented in Table 7 below are the sound power levels (SWL) used for this assessment. The SWL represents a single movement and corrected for the number of vehicle movements / events within a 15-minute period. All vehicles have been assessed at 10 km/h.

The source noise levels have been based on measured noise levels of light vehicles, operating on similar sites and correlated to international prediction models to confirm suitability across a range of vehicle types. Sound power levels for the proposed mechanical equipment have been obtained from the manufacturers data sheet.

Table 7 Single event source noise level, L_{Aeq} SWL.

Source	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	Overall dB(A)
Car movements x1 (excluding time correction)	63	61	62	76	79	72	61	51	81
Car engine start 1x (excluding time correction)	87	87	87	87	87	87	87	87	94
Car door slam 1x (excluding time correction)	85	85	85	85	85	85	85	85	92
External condenser unit (Daikin 20 kW FDYQN200 or equivalent)	80	78	74	72	69	64	59	53	74

Figure 5 Noise source layout – Operational scenario.





4.4 Predicted site operational noise impacts

Presented below in Table 8 is a summary of the predicted noise levels for the worst-case operational scenario during the daytime period (7:00 am – 6:00 pm). Noise contours of this scenario is presented in Appendix C.

Table 8 Predicted operational noise impacts, $L_{Aeq,15min}$, dB(A).

Receiver	PSNTL – Daytime 7:00 am – 6:00 pm	Predicted noise levels, dB(A) $L_{Aeq, 15min}$	Exceedance
R01 – A	50	36	-
R01 – B	50	51	1 ¹
R02 – A	50	42	-
R02 – B	50	43	-
R03	50	36	-

Note 1 Where the calculated noise levels are within +/- 2 dB of the specified level given above, the PSNTL will be considered achieved. The reason for this is because a 1-2 dB difference is difficult to perceive subjectively.

Based on the above results for the typical operational scenario, compliance with the nearest noise sensitive residential receivers can be achieved. A non-compliance of 1 dB has been identified for one receiver during the peak daytime operations (R1 - B). Largely resulting from the external condenser unit.

Since the predicted level exceeds the PSNTL level by a minor 1 dB, it is not considered reasonable or feasible to provide additional noise mitigation measures for an exceedance of this nature.



4.5 Road traffic noise

Based on the proposed car parking included on the site, an assessment of the potential for noise impacts resulting from the additional vehicle traffic on the local roads has been undertaken.

In order to generate an increase of 2 dB on local road traffic noise, existing traffic volumes would need to increase by approximately 60% as a result of the proposed development's operations. This level of traffic volume increase is considered to be unlikely although it is noted that the existing traffic flows on the local roads is unknown. The probable increase in traffic noise levels due to the development's traffic generation on local roadways resulting from use of the site will be less than 2 dB and will be acoustically acceptable.



5 CONCLUSION

Pulse White Noise Acoustics Pty Ltd (Pulse White Noise Acoustics) has been engaged to undertake an acoustic assessment for the proposed general dental practice to be located at 119 Marion Street, Bankstown.

The land of the proposed general practice is currently an existing, single storey residential house with a separate shed / building located within the rear of the property.

The existing ambient noise environment for the nearest noise sensitive receivers is controlled by noise associated with the surrounding road networks (specifically Marion Street) and general residential suburban noises.

Background noise logging was undertaken at one location between 20 February and 27 February 2025. The noise logger location was selected to measure the existing noise environment representative of the potentially most affected sensitive receivers.

Operational noise emission criteria have been derived from the background noise logging in accordance with the EPAs Noise Policy for Industry and background noise logging undertaken for this project.

Details of the required mechanical services equipment and acoustic treatments to ensure the relevant noise level criteria is achieved will be provided as part of the CC submission of the project.

Experience with similar projects indicates that the acoustic treatment of all services items proposed for the site is both possible and practical such that the relevant noise level criteria at all surrounding receivers is achieved.

An operational noise model has been developed using SoundPLAN v9.1. The noise model assessed the dominant noise sources generated from the operation of the site. The predicted noise levels identified compliance with the applicable noise criteria is achieved at all sensitive receiver locations, with the exception of Receiver R01 - B. Whereby a minor exceedance (1 dB) of the PSNTL is predicted during peak periods of operation. However, a minor exceedance of the PSNTL is not considered significant due to the difficulty people have in distinguishing between a 1 dB exceedance. Therefore, it is not considered reasonable or feasible to provide additional noise mitigation or management measures.



APPENDIX A. ACOUSTIC TERMINOLOGY

The following is a brief description of the acoustic terminology used in this report:

Ambient Sound	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.
Audible Range	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.
Character, acoustic	The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.
Decibel [dB]	The level of noise is measured objectively using a Sound Level Meter. The following are examples of the decibel readings of every day sounds; 0 dB the faintest sound we can hear 30 dB a quiet library or in a quiet location in the country 45 dB typical office space. Ambience in the city at night 60 dB Martin Place at lunch time 70 dB the sound of a car passing on the street 80 dB loud music played at home 90 dB the sound of a truck passing on the street 100 dB the sound of a rock band 115 dB limit of sound permitted in industry 120 dB deafening
dBA	<i>A-weighted decibels</i> The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dBA. Practically all noise is measured using the A filter. The sound pressure level in dBA gives a close indication of the subjective loudness of the noise.
Frequency	Frequency is synonymous to <i>pitch</i> . Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Loudness	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on
L _{max}	The maximum sound pressure level measured over a given period.
L _{min}	The minimum sound pressure level measured over a given period.
L ₁	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L ₁₀	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L ₉₀	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L ₉₀ noise level expressed in units of dBA.
L _{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
Sound Pressure Level, LP dB	A measurement obtained directly using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the rms sound pressure to the reference sound pressure of 20 micro Pascals.
Sound Power Level, Lw dB	Sound power level is a measure of the sound energy emitted by a source, does not change with distance, and cannot be directly measured. Sound power level of a machine may vary depending on the actual operating load and is calculated from sound pressure level measurements with appropriate corrections for distance and/or environmental conditions. Sound power levels is equal to 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 picoWatt.



APPENDIX B. AMBIENT NOISE MONITORING

119 Marion Street, Bankstown

Ambient noise monitoring report



Item	Information
Logger Type	SVAN 977C
Serial number	98067
Address	119 Marion Street, Bankstown
Location	119 Marion Street, Bankstown
Facade / free field	Free field
Environment	

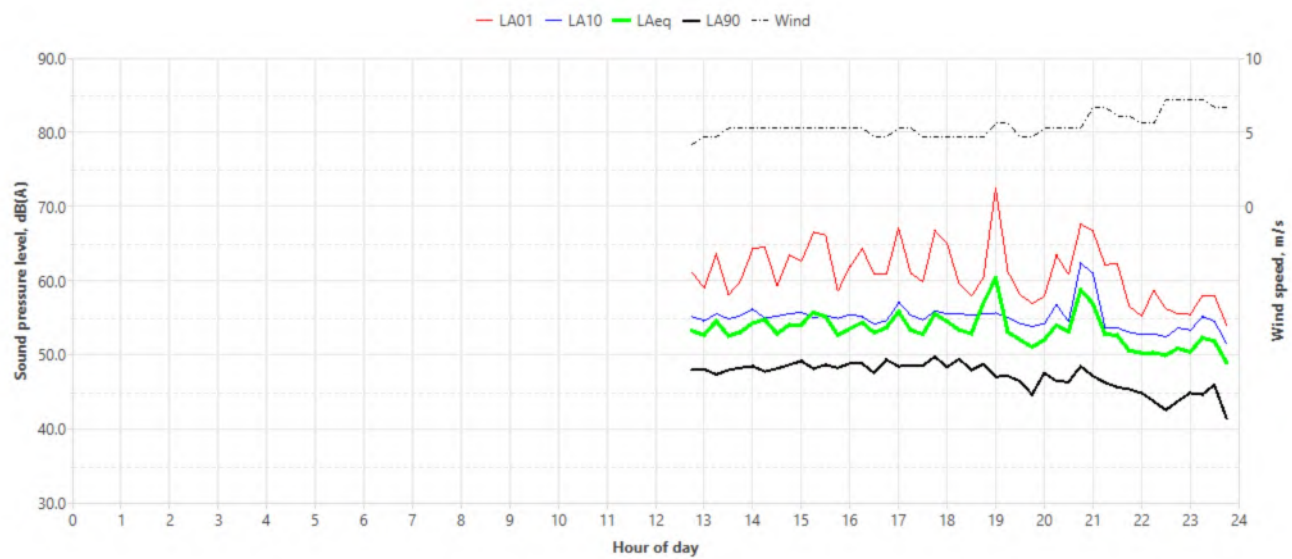
Measured noise levels

Logging date	Rating Background Level			L _{Aeq,period}		
	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Thu 20 Feb 2025	-	45	-	54	55	51
Fri 21 Feb 2025	45	45	35	54	53	48
Sat 22 Feb 2025	43	47	39	54	56	48
Sun 23 Feb 2025	42	45	40	52	54	49
Mon 24 Feb 2025	46	44	42	54	58	49
Tue 25 Feb 2025	46	44	40	55	53	49
Wed 26 Feb 2025	44	46	38	53	53	49
Thu 27 Feb 2025	-	-	-	54	-	49
Summary	45	45	39	54	55	49

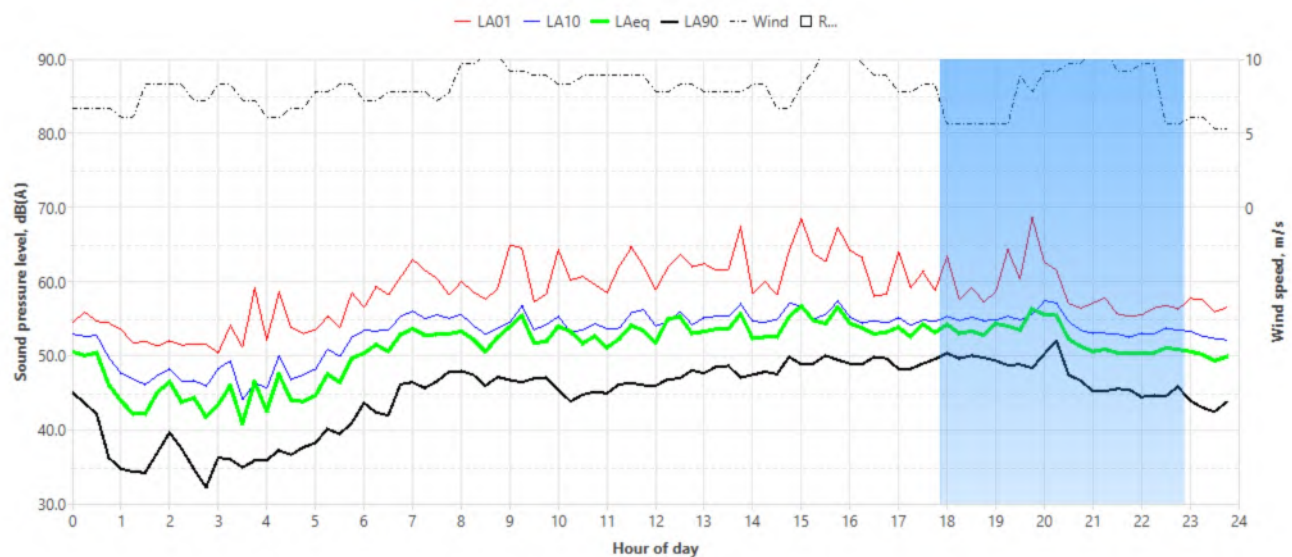
Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, in accordance with the Noise Policy for Industry. The data has been excluded either from weather or manual exclusions. See the charts for more information

Logger location	Logger deployment photo
	

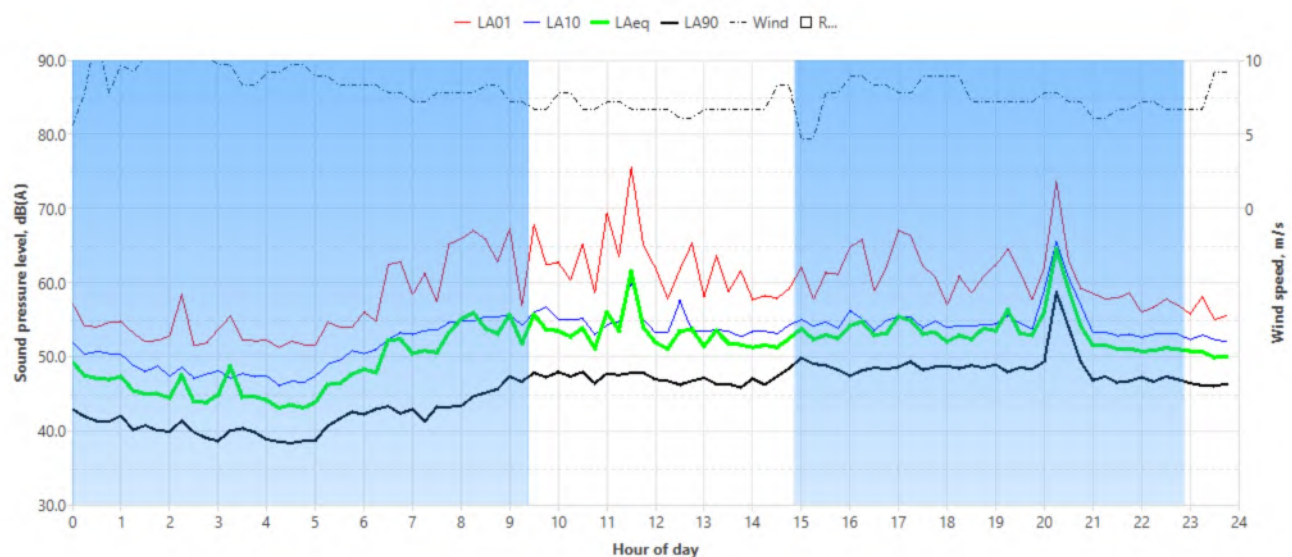
Thursday, 20 February 2025



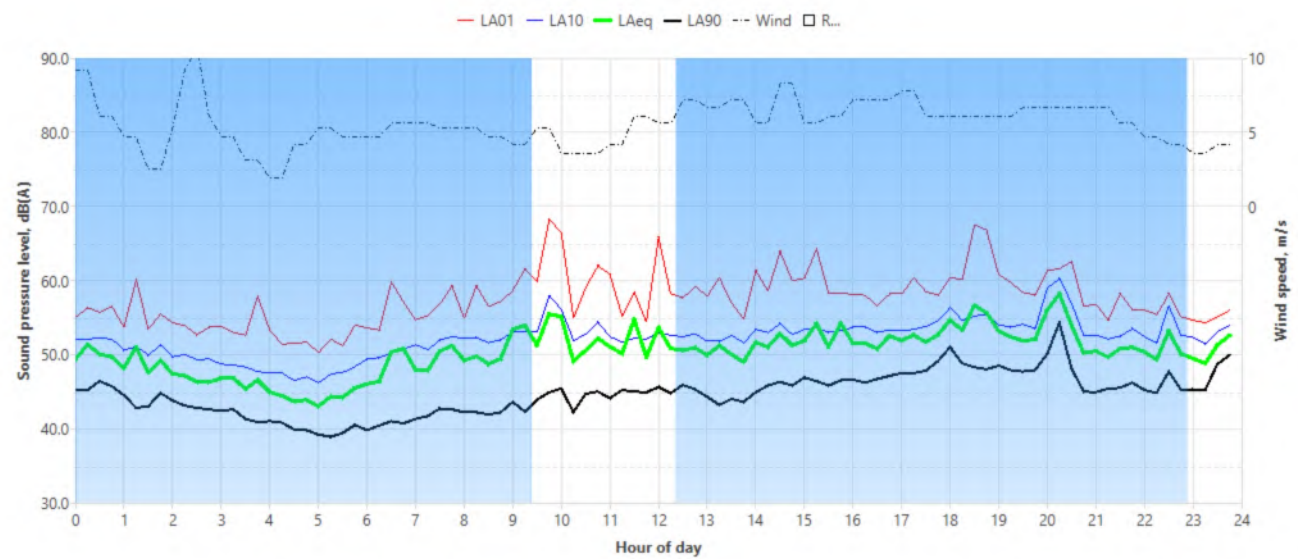
Friday, 21 February 2025



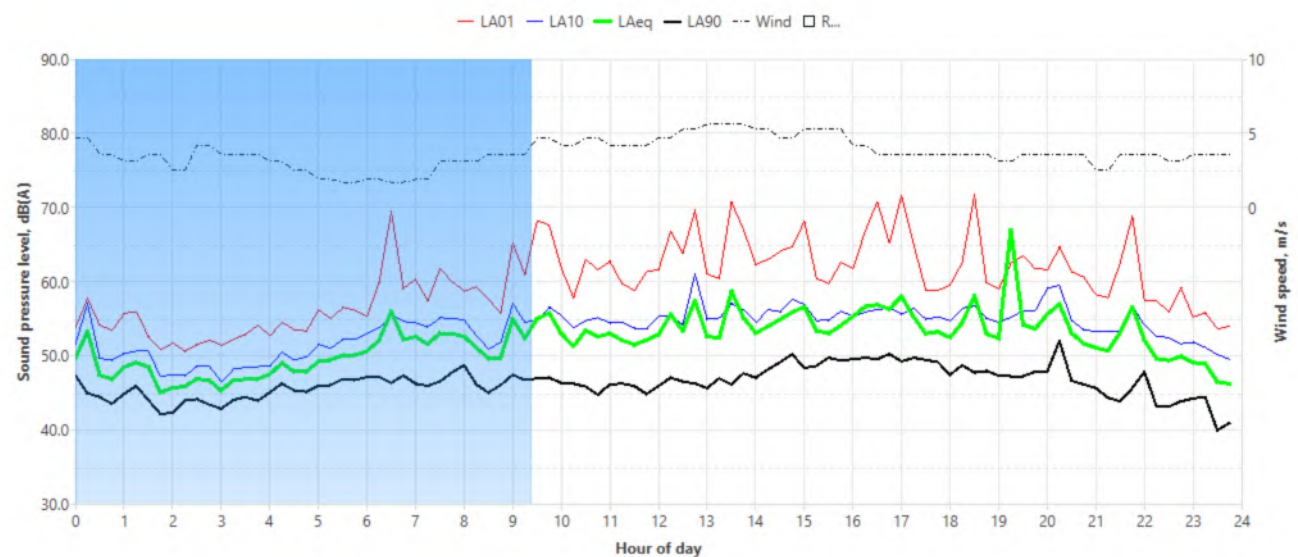
Saturday, 22 February 2025



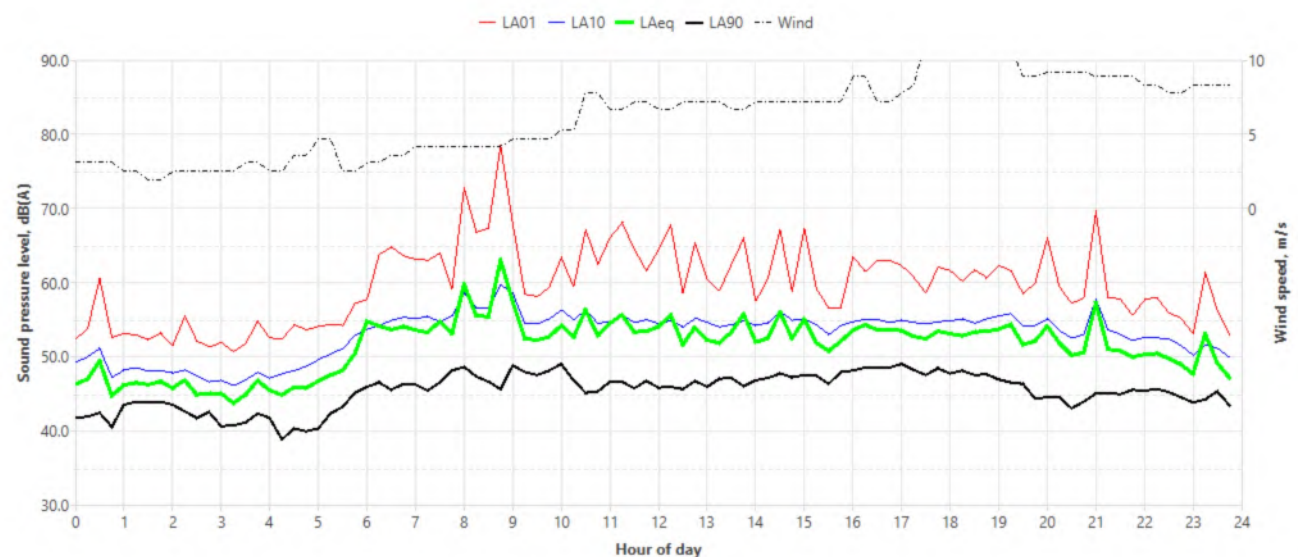
Sunday, 23 February 2025



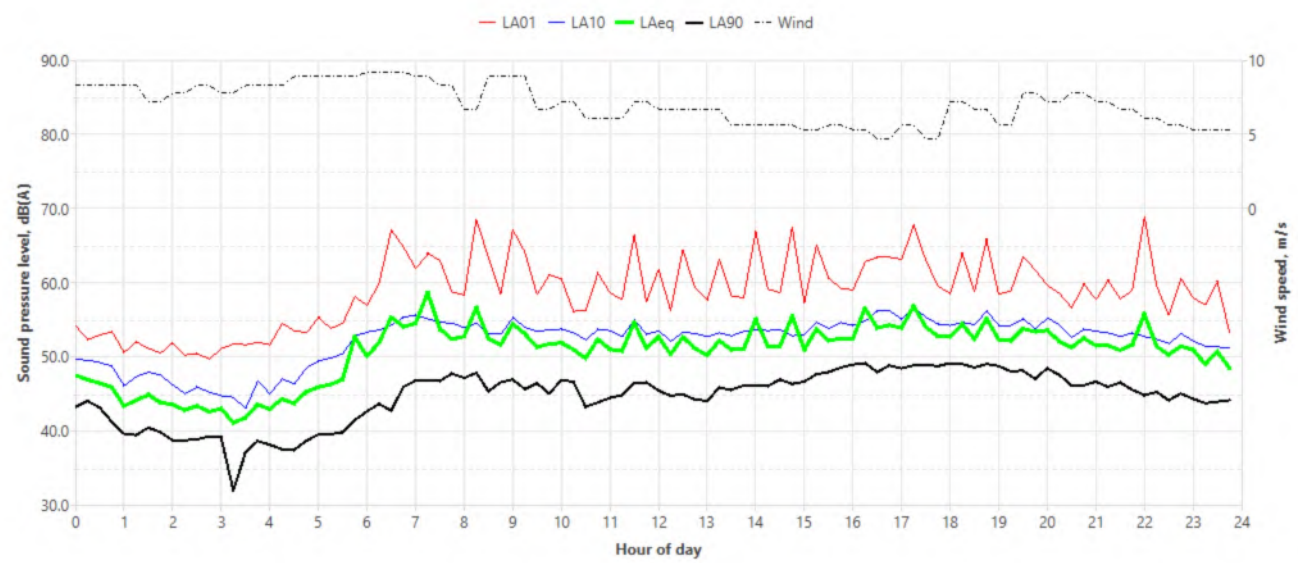
Monday, 24 February 2025



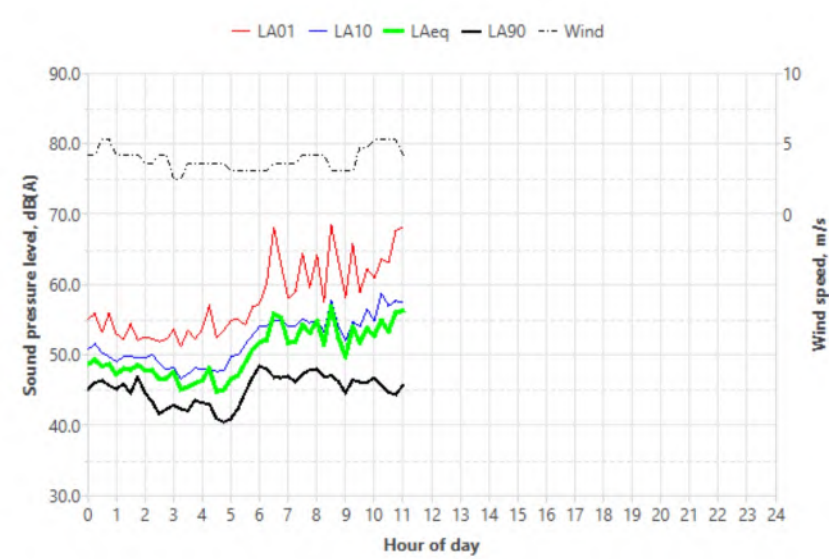
Tuesday, 25 February 2025



Wednesday, 26 February 2025

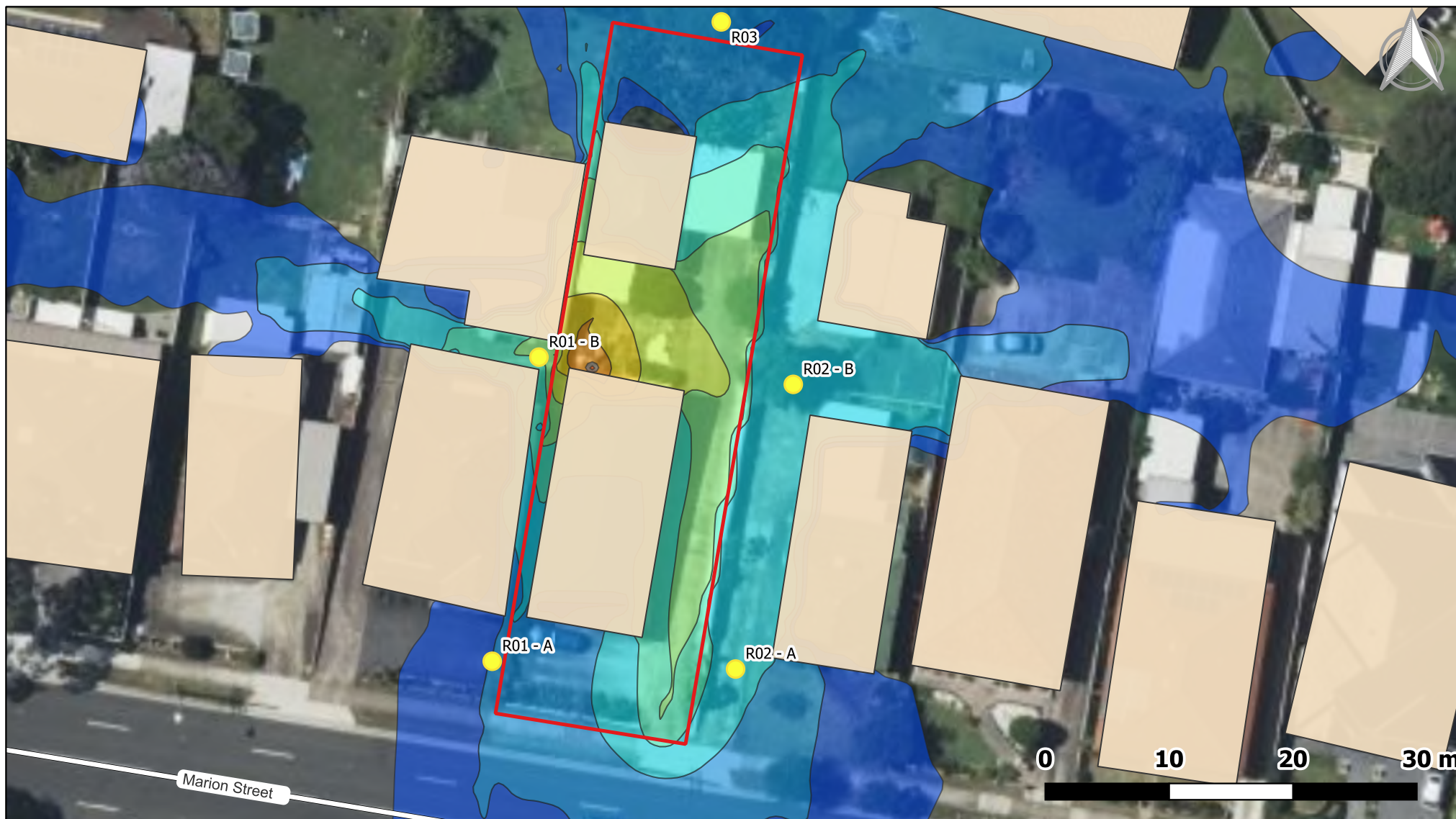


Thursday, 27 February 2025





APPENDIX C. OPERATIONAL NOISE CONTOURS



$L_{Aeq,15min}$ noise levels, dB(A)

30 to 35

35 to 40

40 to 45

45 to 50

50 to 55

55 to 60

60 to 65

65 to 70

>70

119 Marion Street, Bankstown

General Dental Practice

Operational noise contours

Daytime $L_{Aeq,15}$ minute noise impacts

Contour Height - 1.5 m

