Noise Impact Assessment

Planning Proposal (Rezoning)
Lot 11 DP807867 & Lot 261 DP 1262316
Rankin Drive Bangalow

HEALTH SCIENCE ENVIROMENTAL EDUCATION
ENVIRONMENTAL AUDITOR

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1. Introduction

1.1 Purpose

Tim Fitzroy & Associates (TFA) has been engaged by Instant Steel Pty Ltd to undertake a Noise Impact Assessment (NIA) to accompany a Planning Proposal to Byron Shire Council to rezone Lot 11 DP807867 & Lot 261 DP 1262316 to R2 Low Density Residential for the majority of the site, with an area for medium density at the eastern triangular end of the land. This area will be zoned R3 - Medium Density.

This report provides details on the noise assessment and modelling carried out by *Tim Fitzroy & Associates* and *Noise Measurement Services, Brisbane* to establish existing noise levels at the subject site and investigate potential road noise impacts on future residences.

The purpose of this noise assessment is to:

1. Establish existing background noise levels at the subject site;
2. Examine the likely impacts of existing and future road traffic noise from the Hinterland Way (Old Pacific Highway) and the new Pacific Highway on the subject site in accordance with the NSW Road Noise Policy for Industry (2011); and
3. Provide recommendations (where necessary) to be considered should residential development be approved at the subject site.

1.2 Applicable Noise Criteria

1.2.1 Road Traffic Noise Policy (NSW EPA 2011)

In 1999, the Environment Protection Authority published Environmental criteria for road traffic noise to introduce a comprehensive and effective approach for managing road traffic noise in NSW. This policy was widely adopted by determining authorities, regulators, project proponents and acoustic practitioners and supported by the Environmental noise management manual (NSW Roads and Traffic Authority 2001).

The Environmental Criteria for Road Traffic Noise (NSW EPA 1999) provides a framework that guides the consideration and management of traffic noise issues associated with building developments near roads. The framework embodies a non-mandatory performance-based approach. The criteria are applied as targets, but recognise there will be situations where planning strategies are not feasible in order to comply with the nominated criteria. Solutions that can be reasonably applied in the short term may not always meet the target. For these cases, a longer-term perspective needs to be taken to institute ongoing strategies that will minimise traffic noise impacts over time.

The Environmental Criteria for Road Traffic Noise (NSW EPA 1999) provides a number of criteria for assessment of noise amenity for existing and future residence near existing or proposed roads. The noise criteria are dependent on the road type and the receiver type and is split into a day and night period from 7:00am to 10pm and 10:00pm to 7:00am respectively. The values presented as criteria levels are intended to preserve amenity appropriate to the land use. The confidence for such an outcome

occurring for the specified noise levels is based on well-documented social surveys defining a dose-response relationship between noise level and annoyance.

The Environmental Criteria for Road Traffic Noise (NSW EPA 1999) provides criteria for a range of land uses including metropolitan, rural, residential and sensitive land use. The subject site would be classified as 'rural'.

The noise criteria applicable to the development of a new freeway or arterial road corridor as applicable to the subject site and as set out in the Environmental Criteria for Road Traffic Noise (NSW EPA 1999) is presented in **Table 1.1.** These are the noise goals that the RTA will seek to achieve. The application of the criteria is due to the road upgrade incorporating a new alignment necessitating land acquisition.

The noise criteria applicable for 'new residential land use developments affected by freeway/arterial road traffic noise', as applicable to any future development of the subject site is presented in **Table 1.2**. Should the subject site be developed for residential land use in the future, these are the noise goals that the development will be required to demonstrate compliance with.

The NSW Government approved the NSW Road Noise Policy (RNP), to replace the Environmental criteria for road traffic noise with effect from 1 July 2011. This policy outlines the range of measures needed to minimise road traffic noise and its impacts.

Table 1.1 RTA Road Noise criteria for new freeway or arterial road corridor

Road Type	Day (7: am – 10pm)	Night (10: pm – 7am)	Where Criteria are already Exceeded
'new freeway or arterial road corridor''	$L_{Aeq(15hr)}$ 55	$L_{Aeq(9hr)}$ 50	The new road should be designed so as not to increase existing noise levels by more than 0.5 dB. Where feasible and reasonable, noise levels from existing roads should be reduced to meet the noise criteria. In some instances, this may be achievable only through long-term strategies such as improved planning, design and construction of adjoining land use developments; reduced vehicle emission levels through new vehicle standards and regulation of in-service vehicles; greater use of public transport; and alternative methods of freight haulage.

Table 1.2 Noise criteria for future development of the subject site

Road Type	Day (7: am – 10pm)	Night (10: pm – 7am)	Where Criteria are already Exceeded
'New residential land use developments affected by freeway/arterial traffic noise'	$L_{Aeq(15hr)}$ 55	$L_{Aeq(9hr)}$ 50	Where feasible and reasonable, existing noise levels should be reduced to meet the noise criteria via judicious design and construction of the development. Locations, internal

			layouts, building materials and construction should be chosen so as to minimise noise impacts.

When investigating future residential development adjacent to proposed roads the document suggests that where feasible and reasonable, noise levels should be reduced to meet the noise criteria via judicious design and construction of the development. Locations, internal layouts, building materials and construction should be chosen so as to minimise noise impacts. Additionally, consideration of road surfacing with a smoother surface is known to reduce traffic noise levels.

1.2.2 State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP)

The State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) (Department of Planning 2007) sets internal noise criteria which must be met by new developments along some of the busiest transport corridors in NSW. This is a major initiative to ensure that sustainable higher density living can occur along major transport routes whilst maintaining an acceptable level of amenity for residents.

The SEPP Infrastructure aligns with Australian Standard AS/NZS 2107:2000 'Acoustics – Recommended Design Sound Level and Reverberation Times for Building Interiors'. These levels expressed as L_{Aeq} are presented in **Table 1.3** below.

Table 1.3 AS 2107:2000. AS2107:200 specify internal noise goals for Residences

Type of occupancy/activity	*Recommended design sound level, L_{Aeq} dB(A)*	
	Satisfactory*	**Maximum****
RESIDENTIAL BUILDINGS		
Living areas	30 dB(A)	40 dB(A)
Sleeping areas	30 dB(A)	35 dB(A)
Work areas	35 dB(A)	40 dB(A)
Apartment common areas(e.g. foyer, lift, lobby)	45 dB(A)	55 dB(A)

1.2.3 Sleep disturbance

Specific provisions relate to sleep disturbance and the World Health Organization recommends that a maximum level of 45 dB (A) should not be exceeded inside a bedroom. For practical purposes this is equivalent to a maximum level of 55 dB (A) outside a residence, with an open window to the bedroom (Guidelines for Community Noise WHO 1999).

1.3 Overview of Noise Assessment

This noise assessment establishes the existing background noise levels within the vicinity of the nearest future affected sensitive receiver to the Hinterland Way.

The noise assessment process included the following components:

- Measurement and determination of the existing background and ambient noise at the site;
- Consideration of potential road traffic noise impacts on surrounding residences; and
- Consideration of what feasible and reasonable noise mitigation measures ought to be considered where the project-specific noise levels are exceeded.

1.4 Site Description

The subject site is located at Lot 11 DP807867 & Lot 261 DP 1262316 Rankin Drive, Bangalow (see **Illustration 1.1**). The lands are currently zoned R2 Low Density Residential (about one third of the site), RU2 Rural Landscape and RU1 under the provisions of the Byron LEP 2014 (see **Illustration 1.2**). The site is currently impacted by road traffic noise from the Hinterland Way (Old Pacific Highway) located on the eastern boundary.

The total land area covers 4.1ha. The site is a residual parcel of land following the creation of the adjoining residential subdivision. The site has been completely cleared in the past with a recent history of both beef and cattle grazing. Regrowth, largely exotic, has been allowed to develop over creek banks and fence lines and much of the northern section of the subject site.

1.4.1 Topography

The property has a steep to moderate slope to the south, south-west from RL100m AHD in the north to RL 50m AHD in the south.

1.4.2 Climate

Weather recording data was collected from the official Bureau of Meteorology (BOM) Weather Station at Ballina Airport. Rain fall and wind greater than 18km/hr was excluded from the noise monitoring results.

1.4.3 Surrounding Land use

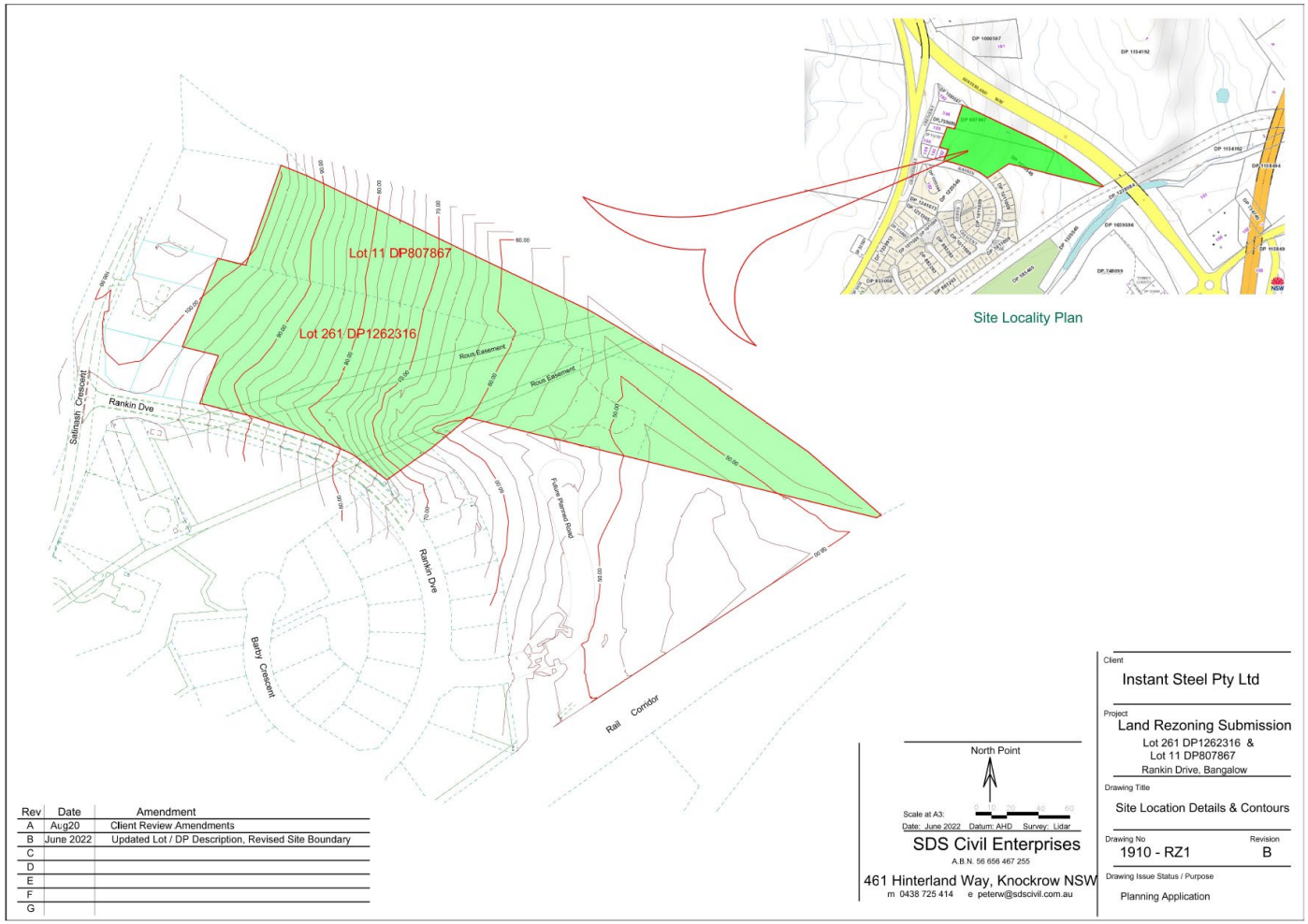
The railway line forms the southern boundary while Rankin Drive forms the western boundary located adjacent to residential development while the realigned Pacific Highway lies to the south east, but does not adjoin the site.

1.5 Proposed Development

The land is currently vacant. The lands are currently zoned R2 Low Density Residential (about one third of the site), RU2 Rural Landscape and RU1 under the provisions of the Byron LEP 2014.
It is the intent of this Planning Proposal to zone the land R2 Low Density Residential for the majority of the site, with an area R3 Medium Density Residential housing at the eastern triangular end of the land.

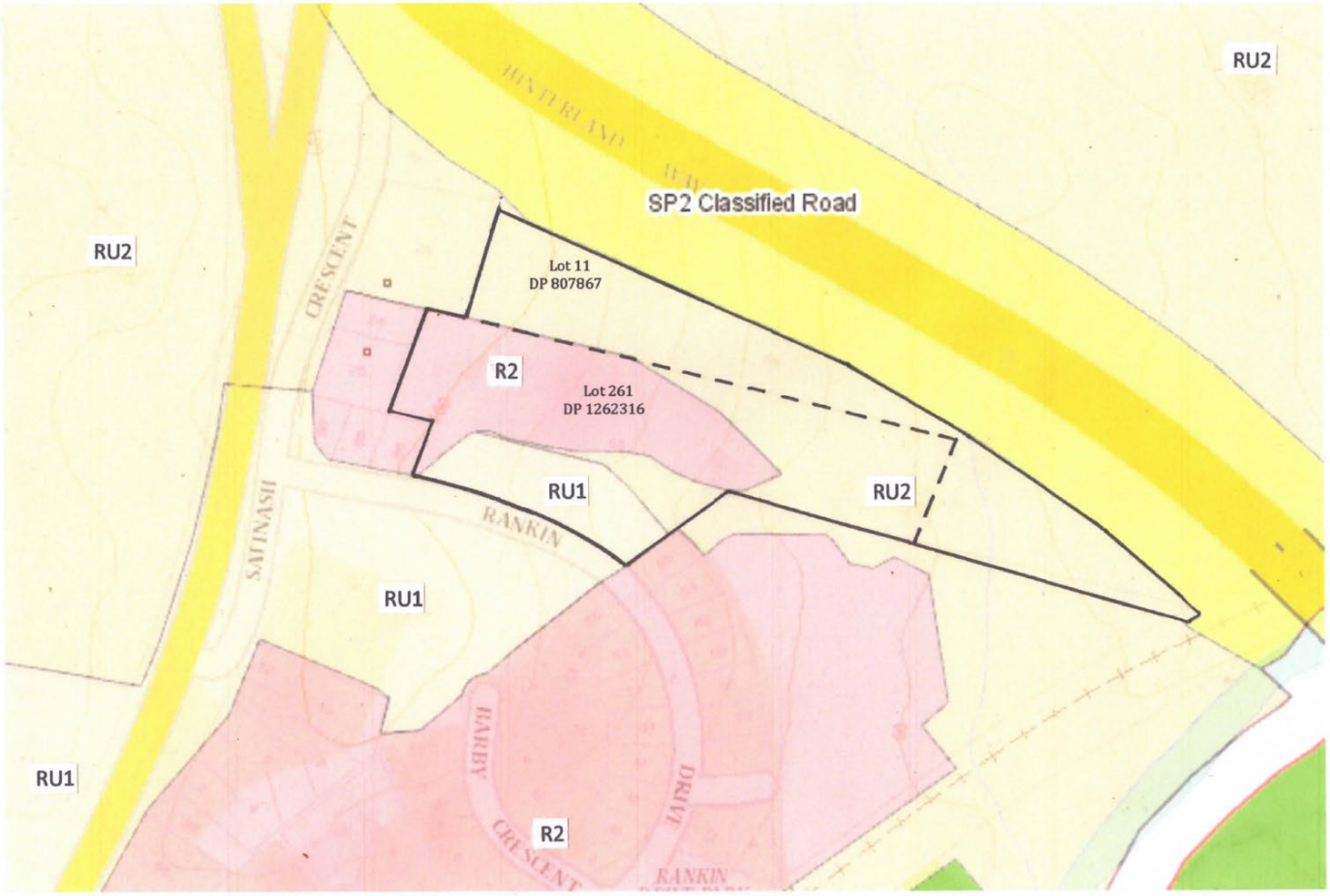
A Copy of the Planning Proposal is provided in **Appendix A**. Photographs of the site are located in **Appendix B**.

Illustration 1.1 Site Locality



Source: SDS Civil Enterprises June 2022

Illustration 1.2 Current Zoning Map



Zone Map - Byron LEP 2014 Rankin Drive, Bangalow.

2. Instrumentation

2.1 Noise Monitoring Equipment

Tim Fitzroy & Associates utilised the following equipment in this Noise Impact Assessment:

- A Type 1, 1/3 Octave Band Larson Davis Noise Meter with sound recording and event trigger features.

Calibration of the noise monitoring equipment was undertaken prior to use. To ensure no significant tonal drift occurred over the monitoring period, the calibration was checked before and after each measurement period.

2.2 Monitoring Methodology

Consistent with the purpose of the acoustic assessment, the aim of the noise monitoring process was to establish:

- the existing background and ambient noise at the site;
- consideration of potential road traffic noise impacts on the subject site; and
- consideration of what feasible and reasonable noise mitigation measures ought to be considered where the project-specific noise levels are exceeded.

Long term noise monitoring was undertaken to establish the existing background noise environment at the subject site. Ambient sound pressure levels were measured generally in accordance with Australian Standard AS1055.1:1997 - 'Acoustics- Description and measurement of environmental noise - Part 1: General procedures'.

A Type 1, 1/3 Octave Band Larson Davis Noise Meter was placed at a measurement location ML1 (offset from Hinterland Way at an equivalent distance to the closest future sensitive receivers) to monitor the ambient noise levels, in continuous 15-minute intervals from 6 to 13 December 2019 to gather information of background noise during the day, evening and night. The microphone at each location was 1.35m above ground level.

Illustration 2.1 shows the location of the noise meter.

Illustration 2.1 Noise Monitoring Location

3. Acoustic Assessment

3.1 The Decibel Scale

The human ear responds to sound pressure levels over a very wide range – the loudest sound pressure level to which the human ear responds is ten million times greater than the quietest. This large ratio is reduced to a more manageable size by the use of logarithms. To avoid scale which is too compressed a factor of ten is introduced, giving rise to the decibel. The following **Table 3.1** provides an indication of typical A-Weighted sound pressure levels measured in decibels with typical noise sources. The table provides a good reference when comparing decibel readings.

Table 3.1 Example noise sources and the corresponding A-weighted decibel levels

Sound Pressure Level (dBA)	Typical Source	Subjective Evaluation
140	Long range gun, gunner's ear	Extremely noisy to intolerable
130	Threshold of pain	
120	Jet take-off at 100m	
110	Night club dance floor	
100	Loud car horn at 3 metres	Very noisy
90	Heavy truck at 10m	
80	Curbside of busy street	Loud
70	Car interior	
60	Normal conversation at 1m	Moderate to quiet
50	Office noise	
40	Living room in quiet area	Quiet to very quiet
30	Inside bedroom at night	
20	Unoccupied recording studio	Almost silent

The sensitivity of people to noise level changes varies from person to person. However generally, a change of up to 3 dBA in the level of a sound is difficult for most people to detect, whilst a 3 dBA to 5 dBA change corresponds to a small but noticeable change in loudness. A 10 dBA change corresponds to an approximate doubling or halving in loudness.

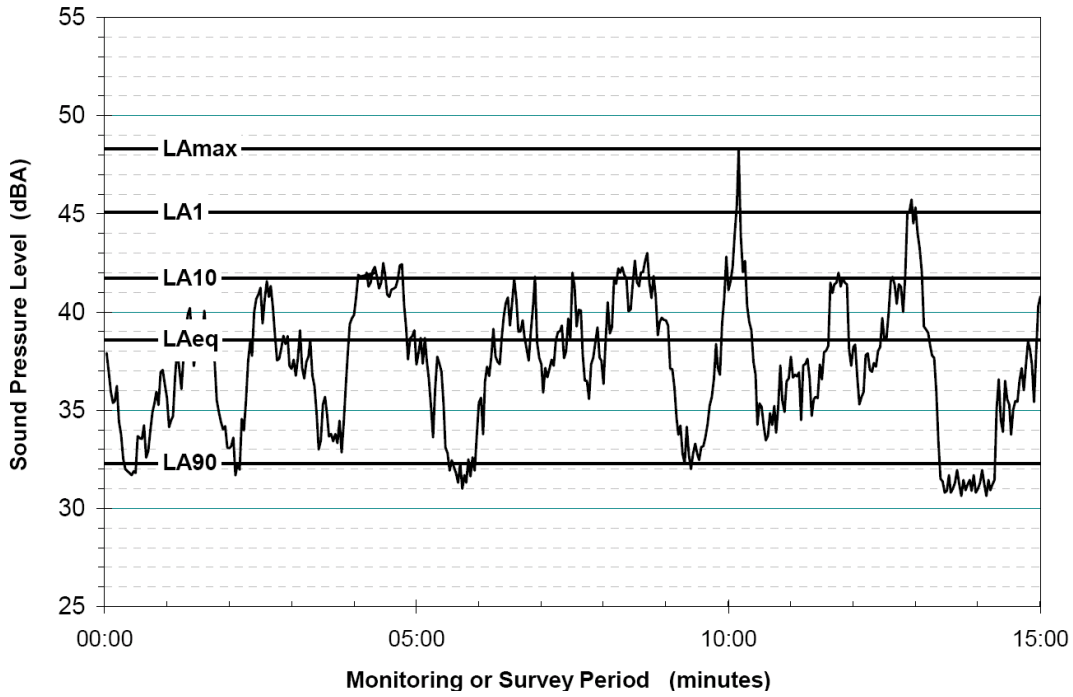
3.2 Acoustical Terms

This report makes reference to a number of different acoustical terms. Particularly the L_{Aeq}, L_{Amax}, L_{A10} and L_{A90} descriptors. Each descriptor is briefly explained below.

- The L_{Aeq} is essentially the average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time; varying sound over a defined measurement period.
- The L_{Amax} noise level is the maximum A-weighted noise level.
- The L_{A10} is the A-weighted sound pressure level exceeded 10% of a given measurement period and is utilised normally to characterise typical maximum noise levels.
- The L_{A90} noise level is the A-weighted sound pressure level exceeded 90% of a given measurement period and is representative of the average minimum background sound level (in the absence of the source under consideration), or simply the "background" level.

A graphical display of typical noise indices and the relationship between each noise descriptor is provided below in Figure 3.1.

Figure 3.1 Graphical Display of Typical Noise Indices



3.3 Existing Noise Environment

The primary noise observed while on site emanates from intermittent road traffic along the Hinterland Way and bird calls.

A summary of the results obtained from analysis of data from the background day, evening and night time noise monitoring is provided below in **Table 3.2**.
Full copies of the raw data for the monitoring site can be found in **Appendix C**.

Table 3.2 Background Sound Pressure Levels

Raw data results were corrected for adverse weather conditions and in accordance with 'The Environmental Criteria for Road Traffic Noise' (pg 12 - NSW EPA, 1999) by adding a 2.5 dB (A) correction to the measured value. Data was divided into day and night periods and the corresponding L_{Aeq} was determined for each period. The results from the noise logger are summarised in **Table 3.3** below.

To enable a direct comparison of noise pressure levels within Table 1 of the Road Traffic Noise Criteria (NSW EPA 2011), the $L_{Aeq(15hr)}$ and the $L_{Aeq(9hr)}$ levels have been calculated.

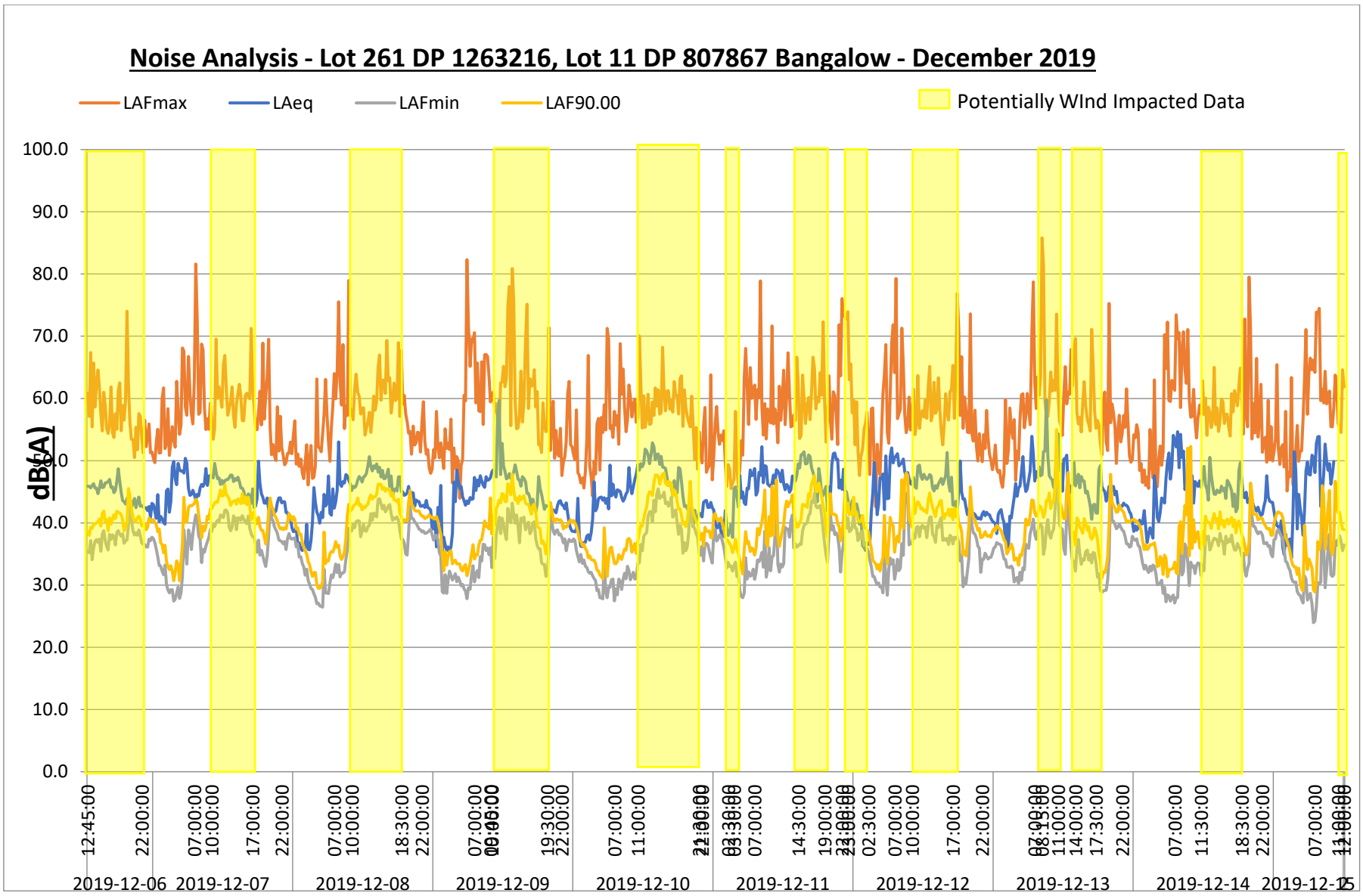
Table 3.3 Results of Long Term Noise Logger

	Date	***$L_{Aeq(15hr)}$ Day (7am to 10pm)***	***$L_{Aeq(9hr)}$ Night (10pm to 7am)***
Site 1	6-13 December 2019	48.7 dB(A)	46.3 dB(A)
RNP Criteria Levels		*55 dB(A)*	*50 dB(A)*

The noise levels recorded were below the criteria levels of 55 $L_{Aeq(15hr)}$ dBA and 50 $L_{Aeq(9hr)}$ dBA for the day (7am to 10pm) and night (10pm to 7am) periods respectively.

The ambient and background noise levels measured at ML1 over the monitoring period are presented in **Figure 3.2**.

Figure 3.2 Ambient and Background Noise Levels at Measurement Location ML1



3.4 Pacific Highway Upgrade

As part of the RTA's Major Project Assessment for the *Pacific Highway Upgrade Tintenbar to Ewingsdale* noise monitoring of existing road traffic conditions were undertaken at a number of locations along the route. Part of the subject site is within the influence of the *Tintenbar to Ewingsdale* Pacific Highway upgrade, to the north west of the proposed *Bangalow diversion*.

The Pacific Highway upgrade diverts to the north east some 500m south east of the subject site. Our review of the Working Paper No. 8 'Noise and Vibration Assessment' (Arup, June 2008) indicates that the highway diversion results in a decrease in road traffic noise exposure at the subject site.

Maximum noise levels adjacent to the highway are typically due to engine barking events for individual trucks, particularly during the night time period when there are a high proportion of trucks relative to other vehicles. Traffic predictions indicate future (2022) truck movements will average approximately 100 per hour during the night time. Measurements adjacent to the route suggest that around 30% of trucks use engine braking at various locations along the existing route, which should equate to 30 maximum noise events per hour (Arup 2008).

The Pacific Highway upgrade has been aligned to minimise gradients and there are no traffic signals along the route. As a consequence, the use of noisy engine braking is likely to be significantly reduced compared to the existing highway.

3.5 Impact of Road Traffic Noise on Subject Site

3.5.1 Noise Modelling

The 10-year design levels for traffic noise from the Old Pacific Highway are calculated across the proposed subdivision. Calculations are performed in accordance with Australian Standard AS2702-1984 Acoustics-Methods for the measurement of road traffic noise and 'Calculation of Road Traffic Noise', 1975-1988. Predicted levels for this report have been calculated using CRTN prediction model SoundPlan v8.0 and are façade-adjusted. The noise model includes screening from existing topography and structures. Topographic information was sourced from NSW Government Six Maps.

Existing and future traffic volumes have been calculated from data provided in Table 10b (ARUP, 2008). ARUP 2008 provided a 2012 and 2022 traffic flow, from which 2020 (current) and (future) 2030 (10-year design horizon) traffic flows were calculated based on the same growth. The assumptions that were made for the calculations are based on figures presented in **Table 3.2.**

Table 3.2 Traffic variables for Old Pacific Highway, as modelled.

Time Period	Vehicles Per Hour				Growth (%p.a.)	HV %	Speed (km/hr)	Source Height (m)	Surface
	2012	2020	2022	2030					
Day	593	710	743	891	2.28%	7%	80	0.5	SMA
Night	73	~~87~~ (174*)	92	~~110~~ (220*)	2.28%	19%	80	0.5	SMA

* Night time noise levels, when modelled, did not validate to the measured levels on site. In order to validate to the measured levels, calculated night time traffic flows were doubled.

The noise model has been validated to the noise measurement location NML (TFA 6-13 December 2019). 2020 traffic variables have been used for the validation, which are summarised in **Table 3.3**.

Table 3.3 Model Validation. Levels are in dB(A), façade adjusted

Measurement	Survey	SoundPlan	Difference
$L_{10,18hr}$	51.3	52.0	+0.7
$L_{eq,15hr}$ (Day)	50.0	50.2	+0.2
$L_{eq,9hr}$ (Night)	46.3	46.1	-0.2

Results from the validation model suggest an acceptable level of fit between measured and predicted levels at the noise measurement location. Results from the road traffic noise model are presented in the following **Plates 3.1** and **3.2**.

Plate 3.1 55dBA Noise Contour at 1.5m above ground, 2030 traffic flows, Day. Levels are dBA $L_{eq,15hr}$, façade adjusted.

Plate 3.2 50dBA Noise Contours at 1.5m above ground, 2030 traffic flows, Night. Levels are dBA $L_{eq,9hr}$, façade adjusted.

3.5.2 Modeling Outcomes

It is concluded that –

- A noise model has been constructed to predict the propagation of noise of road traffic noise from the Hinterland Way in 2020 and in 2030 on the subject site.
- The model includes shielding effects from existing structures, and topography. Topographic information included in the model was sourced from Geoscience Australia.
- Predicted noise levels have been validated against noise monitoring conducted onsite between 6 and 13 December 2019.
- Predicted noise levels from road traffic noise in 2030 are expected to exceed the daytime and night noise goals (RNP 2011) along part of the eastern portion of the subject site (see **Plates 3.1** and **3.2**).

4. Discussion

Our review of the existing and predicted road traffic noise impacts from the Hinterland Way (Old Pacific Highway) at the subject site indicate that while traffic and resultant noise impacts have reduced with the Pacific Highway bypass traffic noise will still affect part of the eastern portion of the subject site.

To ensure that compliance with the internal noise criterion (55 $L_{Aeq(15hr)}$ dBA and 50 $L_{Aeq(9hr)}$ dBA for the day (7am to 10pm) and night (10pm to 7am) periods respectively) along the eastern portion of the subject site (see **Plates 3.1** and **3.2**) and to minimise the extent of treatments, future building designs should utilise the placement of non-habitable rooms (i.e. laundries and bathrooms); and / or reduce the glazing areas along façades fronting the Hinterland Way (Old Pacific Highway). Further, increasing the acoustic performance of the wall and ceiling / roof treatments (i.e. use of masonry walls over light-weight wall systems) of future dwellings may reduce the extent of treatment to windows and doors.

The provision of air conditioning or sealed mechanical ventilation may also be required on all noise affected future habitable rooms on allotments closest to the Hinterland Way to allow occupants to close external windows and doors.

A qualified and experienced acoustic consultant should be engaged at the design stage of dwellings, to determine the required building shell treatments; and to ensure the internal noise criterion will be achieved. However, based upon the predicted noise impact levels, the following treatments are likely to be required. *It is noted that the presented treatments are indicative only.*

Building shell treatments which are effective in reducing internal noise levels are as follows:

- Masonry external walls;
- Insulated roof/ceiling cavity above a ceiling of a single or multiple layer of plasterboard;
- Upgraded laminate and/or double glazing of windows and sliding doors.

For private open spaces of dwellings such areas should not be located along the road frontages of the Hinterland Way. By locating playgrounds, courtyards and balconies on the opposite side of the buildings to the Hinterland Way, the buildings themselves will provide physical screening of road traffic noise. Alternatively, barriers should be incorporated into the development to mitigate noise impacts.

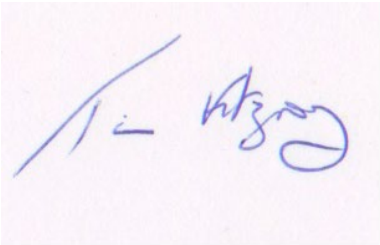
Assessment of habitable rooms (i.e. bedrooms, living/dining/kitchen areas and motel rooms) should be undertaken in accordance with Australian Standard AS3671:1989 ‘Acoustics – Road traffic noise intrusion – Building Siting and Construction’ to achieve the maximum internal noise levels prescribed in AS/NZS 2107:1987 ‘Acoustics – Recommended Design Sound Level and Reverberation Times for Building Interiors’.

5 Conclusion

A summary of the results of this acoustic assessment are provided below:

- A noise model has been constructed to predict the propagation of noise of road traffic noise from the Hinterland Way in 2020 and in 2030 on the subject site.
- The model includes shielding effects from existing structures, and topography. Topographic information included in the model was sourced from Geoscience Australia.
- Predicted noise levels have been validated against noise monitoring conducted onsite between 6 and 13 December 2019
- Predicted noise levels from road traffic noise in 2030 are expected to exceed the daytime and night noise goals (RNP 2011) along part of the eastern portion of the subject site (see **Plates 3.1** and **3.2**). The exceedance will not be of significance provided internal noise environment can comply with the requirements of AS2107:2000.
- To ensure that compliance with the internal noise criterion can be achieved and to minimise the extent of treatments for future dwellings, building designs should utilise the placement of non-habitable rooms (i.e. laundries and bathrooms); and / or reduce the glazing areas along façades fronting the Hinterland Way.
- A qualified and experienced acoustic consultant should be engaged at the design stage of future dwellings, to determine the required building shell treatments; and to ensure the internal noise criterion will be achieved.
- Private open spaces of dwellings such areas should not be located along the road frontages of the Hinterland Way.

This report has been prepared by Tim Fitzroy of *Tim Fitzroy & Associates.* Noise modelling was undertaken by Matt Dever*, Noise Measurement Services, Brisbane.*



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Environmental Auditor

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NSW EPA 2017 Noise Policy for Industry, Environment Protection Authority, Sydney

NSW DECC, 2009 Noise Guide for Local Government, Department of Environment, Climate Change & Water, Sydney

A/NZ Standards, 1987 Internal noise limits from Australian/New Zealand Standard AS/NZS 2107:1987.

World Health Organisation 1999 Guidelines for Community Noise (Editor B Berglund et al Geneva Switzerland 1999)

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A Development Plans

North Point

Scale at A3: 0 7.5 15 30 45

Date: June 2022 Datum: AHD Survey: Lidar & Canty's

SDS Civil Enterprises

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Proposed Zone Map

Project Lands

Lot 261 DP1262316 &
Lot 11 DP807867

Rankin Drive, Bangalow

Drawing No 1910 - RZ-202

Revision D

LEGEND

- Existing R2 - RESIDENTIAL ZONE on Lot 261 DP 1262316
- Proposed R2 - RESIDENTIAL ZONE
- Proposed R3 - MEDIUM DENSITY ZONE

182 DP1000507

348 DP755695

105 DP1225545

100 DP1127017

104 DP1225545

103 DP1225545

102 DP1225545

11 DP807867 (1.682ha) R2

261 DP1262316 (2.332ha) R2

R3

R3

20.00

67.85

196.77

21.25

8.0

62.32

18.38

60.01

23.50

32.31

129.30

67.10

38.50

69.68

35.96

82.19

68.01

157.67

61.30

3.53

Hinterland Way

SATINASH CRESCENT

RANKIN DRIVE

GRANUAILLE ROAD

SATINASH CRESCENT

102 DP1155344

Part 262 DP1262316

73 DP1011009

72 DP1011009

74 DP1011009

71 DP1011009

75 DP1011009

RANKIN DRIVE

BARRY CRESCENT

CORLIS CRESCENT

Part 262 DP1262316

Rail Corridor

B Site Photographs

Photo A **Subject site looking north east**

Photo B **Subject site looking north**

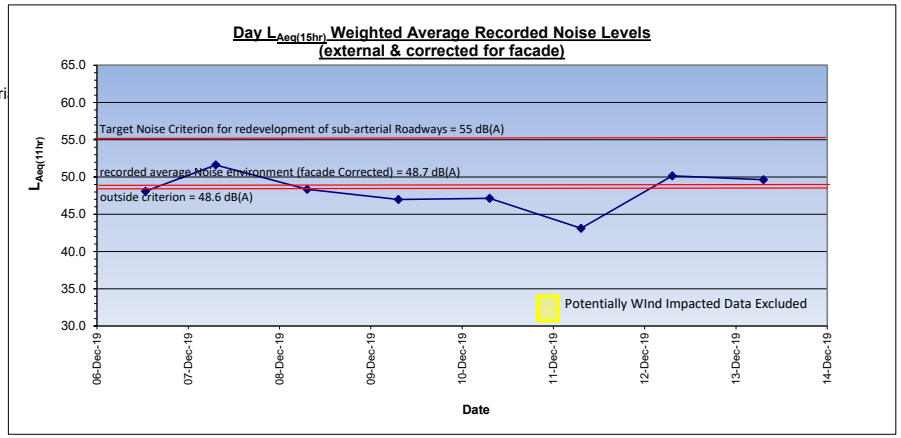
Photo C Subject Site looking south

Photo D Subject site looking south east

C Noise Data

Noise Assessment

Day Period	7am to 10pm		
Target level (Table 3 NSW road noise policy 2001)	55	dB(A)	redevelopment of sub-arteri
Recorded $L_{Aeq(15hr)}$ (façade Corrected)	48.7	dB(A)	
Overall $L_{Aeq(1hr)}$ criterion	48.6	dB(A)	



Day	Date	Recorded Daily $L_{Aeq(15hr)}$	Daily $L_{aeq(15hr)}$ (Façade Corrected)	Daily $L_{Aeq(1 hr)}$
Friday	6/12/2019	45.6	48.1	47.0
Saturday	7/12/2019	49.1	51.6	48.2
Sunday	8/12/2019	45.8	48.3	49.7
Monday	9/12/2019	44.5	47.0	46.6
Tuesday	10/12/2019	44.6	47.1	45.7
Wednesday	11/12/2019	40.6	43.1	49.1
Thursday	12/12/2019	47.6	50.1	50.8
Friday	13/12/2019	47.1	49.6	51.2

no.	Date	time	$L_{Aeq(15 minute)}$	$10^{((L_{Aeq(15 m}$	period sum	hrly sums	hrly Laeq
						0	
1	2019-12-06	12:45:00	43.9	24331			
2	2019-12-06	13:00:00	43.1	20471	44802		40.5
3	2019-12-06	13:15:00	45.9	39176			
4	2019-12-06	13:30:00	44.5	28273			
5	2019-12-06	13:45:00	45.8	38086			
6	2019-12-06	14:00:00	46.2	41473	147009		45.7
7	2019-12-06	14:15:00	46.7	47043			
8	2019-12-06	14:30:00	45.9	39025			
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41	2019-12-11	22:00:00	49.4	87202	**473214**	167862	46.2	x	
1	2019-12-12	07:15:00	50.8	118935					
2	2019-12-12	07:30:00	43.9	24431					
3	2019-12-12	07:45:00	43.9	24815					
4	2019-12-12	08:00:00	50.6	116110		284291	48.5		41.7
5	2019-12-12	08:15:00	52.1	160539					43.8
6	2019-12-12	08:30:00	49.6	91901					45.0
7	2019-12-12	08:45:00	50.5	111486					46.3
8	2019-12-12	09:00:00	50.8	118990		482916	50.8		48.5
9	2019-12-12	09:15:00	51.1	129145					48.5
10	2019-12-12	09:30:00	49.2	82935					50.0
11	2019-12-12	09:45:00	49.4	88009					50.8
	2019-12-12	10:00:00	49.6			300088	50.0		
	2019-12-12	10:15:00	50.3						
	2019-12-12	10:30:00	48.2						
	2019-12-12	10:45:00	47.6						
	2019-12-12	11:00:00	48.1			0	#NUM!		
	2019-12-12	11:15:00	47.1						
	2019-12-12	11:30:00	46.3						
	2019-12-12	11:45:00	46.1						
	2019-12-12	12:00:00	47.3			0	#NUM!		
	2019-12-12	12:15:00	45.8						
	2019-12-12	12:30:00	45.5						
	2019-12-12	12:45:00	49.1						
	2019-12-12	13:00:00	49.3			0	#NUM!		
	2019-12-12	13:15:00	47.5						
	2019-12-12	13:30:00	47.0						
	2019-12-12	13:45:00	47.8						
	2019-12-12	14:00:00	47.3			0	#NUM!		
	2019-12-12	14:15:00	47.0						
	2019-12-12	14:30:00	47.2						
	2019-12-12	14:45:00	47.8						
	2019-12-12	15:00:00	47.5			0	#NUM!		
	2019-12-12	15:15:00	45.6						
	2019-12-12	15:30:00	45.1						
	2019-12-12	15:45:00	46.0						
	2019-12-12	16:00:00	45.5			0	#NUM!		
	2019-12-12	16:15:00	46.3						
	2019-12-12	16:30:00	46.7						
	2019-12-12	16:45:00	47.2						
	2019-12-12	17:00:00	46.2			0	#NUM!		
12	2019-12-12	17:15:00	46.9	48601					
13	2019-12-12	17:30:00	47.6	57766					
14	2019-12-12	17:45:00	51.3	134590					
15	2019-12-12	18:00:00	46.3	42776		283733	48.5		
16	2019-12-12	18:15:00	45.1	32328					
17	2019-12-12	18:30:00	47.3	54308					

18	2019-12-12	18:45:00	42.9	19284				
19	2019-12-12	19:00:00	42.8	19193		125113	45.0	
20	2019-12-12	19:15:00	43.4	22076				
21	2019-12-12	19:30:00	42.0	15818				
22	2019-12-12	19:45:00	45.2	33157				
23	2019-12-12	20:00:00	50.0	99246		170298	46.3	
24	2019-12-12	20:15:00	44.9	31108				
25	2019-12-12	20:30:00	43.8	23910				
26	2019-12-12	20:45:00	43.9	24318				
27	2019-12-12	21:00:00	42.5	17693		97028	43.8	
28	2019-12-12	21:15:00	41.3	13478				
29	2019-12-12	21:30:00	42.2	16748				
30	2019-12-12	21:45:00	41.9	15449				
31	2019-12-12	22:00:00	41.3	13607		59282	41.7	x
				1	**1802749**			x
1	2019-12-13	07:15:00	45.1	32016				
2	2019-12-13	07:30:00	45.5	35169				
3	2019-12-13	07:45:00	46.9	49167				
4	2019-12-13	08:00:00	48.3	68164		184515	46.6	
	2019-12-13	08:15:00	53.9					
	2019-12-13	08:30:00	51.1					
	2019-12-13	08:45:00	46.7					
	2019-12-13	09:00:00	48.2			0	#NUM!	
	2019-12-13	09:15:00	47.3					
	2019-12-13	09:30:00	49.0					
	2019-12-13	09:45:00	47.6					
	2019-12-13	10:00:00	47.7			0	#NUM!	
	2019-12-13	10:15:00	51.5					
	2019-12-13	10:30:00	51.6					
	2019-12-13	10:45:00	59.8					
	2019-12-13	11:00:00	50.7			0	#NUM!	
5	2019-12-13	11:15:00	47.6	57288				
6	2019-12-13	11:30:00	47.2	52348				
7	2019-12-13	11:45:00	46.9	49137				
8	2019-12-13	12:00:00	45.7	36906		195679	46.9	
9	2019-12-13	12:15:00	47.2	52117				
10	2019-12-13	12:30:00	51.2	133135				
11	2019-12-13	12:45:00	54.3	271377				
12	2019-12-13	13:00:00	48.4	69871		526500	51.2	
13	2019-12-13	13:15:00	49.5	88714				
14	2019-12-13	13:30:00	45.1	32333				
15	2019-12-13	13:45:00	50.2	105738				
	2019-12-13	14:00:00	50.3			226785	48.8	
	2019-12-13	14:15:00	50.9					
	2019-12-13	14:30:00	45.4					
	2019-12-13	14:45:00	44.8					
	2019-12-13	15:00:00	45.8			0	#NUM!	
	2019-12-13	15:15:00	46.2					
	2019-12-13	15:30:00	49.7					
	2019-12-13	15:45:00	45.9					
	2019-12-13	16:00:00	46.7			0	#NUM!	
	2019-12-13	16:15:00	47.8					
	2019-12-13	16:30:00	45.6					
	2019-12-13	16:45:00	47.5					
	2019-12-13	17:00:00	46.8			0	#NUM!	
	2019-12-13	17:15:00	46.7					
	2019-12-13	17:30:00	44.8					
16	2019-12-13	17:45:00	45.1	32189				
17	2019-12-13	18:00:00	43.9	24794		56983	44.5	
18	2019-12-13	18:15:00	42.7	18762				

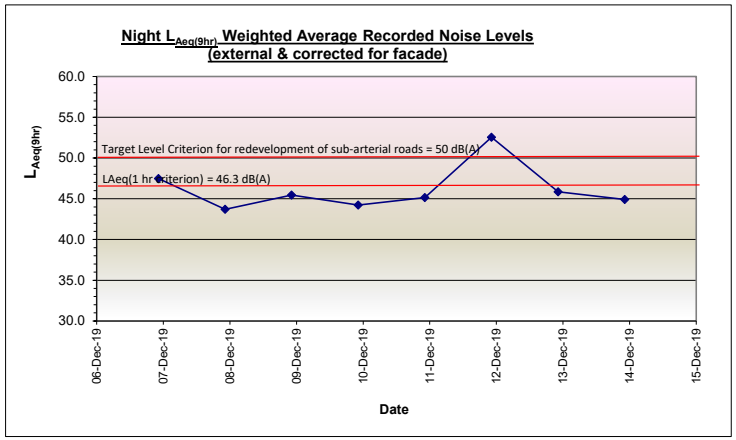
42.4
44.5
45.0
45.2
46.6
46.6
46.9
48.8
51.2

19	2019-12-13	18:30:00	40.6	11418				
20	2019-12-13	18:45:00	42.9	19444				
21	2019-12-13	19:00:00	43.0	19937		69561	42.4	
22	2019-12-13	19:15:00	41.6	14419				
23	2019-12-13	19:30:00	41.5	14253				
24	2019-12-13	19:45:00	48.6	71748				
25	2019-12-13	20:00:00	49.2	83623		184044	46.6	
26	2019-12-13	20:15:00	45.9	38721				
27	2019-12-13	20:30:00	45.4	34449				
28	2019-12-13	20:45:00	45.0	31972				
29	2019-12-13	21:00:00	43.5	22249		127391	45.0	
30	2019-12-13	21:15:00	44.4	27246				
31	2019-12-13	21:30:00	45.9	38530				
32	2019-12-13	21:45:00	45.2	32918				
33	2019-12-13	22:00:00	45.3	33824		132518	45.2	x
					1703976			x

Min Laeq(15min)	40.2
Max Laeq(15min)	59.8

Noise Assessment

Night Period	10pm to 7am		
Target level (Table 3 NSW road noise policy 2001)	50	dB(A)	redevelopment of sub arterial roadways
Recorded $L_{Aeq(9hr)}$ (façade Corrected)	46.3	dB(A)	
Overall $L_{Aeq(1hr)}$ criterion	46.0	dB(A)	
Sleep Disturbance criteria (RBL+ 15)	47.4	dB(A)	



Night	Date	Recorded Daily $L_{Aeq(9hr)}$	Daily $L_{aeq(9hr)}$ (Façade Corrected)	Daily $L_{Aeq(1\ hr)}$	RBL	Potential Sleep Disturbance Events
Friday Night	6/12/2019	45.0	47.5	48.5	32.3	7
Saturday Night	7/12/2019	41.2	43.7	43.7	30.1	0
Sunday Night	8/12/2019	42.9	45.4	46.7	32.3	1
Monday Night	9/12/2019	41.7	44.2	44.9	31.6	0
Tuesday Night	10/12/2019	42.6	45.1	45.3	33.9	1
Wednesday Night	11/12/2019	50.0	52.5	50.9	32.6	7
Thursday Night	12/12/2019	43.4	45.9	48.2	34.3	2
Friday Night	13/12/2019	42.4	44.9	44.8	32.5	1
					32.4	

no.	date	time	$L_{Aeq(15\ minute)}$	$L_{A90(15minute)}$	$L_{A90(15min)}$ assend	$10^{((L_{Aeq(15\ minute)}/10))}$	period sums	hrly sums	hrly Laeq	Sleep Disturbance events		
1	2019-12-06	22:15:00	43.1	39.8	30.7	20260				0		
2	2019-12-06	22:30:00	43.9	39.8	30.7	24739				0		
3	2019-12-06	22:45:00	42.4	38.9	32.0	17509				0		
4	2019-12-06	23:00:00	43.4	39.3	32.3	22045		84553	43.3	0	42.0	1
5	2019-12-06	23:15:00	44.2	40.8	32.5	26033				0	42.0	2
6	2019-12-06	23:30:00	42.7	40.2	33.0	18525				0	42.3	3
7	2019-12-06	23:45:00	42.8	40.5	33.1	18848				0	42.4	4
8	2019-12-07	00:00:00	42.5	40.5	33.3	17948		81353	43.1	0	43.1	5
9	2019-12-07	00:15:00	42.4	40.1	33.5	17343				0	43.3	6
10	2019-12-07	00:30:00	42.4	39.7	33.8	17526				0	45.7	7
11	2019-12-07	00:45:00	42.0	38.6	33.9	15743				0	48.3	8
12	2019-12-07	01:00:00	42.6	39.0	35.2	18304		68916	42.4	0	48.5	9
13	2019-12-07	01:15:00	40.9	36.8	36.4	12250				0		
14	2019-12-07	01:30:00	43.1	36.5	36.5	20595				0		
15	2019-12-07	01:45:00	43.0	35.2	36.7	19760				0		
16	2019-12-07	02:00:00	41.9	36.4	36.8	15339		67943	42.3	0		
17	2019-12-07	02:15:00	40.7	33.8	38.6	11847				0		
18	2019-12-07	02:30:00	44.5	33.0	38.9	28414				0		
19	2019-12-07	02:45:00	40.2	32.5	39.0	10457				0		
20	2019-12-07	03:00:00	41.0	33.1	39.3	12659		63378	42.0	0		
21	2019-12-07	03:15:00	40.7	32.3	39.7	11703				0		
22	2019-12-07	03:30:00	40.0	30.7	39.8	10069				0		
23	2019-12-07	03:45:00	39.8	32.0	39.8	9504				0		
24	2019-12-07	04:00:00	45.2	33.9	40.1	32776		64051	42.0	0		
25	2019-12-07	04:15:00	45.4	33.3	40.1	34853				0		
26	2019-12-07	04:30:00	41.7	30.7	40.1	14743				0		
27	2019-12-07	04:45:00	43.4	33.5	40.2	21986				0		
28	2019-12-07	05:00:00	48.9	36.7	40.5	78127		149709	45.7	1		
29	2019-12-07	05:15:00	49.9	44.1	40.5	97461				1		
30	2019-12-07	05:30:00	47.1	40.1	40.8	50856				0		
31	2019-12-07	05:45:00	46.2	40.1	42.5	41253				0		
32	2019-12-07	06:00:00	49.6	42.5	42.7	90450		280019	48.5	1		
33	2019-12-07	06:15:00	48.6	42.8	42.8	72366				1		

34	2019-12-07	06:30:00	48.3	42.7	42.9	67537					1			
35	2019-12-07	06:45:00	48.4	42.9	43.1	68451					1			
36	2019-12-07	07:00:00	48.0	43.1	44.1	63140		271495	48.3		1			
							1131418	1131418	x		**7**			
1	2019-12-07	22:15:00	41.3	38.9	29.5	13583					0			
2	2019-12-07	22:30:00	41.7	39.2	29.5	14712					0			
3	2019-12-07	22:45:00	41.9	39.0	29.8	15660					0			
4	2019-12-07	23:00:00	43.3	40.2	30.1	21160		65116	42.1		0	37.3	1	
5	2019-12-07	23:15:00	44.0	41.5	30.5	25125					0	37.3	2	
6	2019-12-07	23:30:00	44.0	41.1	31.4	25402					0	37.6	3	
7	2019-12-07	23:45:00	43.2	40.4	32.0	21004					0	39.5	4	
8	2019-12-08	00:00:00	43.4	41.0	32.0	21911		93442	43.7		0	42.0	5	
9	2019-12-08	00:15:00	43.4	40.6	32.1	21791					0	42.1	6	
10	2019-12-08	00:30:00	41.7	39.0	33.3	14698					0	42.1	7	
11	2019-12-08	00:45:00	41.6	39.2	33.5	14482					0	43.3	8	
12	2019-12-08	01:00:00	40.9	38.2	33.8	12280		63251	42.0		0	43.7	9	
13	2019-12-08	01:15:00	40.9	38.2	33.9	12342					0			
14	2019-12-08	01:30:00	39.3	36.8	34.0	8457					0			
15	2019-12-08	01:45:00	38.6	36.1	35.0	7236					0			
16	2019-12-08	02:00:00	38.7	35.5	35.0	7388		35422	39.5		0			
17	2019-12-08	02:15:00	39.3	35.0	35.3	8550					0			
18	2019-12-08	02:30:00	36.4	33.8	35.4	4345					0			
19	2019-12-08	02:45:00	36.8	33.3	35.5	4765					0			
20	2019-12-08	03:00:00	35.9	32.1	36.0	3865		21525	37.3		0			
21	2019-12-08	03:15:00	35.5	31.4	36.1	3588					0			
22	2019-12-08	03:30:00	36.3	32.0	36.8	4258					0			
23	2019-12-08	03:45:00	36.1	32.0	38.2	4042					0			
24	2019-12-08	04:00:00	39.8	30.1	38.2	9456		21344	37.3		0			
25	2019-12-08	04:15:00	35.8	29.5	38.5	3766					0			
26	2019-12-08	04:30:00	35.7	29.5	38.9	3709					0			
27	2019-12-08	04:45:00	37.2	29.8	39.0	5227					0			
28	2019-12-08	05:00:00	40.1	30.5	39.0	10346		23048	37.6		0			
29	2019-12-08	05:15:00	45.7	38.5	39.2	36854					0			
30	2019-12-08	05:30:00	43.3	33.5	39.2	21394					0			
31	2019-12-08	05:45:00	41.7	34.0	40.2	14873					0			
32	2019-12-08	06:00:00	41.2	33.9	40.4	13070		86191	43.3		0			
33	2019-12-08	06:15:00	40.0	35.0	40.6	9903					0			
34	2019-12-08	06:30:00	41.7	35.4	41.0	14755					0			
35	2019-12-08	06:45:00	40.9	35.3	41.1	12190					0			
36	2019-12-08	07:00:00	44.6	36.0	41.5	28608		65456	42.1		0			
							474794		x		**0**			
1	2019-12-08	22:15:00	44.8	41.1	31.5	30305					0			
2	2019-12-08	22:30:00	42.7	40.7	32.3	18561					0			
3	2019-12-08	22:45:00	43.7	40.8	32.3	23408					0			
4	2019-12-08	23:00:00	43.5	41.0	32.3	22137		94412	43.7		0	36.4		
5	2019-12-08	23:15:00	43.4	41.3	32.5	21934					0	36.7		
6	2019-12-08	23:30:00	42.7	41.0	33.0	18486					0	40.4		
7	2019-12-08	23:45:00	42.7	40.8	33.2	18450					0	42.6		
8	2019-12-09	00:00:00	42.8	40.9	33.3	19266		78137	42.9		0	42.7		
9	2019-12-09	00:15:00	42.5	40.6	33.4	17652					0	42.9		
10	2019-12-09	00:30:00	43.6	41.0	33.4	22935					0	43.7		
11	2019-12-09	00:45:00	42.5	40.3	33.4	17635					0	44.9		
12	2019-12-09	01:00:00	42.3	39.1	33.4	17049		75271	42.7		0	46.7		
13	2019-12-09	01:15:00	42.1	38.1	33.5	16126					0			
14	2019-12-09	01:30:00	39.2	35.0	33.9	8231					0			
15	2019-12-09	01:45:00	39.0	32.3	34.0	7945					0			
16	2019-12-09	02:00:00	40.7	35.4	34.2	11799		44100	40.4		0			
17	2019-12-09	02:15:00	36.2	33.2	34.7	4128					0			
18	2019-12-09	02:30:00	42.5	34.7	35.0	17668					0			
19	2019-12-09	02:45:00	40.3	35.4	35.0	10673					0			

20	2019-12-09	03:00:00	46.0	35.5	35.4	40159		72628	42.6	0	
21	2019-12-09	03:15:00	35.4	33.4	35.4	3448				0	
22	2019-12-09	03:30:00	37.7	33.9	35.5	5876				0	
23	2019-12-09	03:45:00	36.5	34.0	36.5	4435				0	
24	2019-12-09	04:00:00	35.5	33.4	38.1	3588		17347	36.4	0	
25	2019-12-09	04:15:00	36.1	33.4	39.1	4106				0	
26	2019-12-09	04:30:00	35.5	33.4	40.3	3536				0	
27	2019-12-09	04:45:00	36.2	32.5	40.6	4127				0	
28	2019-12-09	05:00:00	38.3	32.3	40.7	6791		18560	36.7	0	
29	2019-12-09	05:15:00	46.6	33.0	40.8	45511				0	
30	2019-12-09	05:30:00	43.4	33.3	40.8	22021				0	
31	2019-12-09	05:45:00	48.5	31.5	40.9	70739				1	
32	2019-12-09	06:00:00	46.7	32.3	41.0	47058		185329	46.7	0	
33	2019-12-09	06:15:00	45.5	33.5	41.0	35770				0	
34	2019-12-09	06:30:00	45.9	35.0	41.0	38466				0	
35	2019-12-09	06:45:00	44.2	36.5	41.1	26351				0	
36	2019-12-09	07:00:00	43.6	34.2	41.3	22776		123363	44.9	0	
							709147		x	**1**	
1	2019-12-09	22:15:00	42.1	39.0	31.0	16129				0	
2	2019-12-09	22:30:00	41.9	39.5	31.4	15618				0	
3	2019-12-09	22:45:00	41.6	39.3	31.4	14589				0	
4	2019-12-09	23:00:00	42.8	39.6	31.6	18975		65312	42.1	0	37.0
5	2019-12-09	23:15:00	43.4	40.2	32.3	22113				0	38.7
6	2019-12-09	23:30:00	43.6	40.5	32.4	22721				0	38.8
7	2019-12-09	23:45:00	42.9	40.1	33.5	19591				0	40.3
8	2019-12-10	00:00:00	42.8	40.4	33.5	19035		83460	43.2	0	42.1
9	2019-12-10	00:15:00	42.2	40.0	34.0	16740				0	43.2
10	2019-12-10	00:30:00	43.2	39.5	34.0	21050				0	44.0
11	2019-12-10	00:45:00	41.5	38.6	34.1	14103				0	44.1
12	2019-12-10	01:00:00	39.9	37.3	34.3	9779		61671	44.9	0	44.9
13	2019-12-10	01:15:00	39.1	37.0	34.4	8138				0	
14	2019-12-10	01:30:00	38.7	36.3	34.5	7354				0	
15	2019-12-10	01:45:00	38.6	36.6	34.7	7301				0	
16	2019-12-10	02:00:00	38.6	35.9	34.7	7194		29987	38.7	0	
17	2019-12-10	02:15:00	39.0	35.5	35.5	7949				0	
18	2019-12-10	02:30:00	43.9	34.4	35.9	24792				0	
19	2019-12-10	02:45:00	37.9	34.7	35.9	6125				0	
20	2019-12-10	03:00:00	36.3	34.1	36.1	4235		43100	40.3	0	
21	2019-12-10	03:15:00	36.2	34.0	36.3	4148				0	
22	2019-12-10	03:30:00	36.8	34.0	36.6	4834				0	
23	2019-12-10	03:45:00	36.9	33.5	37.0	4871				0	
24	2019-12-10	04:00:00	37.8	32.4	37.3	6090		19942	37.0	0	
25	2019-12-10	04:15:00	38.1	32.3	38.6	6463				0	
26	2019-12-10	04:30:00	37.2	31.6	39.0	5279				0	
27	2019-12-10	04:45:00	38.4	31.4	39.2	6893				0	
28	2019-12-10	05:00:00	40.6	31.0	39.3	11568		30204	38.8	0	
29	2019-12-10	05:15:00	46.6	39.2	39.5	45844				0	
30	2019-12-10	05:30:00	42.0	34.5	39.5	15678				0	
31	2019-12-10	05:45:00	42.4	31.4	39.6	17475				0	
32	2019-12-10	06:00:00	43.9	34.3	40.0	24414		103411	44.1	0	
33	2019-12-10	06:15:00	44.1	35.9	40.1	25521				0	
34	2019-12-10	06:30:00	44.2	36.1	40.2	26004				0	
35	2019-12-10	06:45:00	43.7	34.7	40.4	23219				0	
36	2019-12-10	07:00:00	44.0	33.5	40.5	25378		100122	44.0	0	
							537210		x	**0**	
1	2019-12-10	22:15:00	39.4	36.3	31.8	8630				0	
2	2019-12-10	22:30:00	42.0	39.3	33.0	15956				0	
3	2019-12-10	22:45:00	40.5	38.7	33.9	11121				0	
4	2019-12-10	23:00:00	40.6	38.6	34.8	11559		47267	40.7	0	38.6
5	2019-12-10	23:15:00	41.6	38.7	35.1	14480				0	39.3

6	2019-12-10	23:30:00	41.3	37.6	35.2	13527				0	39.7
7	2019-12-10	23:45:00	41.0	37.7	35.4	12505				0	40.8
8	2019-12-11	00:00:00	43.3	41.2	35.7	21381		61893	41.9	0	41.9
9	2019-12-11	00:15:00	43.5	41.5	35.7	22561				0	42.1
10	2019-12-11	00:30:00	43.6	40.6	35.7	22860				0	43.1
11	2019-12-11	00:45:00	42.5	40.3	36.0	17728				0	44.7
12	2019-12-11	01:00:00	42.5	40.6	36.0	17681		80831	43.1	0	45.3
13	2019-12-11	01:15:00	43.3	40.8	36.2	21369				0	
14	2019-12-11	01:30:00	42.4	39.9	36.3	17488				0	
15	2019-12-11	01:45:00	42.1	39.0	36.6	16232				0	
16	2019-12-11	02:00:00	40.2	37.7	36.7	10473		65561	42.1	0	
17	2019-12-11	02:15:00	39.2	37.2	37.0	8233				0	
	2019-12-11	02:30:00	39.3	37.1	37.1					0	
	2019-12-11	02:45:00	40.0	36.6	37.2					0	
	2019-12-11	03:00:00	38.6	36.2	37.4			8233		0	
	2019-12-11	03:15:00	37.7	35.2	37.6					0	
	2019-12-11	03:30:00	38.7	36.0	37.7					0	
18	2019-12-11	03:45:00	42.0	37.4	37.7	15876				0	
19	2019-12-11	04:00:00	39.0	35.7	38.6	7954		23830	40.8	0	
20	2019-12-11	04:15:00	38.0	35.1	38.6	6277				0	
21	2019-12-11	04:30:00	38.6	33.9	38.7	7327				0	
22	2019-12-11	04:45:00	39.8	33.0	38.7	9614				0	
23	2019-12-11	05:00:00	37.6	31.8	39.0	5807		29025	38.6	0	
24	2019-12-11	05:15:00	45.5	35.7	39.3	35171				0	
25	2019-12-11	05:30:00	45.8	38.6	39.9	37863				0	
26	2019-12-11	05:45:00	44.1	36.7	40.3	25974				0	
27	2019-12-11	06:00:00	42.6	37.0	40.6	18026		117034	44.7	0	
28	2019-12-11	06:15:00	47.6	35.4	40.6	57567				1	
29	2019-12-11	06:30:00	44.0	36.0	40.8	25057				0	
30	2019-12-11	06:45:00	45.0	35.7	41.2	31533				0	
31	2019-12-11	07:00:00	43.2	34.8	41.5	20963		135120	45.3	0	
							568795	x		1	
1	2019-12-11	22:15:00	51.1	40.5	32.3	129168				1	
2	2019-12-11	22:30:00	51.2	44.9	32.6	133241				1	
3	2019-12-11	22:45:00	50.2	41.7	33.3	104997				1	
	2019-12-11	23:00:00	50.2	43.2	33.4			367406	50.9	1	36.2
	2019-12-11	23:15:00	45.6	41.3	33.4					0	40.5
	2019-12-11	23:30:00	46.9	41.6	33.7					0	41.4
	2019-12-11	23:45:00	45.4	41.3	33.7					0	46.2
	2019-12-12	00:00:00	48.6	44.1	34.0			0		1	46.6
	2019-12-12	00:15:00	44.5	41.4	34.4					0	50.9
	2019-12-12	00:30:00	45.0	41.7	35.2					0	
	2019-12-12	00:45:00	43.8	40.4	35.3					0	
	2019-12-12	01:00:00	41.9	40.2	35.9			0		0	
	2019-12-12	01:15:00	42.3	40.3	36.9					0	
	2019-12-12	01:30:00	43.6	41.2	37.0					0	
	2019-12-12	01:45:00	43.4	39.3	38.5					0	
	2019-12-12	02:00:00	42.3	39.1	38.9			0		0	
	2019-12-12	02:15:00	43.1	38.9	39.1					0	
	2019-12-12	02:30:00	42.1	38.5	39.3					0	
4	2019-12-12	02:45:00	39.8	37.0	39.6	9540				0	
5	2019-12-12	03:00:00	41.1	35.9	39.8	12948		22488	40.5	0	
6	2019-12-12	03:15:00	36.3	34.0	40.2	4273				0	
7	2019-12-12	03:30:00	36.0	33.7	40.3	3993				0	
8	2019-12-12	03:45:00	35.5	33.4	40.4	3586				0	
9	2019-12-12	04:00:00	36.9	32.6	40.5	4895		16747	36.2	0	
10	2019-12-12	04:15:00	36.6	33.3	40.9	4548				0	
11	2019-12-12	04:30:00	36.9	32.3	41.2	4859				0	
12	2019-12-12	04:45:00	41.8	33.7	41.2	15297				0	
13	2019-12-12	05:00:00	44.8	34.4	41.3	30234		54938	41.4	0	

14	2019-12-12	05:15:00	49.7	41.2	41.3	93098				1	
15	2019-12-12	05:30:00	45.9	35.2	41.4	38957				0	
16	2019-12-12	05:45:00	41.3	33.4	41.6	13541				0	
17	2019-12-12	06:00:00	43.0	36.9	41.7	19870		165466	46.2	0	
18	2019-12-12	06:15:00	47.3	40.9	41.7	53255				0	
19	2019-12-12	06:30:00	47.1	39.8	43.2	51249				0	
20	2019-12-12	06:45:00	47.8	39.6	44.1	60931				1	
21	2019-12-12	07:00:00	42.1	35.3	44.9	16295		181730	46.6	0	
							808774	x		**7**	
1	2019-12-12	22:15:00	41.6	38.0	33.2	14442				0	
2	2019-12-12	22:30:00	41.4	38.6	34.0	13652				0	
3	2019-12-12	22:45:00	40.9	38.0	34.3	12380				0	
4	2019-12-12	23:00:00	40.7	37.8	34.3	11652		52126	41.1	0	39.6
5	2019-12-12	23:15:00	40.8	38.0	34.7	12087				0	40.3
6	2019-12-12	23:30:00	40.6	37.7	34.9	11406				0	40.7
7	2019-12-12	23:45:00	41.4	38.6	35.0	13924				0	41.1
8	2019-12-13	00:00:00	41.8	39.0	35.5	15233		52651	41.2	0	41.1
9	2019-12-13	00:15:00	41.2	38.7	35.8	13051				0	41.2
10	2019-12-13	00:30:00	41.7	39.6	35.9	14800				0	41.4
11	2019-12-13	00:45:00	41.4	39.3	36.0	13715				0	45.2
12	2019-12-13	01:00:00	41.3	39.1	36.6	13502		55068	41.4	0	48.2
13	2019-12-13	01:15:00	40.7	38.7	36.8	11695				0	
14	2019-12-13	01:30:00	40.3	38.1	36.9	10757				0	
15	2019-12-13	01:45:00	40.1	37.3	37.3	10134				0	
16	2019-12-13	02:00:00	39.9	36.9	37.7	9826		42412	40.3	0	
17	2019-12-13	02:15:00	38.3	35.0	37.8	6744				0	
18	2019-12-13	02:30:00	41.3	35.5	38.0	13607				0	
19	2019-12-13	02:45:00	41.9	35.9	38.0	15328				0	
20	2019-12-13	03:00:00	42.1	36.6	38.0	16349		52027	41.1	0	
21	2019-12-13	03:15:00	40.8	36.0	38.1	12086				0	
22	2019-12-13	03:30:00	40.0	34.0	38.6	10051				0	
23	2019-12-13	03:45:00	37.0	34.3	38.6	5005				0	
24	2019-12-13	04:00:00	39.7	34.3	38.7	9411		36552	39.6	0	
25	2019-12-13	04:15:00	36.0	33.2	38.7	4027				0	
26	2019-12-13	04:30:00	41.1	34.9	39.0	12846				0	
27	2019-12-13	04:45:00	40.8	34.7	39.1	11952				0	
28	2019-12-13	05:00:00	42.5	35.8	39.3	17678		46503	40.7	0	
29	2019-12-13	05:15:00	44.1	36.8	39.6	25874				0	
30	2019-12-13	05:30:00	46.3	40.6	39.7	42880				0	
31	2019-12-13	05:45:00	44.3	39.7	39.7	26699				0	
32	2019-12-13	06:00:00	45.6	39.7	40.6	36552		132005	45.2	0	
33	2019-12-13	06:15:00	45.9	41.2	41.2	38948				0	
34	2019-12-13	06:30:00	48.2	43.7	41.6	65840				1	
35	2019-12-13	06:45:00	50.6	43.6	43.6	116073				1	
36	2019-12-13	07:00:00	46.6	41.6	43.7	45710		266571	48.2	0	
							735915	x		**2**	
1	2019-12-13	22:15:00	45.9	41.7	31.3	38477				0	
2	2019-12-13	22:30:00	44.5	40.9	31.7	28146				0	
3	2019-12-13	22:45:00	45.1	40.1	32.5	32268				0	
4	2019-12-13	23:00:00	43.2	40.3	32.5	20728		119620	44.8	0	38.4
5	2019-12-13	23:15:00	42.6	40.1	32.6	18226				0	39.6
6	2019-12-13	23:30:00	42.7	40.3	32.7	18587				0	39.9
7	2019-12-13	23:45:00	42.7	40.5	33.0	18566				0	40.0
8	2019-12-14	00:00:00	43.2	40.6	33.1	20714		76093	42.8	0	42.5
9	2019-12-14	00:15:00	42.9	40.3	33.7	19305				0	42.8
10	2019-12-14	00:30:00	42.8	40.3	34.2	19114				0	43.3
11	2019-12-14	00:45:00	42.5	39.9	34.3	17894				0	44.6
12	2019-12-14	01:00:00	41.8	39.6	34.6	15129		71441	42.5	0	44.8
13	2019-12-14	01:15:00	41.4	38.9	34.8	13861				0	
14	2019-12-14	01:30:00	40.1	37.2	35.6	10143				0	

15	2019-12-14	01:45:00	38.6	35.7	35.7	7323			0
16	2019-12-14	02:00:00	39.5	36.5	35.7	8964		40291	40.0	0
17	2019-12-14	02:15:00	38.8	35.7	35.9	7607				0
18	2019-12-14	02:30:00	39.2	35.9	36.5	8289				0
19	2019-12-14	02:45:00	40.4	36.5	36.5	11075				0
20	2019-12-14	03:00:00	39.8	36.5	36.5	9553		36524	39.6	0
21	2019-12-14	03:15:00	39.9	36.6	36.6	9680				0
22	2019-12-14	03:30:00	42.0	36.8	36.8	15701				0
23	2019-12-14	03:45:00	39.3	35.6	37.2	8508				0
24	2019-12-14	04:00:00	36.8	33.0	38.9	4820		38709	39.9	0
25	2019-12-14	04:15:00	38.1	33.1	39.6	6446				0
26	2019-12-14	04:30:00	39.2	34.6	39.9	8339				0
27	2019-12-14	04:45:00	38.4	34.2	40.1	6964				0
28	2019-12-14	05:00:00	37.5	31.7	40.1	5664		27413	38.4	0
29	2019-12-14	05:15:00	47.6	34.8	40.3	57095				1
30	2019-12-14	05:30:00	45.5	34.3	40.3	35621				0
31	2019-12-14	05:45:00	40.9	31.3	40.3	12233				0
32	2019-12-14	06:00:00	40.2	32.5	40.3	10529		115479	44.6	0
33	2019-12-14	06:15:00	41.7	32.5	40.5	14649				0
34	2019-12-14	06:30:00	44.0	32.6	40.6	25142				0
35	2019-12-14	06:45:00	43.8	32.7	40.9	23988				0
36	2019-12-14	07:00:00	43.2	33.7	41.7	20789		84568	43.3	0
							610138	x		**1**

Min Laeq(15min)	35.4
Max Laeq(15min)	51.2