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## ACOUSTICAL REPORT

### PROPOSED LIGHT INDUSTRIAL/COMMERICAL DEVELOPMENT

### LOT 10 DP 790360, FEDERAL DRIVE, FEDERAL NSW

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**ACOUSTICAL REPORT**  
**PROPOSED LIGHT INDUSTRIAL/COMMERCIAL DEVELOPMENT**  
**LOT 10 DP 790360, FEDERAL DRIVE, FEDERAL NSW**

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## 1.0 INTRODUCTION

Koikas Acoustics Pty Ltd was engaged by DavGav Pty Ltd to prepare a noise impact assessment for the proposed development at Lot 10 DP 790360, Federal Drive, Federal seeking approval for the construction of a new 8-unit mixed-use commercial complex with on-site ground-level parking.

For the DA proposal, the acoustic adequacy of the proposed design must be assessed in terms of standard planning guidelines issued by Byron Shire Council in their Local Environment Plan (LEP) and Development Control Plan (DCP), and also in terms of other standard planning guidelines related to common sources of noise.

As per Council guidelines and other standard planning instruments, Koikas Acoustics has determined the following acoustical components require an assessment at the current DA stage:

1. Noise emission from the use of the facility including (but not limited to) internal vehicle movements, mechanical plant, patrons, operational/breakout noise from buildings, etc.
2. Noise attributed to traffic generation resulting from the development.

This report presents the results and findings of an acoustic assessment for the subject proposal. In-principle acoustic treatments and noise control recommendations are included (where required) so that the premises may operate in compliance with the nominated acoustic planning levels.



## 2.0 THE PROPOSAL

The development is proposed to occupy the site at Lot 10, DP 790360, Federal. The application is for a commercial complex, consisting of 3 separate 2-storey structures including a ground floor car park to the rear. The complex is proposed to house 8 light industrial/commercial premises. The current development design can be seen in architectural drawings as prepared by U+I Building Studio, detailed in Table 1. All calculations and noise modelled scenarios conducted for this assessment are referenced to these architectural drawings.

<b>Table 1. Design drawings used in the assessment</b>				
<b>Drawing Title</b>	<b>Drawing No.</b>	<b>Revision</b>	<b>Date</b>	<b>Job No.</b>
Site Analysis Plan	DA11	A	11/11/2020	-
Site Layout and Carparking Plan	DA20	A	11/11/2020	-
Site Floor Plan	DA30	A	11/11/2020	-
Building A	DA31	A	11/11/2020	-
Building B	DA32	A	11/11/2020	-
Building C	DA33	A	11/11/2020	-
Roof Plan	DA34	A	11/11/2020	-
Proposed Site Section/Street Elevation	DA35	A	11/11/2020	-
Notes	1.	Detailed above are the plans and drawings available at the time of assessment. Where design changes are made without the prior knowledge of Koikas Acoustics, the assessment results and conclusions published within this report may be incorrect.		

The development location is situated in a primarily suburban town-centre area. The subject site is located on the main high-street area of Federal, with low-density residential adjoining to the north, west, and south. “Jasper Corner” Memorial Hall and Community Centre exists to the east directly across Federal Drive.

The subject site and surrounding properties are identified on the aerial photograph included as Figure 1.

Prevailing ambient noise conditions on-site and in the local area are generally the result of typical environmental noise such as distant traffic and localised domestic noise sources.





Figure 1. Aerial photo of the subject site and surrounding area (image source – Sixmaps)

Although the exact use of each tenancy of the premise is unknown at this stage, it is predicted that the following types of creative industries are likely to make use of the proposed space:

- Media Industry (Graphic design, film/media, web design etc.)
- Florist
- Fashion design + small-scale prototype production
- Art studio/gallery
- Bicycle workshop
- Photography studio
- Cobbler
- Traditional Japanese woodworking studio (no power tools)

The above potential noise sources have been considered in this assessment, other noise generating industries may be proposed by future tenants, and as such, should be verified by a qualified acoustical consultant before fit-out.

### 3.0 AMBIENT NOISE SURVEY

Existing external ambient noise levels were previously measured by Tim Fitzroy & Associates by installing a sound level meter data logger near the western boundary of the site. This meter was placed to measure existing background and traffic noise levels that would be common for the area. Noise logger location is shown in figure 1.

Noise level data was stored within the logger memory at 15-minutes intervals for about one week between Tuesday 7<sup>th</sup> and Monday 13<sup>th</sup> February 2020.

Table 2. Summary of noise logger results [dB]			
Location	Period, T <sup>1</sup>	Ambient noise level	Rating background level
		LAeq	LA90
467 Federal Drive	Day	48	40
	Evening	50	41
	Night	49	40
Notes 1.	The NSW EPA NPI refers to, <b>Daytime:</b> 7 am – 6 pm Monday to Saturday and 8 am to 6 pm Sunday and public holidays. <b>Evening:</b> 6 pm – 10 pm Monday to Sunday <b>Night:</b> 10 pm - 7 am Monday to Saturday and 10 pm to 8 am Sunday and public holidays.		

Raw noise data compiled by Tim Fitzroy & Associates is attached as **Appendix A**.

### 3.1 ATTENDED NOISE SURVEY

Koikas Acoustics has previously surveyed operational noise sources at similar development sites. The following noise sources were measured and used in this assessment:

Table 3. Source noise levels [dB]											
Noise Source	Noise Metric	Octave Band Noise Levels									Total
		31.5	63	125	250	500	1000	2000	4000	8000	
Internal Café/Bakery area	L <sub>Aeq</sub>	35	40	48	56	63	61	60	54	48	<b>67</b>
Internal office/studio area	L <sub>Aeq</sub>	33	38	46	54	61	59	58	52	46	<b>65</b>
Sewing Machine	L <sub>Aeq @ 1m</sub>	27	39	47	55	59	58	58	54	49	<b>64</b>
Overlocker	L <sub>Aeq @ 1m</sub>	25	36	45	55	64	67	67	62	55	<b>72</b>
Screen-Printing Machine	L <sub>Aeq @ 1m</sub>	24	34	44	49	51	50	46	37	29	<b>56</b>
Basic Hand tools (Hammering, sawing etc.)	L <sub>Aeq @ 1m</sub>	17	41	67	68	66	73	71	66	60	<b>77</b>

Each survey was conducted with an NTi XL2 sound level meter set to A-frequency and Fast-time weighted response. Surveys were conducted for durations deemed sufficient to represent the equivalent noise level without the influence of extraneous noise.



## 4.0 ACOUSTIC REQUIREMENTS

### 4.1 EPA NOISE POLICY FOR INDUSTRY

Noise emission design targets have been referenced from the NSW Environmental Protection Authority Noise Policy (EPA) for Industry (NPfi). The NPfi replaces the former Industrial Noise Policy, also prepared by the EPA.

The NPfi is designed to assess environmental noise impacts associated with scheduled activities prescribed within the Protection of the Environment Operations Act 1997, Schedule 1. It is also commonly used as a reference tool for establishing suitable planning levels for noise generated by mechanical plant and equipment and noise emission from commercial operations.

The guideline applies limits on the short term intrusive nature of a noise or noise-generating development (project intrusive noise level), as well as applying an upper limit on cumulative industrial noise emissions from all surrounding development/industry (project amenity noise level).

The most stringent of the project intrusive noise level and project amenity noise level is applied as the **project noise trigger level**. The project noise trigger level is the point, above which noise emission from a source or development site would trigger a management response.

To be able to define the more stringent of the intrusive and amenity noise levels, the underlying noise metrics must be the same. As the intrusive noise level is defined in terms of an  $L_{Aeq}$  15 minutes and the amenity noise level is defined in terms of an  $L_{Aeq}$  Period, a correction +3dB correction is applied to the project amenity noise level to equate the  $L_{Aeq}$  Period to  $L_{Aeq}$  15 minutes.

#### 4.1.1 Project noise trigger levels

Operational noise was assessed during the proposed operating periods per the requirements of the NPfi. Acoustic planning levels are largely determined to the existing environmental noise levels. The following NPfi planning levels apply for this project:





**Table 4. NPfl planning levels [dB]**

Period, T (Note 1)	Intrusive		Amenity					Project noise trigger level
	R BL	RBL + 5	Area classification	Recommended amenity noise level	High traffic area	Project amenity noise level	+3dB correction	
Day	40	45	Suburban	55	No	50	53	45
Evening	41	46	Suburban	45	No	40	43	43
Night	40	45	Suburban	40	No	35	38	38
Notes	<p>1. The NSW EPA NPI refers to,  <b>Daytime:</b> 7 am – 6 pm Monday to Saturday and 8 am to 6 pm Sunday and public holidays.  <b>Evening:</b> 6 pm – 10 pm Monday to Sunday  <b>Night:</b> 10 pm - 7 am Monday to Saturday and 10 pm to 8 am Sunday and public holidays.</p> <p>2. Project noise amenity level = recommended noise amenity level – 5dB, except where specific circumstances are met, such as high traffic.</p>							

Operational noise levels assessed to nearby commercial premises are not to exceed a recommended project amenity noise level of  $L_{Aeq\ Period}$  63 dB during business hours.



## 5.0 OPERATIONAL USE NOISE ASSESSMENT

### 5.1 NOISE PREDICTION MODEL

The noise predictions are based on computer simulation (CadnaA) of the site and the surrounding area. The program predicts noise levels to receiver points based on source sound power levels, source-receiver distances, the presence of any acoustic shielding objects, and the effects of acoustic absorption of the ground and other elements. Noise propagation calculations follow *ISO 9613 Acoustics – Attenuation of sound during propagation outdoors*. As per the sound propagation algorithms adopted in the ISO standard, the output of the noise model is a downwind sound pressure level which constitutes an assessment of noise-enhancing weather conditions.

### 5.2 DESIGN PARAMETERS AND ASSUMPTIONS

The following noise sources were considered to be a worst-case scenario for the night-time noise model scenario over 15-minutes:

Operating Period	Tenancy Use	Activity 1	Activity 2
	Daytime	Media Studio	10x Patrons speaking
Florist		4x Patrons speaking	Background music playing
Fashion Designer		4x Patrons speaking	Sewing machine and overlocker operating continuously
Art Studio		10x Patrons speaking	Basic hand tools
Bicycle Workshop		4x Patrons speaking	Basic hand tools
Photography Studio		4x Patrons speaking	Background music playing
Cobbler		2x Patrons speaking	Basic hand tools
Woodworking Studio		4x Patrons speaking	Basic hand tools

Note:

Noise from the recording studio was not considered in this assessment as all noise sources will be located within sound-proof enclosures. A further assessment of the studio sound enclosures should be undertaken by a qualified acoustical consultant before the fit-out. Additionally, the above noise sources are based on predictions of the future occupation of the development. Other noise-generating activities may be permissible on-site provided they are verified by a qualified acoustical consultant.



Given the 27 car parking spaces within the proposed parking area of the development, a maximum of 7 car movements to the car park are predicted at the peak arrival/departure during the busiest 15-minute period. Associated car engine ignition noise and car doors slamming will occur within the car park and have been included in this assessment

### 5.3 CALCULATED NOISE LEVEL RESULTS

The predicted operational noise impact from the development to the surrounding premises during the evening and night-time periods is summarised below. Scenario 1.1 is representative of all noise sources in Table 5 sounding continuously with all windows and doors open, Scenario 1.2 is with all work shop type activities having windows and doors closed.

Receivers		Scenario 1.1 Calculated External Noise Levels LAeq,15min	Evening Project Noise Trigger Level LAeq,15min	Scenario 1.2 Calculated External Noise Levels LAeq,15min	Night-time Project Noise Trigger Level LAeq,15min
Residential	R1	32	43	27	38
Residential	R2	36		30	
Residential	R3	43		36	
Commercial	R4	43	63	42	63
Commercial	R5	40		36	
Residential	R6	36	43	36	43

Notes:

1. The assessment predicts noise to comply with the adopted project noise trigger levels during the evening and night-time. Compliance during the evening period implies compliance with the less stringent daytime period.
2. Furthermore, the scenarios consider the worst-case scenario as all noise-generating activities are operating simultaneously and at maximum capacity in one 15-minute period. This is unlikely to occur as typical daily activities would be much less resulting in lower noise levels. Additionally, it is expected that most noise-generating activities will not occur during the night-time period.
3. An assessment of the mechanical plant should be conducted at the detailed design stage and should be assessed cumulatively with the operational noise sources considered in this report.

Refer to **Appendix B** for the receiver locations and Cadna/A noise contour maps.



## 5.4 RECOMMENDATIONS

- Boundary fences should be a minimum 1.8 m high. Boundary fences should utilise the following construction:
  - Double lapped 15mm thick timber fence palings offset so that there are no air gaps. This equates to a total barrier thickness of 30 mm; **OR**
  - 15mm compressed fibre cement panels with no air gaps at the joins; **OR**
  - 6mm compressed fibre cement panels either side of a 50mm steel frame with fibre-glass insulation batts (14kg/m;) to the cavity.
- Windows for workshop activities should be closed during the night-time period.
- Other noise-generating activities may be considered for the development but should be verified by a qualified acoustical consultant.
- Furthermore, it may be necessary for further façade treatment or plans of management to be implemented for the development based on the final activities to be conducted by tenants of the premise. There is however sufficient scope as shown in this report for a variety of activities to operate in a compliant manner.



## 6.0 ADDITIONAL TRAFFIC GENERATED BY PROPOSED DEVELOPMENT

Koikas Acoustics assumes that most vehicles will be using Federal Drive as the primary access corridor to the proposed development. As a traffic report has not been completed for this development yet, Koikas Acoustics has made assumptions regarding traffic volumes during peak times. As the development is proposed to house a maximum of 27 vehicle parking spots, the most stringent 1-hour period, for occupants arriving at the premises (morning peak hour) is considered. A conservative estimate is that all additional vehicles are assumed to arrive via Federal Drive during the busiest hour.

The existing  $L_{Aeq}$  1-hour during the morning peak hour (7 am to 8 am) on Federal Drive is 49 dB. Based on the EPA's Road Noise Policy, the criterion below applies:

*“For existing residences and other sensitive land uses affected by **additional traffic on existing roads generated by land use developments**, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding ‘no-build option’.”*

Noise levels at the façades of neighbouring residential buildings that result from additional vehicles on local roads are predicted to not increase by more than 2 dB, therefore compliance is achieved with the increase permitted by the EPA's Road Noise Policy.



## 7.0 CONCLUSION

Koikas Acoustics was requested to prepare an acoustic report for the proposed light industrial/commercial development at Lot 10, DP 790360, Federal. The acoustic report is to accompany a development application being submitted to Byron Shire Council.

The assessment considers potential noise impacts to future occupants of the development, and to surrounding residents such that acceptable acoustic amenity for the area is maintained.

Acoustic planning levels have been referenced from current EPA acoustic planning guidelines and requirements.

The included recommendations are based on designs prepared by U+I Building Studio.

The conclusions reached in this report should assist the Council in making their determination of the proposal in terms of compliance with the necessary acoustic design requirements. A further detailed acoustic report may be required for the CC submission should the building design be amended, or as required by Council.

Of the assessed components of noise, the following conclusions have been reached:

1. Conservative estimates for the use of the commercial/industrial premises and car park area is predicted to be acceptable for all proposed operation periods. Noise sources considered in this report are assumed based on preliminary predictions for the proposed operation of the premise. Receiver noise levels may vary depending on the final operation of each tenancy. A further assessment of mechanical plant noise impact should be undertaken at the detailed design stage and assessed cumulatively with the noise sources assessed in this report.
2. Traffic noise attributed to additional vehicle movement generated on the local road network as a result of the proposed light industrial/commercial development is predicted to not exceed relevant EPA Road Noise Policy guidelines..

In our professional opinion, there is sufficient scope within the proposed building design to achieve the applied acoustic planning guidelines.



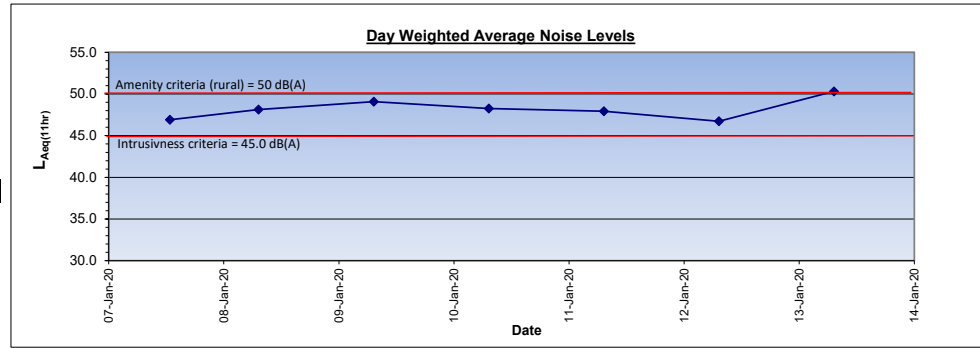
**APPENDIX A**

**A  
P  
P  
E  
N  
D  
I  
X  
A**

**APPENDIX A**

# Noise Assessment

Day Period 7am to 6pm  
 amenity criteria 55 dB(A)  
 Intrusiveness criteria (RBL+ 5) 45.0 dB(A)  
 Suburban



Day	Date	L <sub>Aeq(day)</sub>	ABL	RBL
Tuesday	7/01/2020	46.9	41.4	40.0
Wednesday	8/01/2020	48.1	40.3	
Thursday	9/01/2020	49.1	40.3	
Friday	10/01/2020	48.3	40.0	
Saturday	11/01/2020	47.9	39.0	
Sunday	12/01/2020	46.7	36.4	
Monday	13/01/2020	50.3	37.7	
		48.1		

no.	Date	time	L <sub>Aeq</sub> (15 minute)	L <sub>A90</sub> (15 minute)	L <sub>A90</sub> (15min)	ascending order	10 <sup>^</sup> ((L <sub>Aeq</sub> (15 minute)/10))	period sums	hrly sums	hrly Laeq
1	2020-01-07	10:15:00	48.2	42.2		40.8	66086			
2	2020-01-07	10:30:00	46.9	42.3		41.1	49389			
3	2020-01-07	10:45:00	46.7	42.6		41.4	46936			
4	2020-01-07	11:00:00	47.0	42.4		41.4	50554		212965	47.3
5	2020-01-07	11:15:00	45.8	42.7		41.9	38220			
6	2020-01-07	11:30:00	47.4	43.1		42.0	54846			
7	2020-01-07	11:45:00	46.3	41.9		42.0	43009			
8	2020-01-07	12:00:00	47.6	42.5		42.1	57824		193899	46.9
9	2020-01-07	12:15:00	49.7	42.0		42.2	92917			
10	2020-01-07	12:30:00	44.7	42.0		42.2	29789			
11	2020-01-07	12:45:00	45.8	42.2		42.2	37729			
12	2020-01-07	13:00:00	51.0	42.4		42.3	126645		287080	48.6
13	2020-01-07	13:15:00	45.0	42.1		42.3	31696			
14	2020-01-07	13:30:00	46.0	41.4		42.4	40000			
15	2020-01-07	13:45:00	49.9	41.1		42.4	98057			
16	2020-01-07	14:00:00	46.4	40.8		42.4	44015		213768	47.3
	2020-01-07	14:15:00	53.5	42.4		42.4				
	2020-01-07	14:30:00	48.7	43.4		42.5				
	2020-01-07	14:45:00	48.2	42.5		42.5				
	2020-01-07	15:00:00	48.3	43.3		42.6			0	#NUM!
17	2020-01-07	15:15:00	46.4	42.3		42.6	44102			
18	2020-01-07	15:30:00	47.5	42.9		42.7	56564			
19	2020-01-07	15:45:00	45.6	42.2		42.8	36463			
20	2020-01-07	16:00:00	46.0	42.4		42.8	40157		177285	46.5
21	2020-01-07	16:15:00	45.8	42.8		42.9	38193			
22	2020-01-07	16:30:00	46.4	43.0		42.9	43290			
23	2020-01-07	16:45:00	53.6	42.8		43.0	228338			
24	2020-01-07	17:00:00	46.7	42.6		43.0	47290		357112	49.5
25	2020-01-07	17:15:00	48.0	43.0		43.1	62822			
26	2020-01-07	17:30:00	45.9	42.9		43.2	39312			
27	2020-01-07	17:45:00	46.6	43.2		43.3	45977			
28	2020-01-07	18:00:00	45.4	41.4		43.4	34458		182569	46.6
								1373493		
1	2020-01-08	07:15:00	46.4	38.9		38.6	43255			
2	2020-01-08	07:30:00	46.3	38.6		38.9	43001			
3	2020-01-08	07:45:00	47.3	41.0		39.9	54223			
4	2020-01-08	08:00:00	51.8	42.3		40.3	151846		292325	48.6



5	2020-01-08	08:15:00	47.1	41.8	40.4	50803	
6	2020-01-08	08:30:00	44.9	42.3	40.4	30595	
7	2020-01-08	08:45:00	47.4	41.7	40.5	54984	
8	2020-01-08	09:00:00	48.2	42.2	40.6	65998	202380   47.0
9	2020-01-08	09:15:00	44.5	40.5	40.9	27942	
10	2020-01-08	09:30:00	42.9	40.4	40.9	19671	
11	2020-01-08	09:45:00	47.1	40.9	40.9	51175	
12	2020-01-08	10:00:00	47.5	42.2	41.0	56801	155589   45.9
13	2020-01-08	10:15:00	47.5	40.6	41.2	56786	
14	2020-01-08	10:30:00	46.9	40.4	41.2	49188	
15	2020-01-08	10:45:00	46.2	41.7	41.3	41829	
16	2020-01-08	11:00:00	45.0	40.9	41.4	31920	179724   46.5
17	2020-01-08	11:15:00	52.0	41.2	41.4	156891	
18	2020-01-08	11:30:00	44.5	41.2	41.7	27942	
19	2020-01-08	11:45:00	48.3	40.9	41.7	67329	
20	2020-01-08	12:00:00	45.6	41.8	41.8	35985	288147   48.6
21	2020-01-08	12:15:00	45.5	40.3	41.8	35386	
22	2020-01-08	12:30:00	52.0	39.9	41.9	157811	
23	2020-01-08	12:45:00	46.5	41.4	42.2	44373	
24	2020-01-08	13:00:00	47.3	41.4	42.2	54163	291734   48.6
25	2020-01-08	13:15:00	49.9	42.7	42.2	96838	
26	2020-01-08	13:30:00	50.7	42.6	42.3	116494	
27	2020-01-08	13:45:00	48.4	41.3	42.3	69894	
28	2020-01-08	14:00:00	50.6	41.9	42.3	114647	397872   50.0
29	2020-01-08	14:15:00	46.9	42.3	42.5	49332	
30	2020-01-08	14:30:00	46.1	42.2	42.6	41165	
31	2020-01-08	14:45:00	48.2	43.3	42.7	65370	
32	2020-01-08	15:00:00	47.2	43.4	43.2	52530	208396   47.2
33	2020-01-08	15:15:00	47.4	43.2	43.3	55430	
34	2020-01-08	15:30:00	49.7	44.7	43.4	94185	
35	2020-01-08	15:45:00	48.3	43.6	43.6	67250	
36	2020-01-08	16:00:00	47.6	42.5	43.7	58032	274897   48.4
37	2020-01-08	16:15:00	50.6	44.6	44.3	115972	
38	2020-01-08	16:30:00	48.0	43.7	44.3	62459	
	2020-01-08	16:45:00	54.8	44.3	44.6		
	2020-01-08	17:00:00	54.7	45.6	44.7		178431   49.5
	2020-01-08	17:15:00	51.0	44.3	45.1		
	2020-01-08	17:30:00	49.9	45.1	45.4		
	2020-01-08	17:45:00	49.4	45.4	45.4		
	2020-01-08	18:00:00	49.5	45.4	45.6		0   #NUM!
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3	2020-01-09	07:45:00	46.6	40.3	<b>40.3</b>	45642	
4	2020-01-09	08:00:00	46.1	40.3	40.3	41047	423073   50.2
5	2020-01-09	08:15:00	46.3	41.5	40.3	42942	
6	2020-01-09	08:30:00	46.5	41.3	40.3	44840	
7	2020-01-09	08:45:00	46.8	42.1	40.3	47651	
8	2020-01-09	09:00:00	49.7	42.6	40.5	94013	229446   47.6
9	2020-01-09	09:15:00	47.1	42.4	40.6	51494	
10	2020-01-09	09:30:00	46.1	42.1	40.6	40429	
11	2020-01-09	09:45:00	46.3	40.3	40.7	42274	
12	2020-01-09	10:00:00	45.7	40.8	40.8	37572	171768   46.3
13	2020-01-09	10:15:00	48.8	40.8	40.8	75074	
14	2020-01-09	10:30:00	46.3	39.4	41.3	42681	
15	2020-01-09	10:45:00	51.5	40.3	41.5	141506	

16	2020-01-09	11:00:00	48.0	40.5	41.8	62592	321854	49.1
17	2020-01-09	11:15:00	48.5	40.3	41.8	70880		
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19	2020-01-09	11:45:00	45.5	40.7	42.0	35385		
20	2020-01-09	12:00:00	48.8	40.6	42.1	75768	227754	47.6
21	2020-01-09	12:15:00	47.3	41.8	42.1	53373		
22	2020-01-09	12:30:00	49.5	42.2	42.2	88730		
23	2020-01-09	12:45:00	45.7	41.9	42.4	37361		
24	2020-01-09	13:00:00	52.4	42.6	42.6	173113	352577	49.5
25	2020-01-09	13:15:00	50.3	42.0	42.6	106315		
26	2020-01-09	13:30:00	49.7	43.1	42.7	94378		
27	2020-01-09	13:45:00	48.2	43.6	43.0	65856		
28	2020-01-09	14:00:00	47.9	43.0	43.1	61024	327573	49.1
29	2020-01-09	14:15:00	52.4	45.0	43.6	171940		
30	2020-01-09	14:30:00	49.9	45.0	44.4	98720		
31	2020-01-09	14:45:00	51.7	46.0	44.5	148254		
32	2020-01-09	15:00:00	50.7	46.0	44.5	118757	537670	51.3
	2020-01-09	15:15:00	48.9	45.5	44.6			
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	2020-01-09	16:00:00	51.3	47.6	45.0		0	#NUM!
	2020-01-09	16:15:00	49.3	46.0	45.5			
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	2020-01-09	17:00:00	49.9	44.6	46.0		0	#NUM!
	2020-01-09	17:15:00	49.4	44.4	46.0			
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3	2020-01-10	07:45:00	47.0	39.9	<b>40.0</b>	49856		
4	2020-01-10	08:00:00	46.6	40.6	40.1	46223	274857	48.4
5	2020-01-10	08:15:00	47.8	40.1	40.6	60384		
6	2020-01-10	08:30:00	46.5	41.2	41.1	44761		
7	2020-01-10	08:45:00	46.4	42.1	41.2	44017		
8	2020-01-10	09:00:00	46.8	42.4	41.2	47463	196625	46.9
9	2020-01-10	09:15:00	47.8	42.7	41.5	59953		
10	2020-01-10	09:30:00	48.4	43.2	41.6	68830		
11	2020-01-10	09:45:00	45.2	41.6	41.7	33212		
12	2020-01-10	10:00:00	46.2	41.7	42.1	41649	203644	47.1
13	2020-01-10	10:15:00	43.6	41.1	42.3	22814		
14	2020-01-10	10:30:00	46.7	41.5	42.4	46682		
15	2020-01-10	10:45:00	49.7	45.7	42.5	92583		
16	2020-01-10	11:00:00	47.3	44.1	42.7	53094	215173	48.6
17	2020-01-10	11:15:00	47.1	42.3	42.7	51670		
18	2020-01-10	11:30:00	51.3	43.4	43.2	135023		
19	2020-01-10	11:45:00	46.1	41.2	43.2	40725		
20	2020-01-10	12:00:00	49.8	44.1	43.3	95925	323343	49.1
21	2020-01-10	12:15:00	48.3	42.5	43.4	67126		
22	2020-01-10	12:30:00	47.4	42.7	43.6	54821		
23	2020-01-10	12:45:00	51.3	43.2	43.7	134753		
24	2020-01-10	13:00:00	51.1	44.6	44.0	127593	384293	49.8
	2020-01-10	13:15:00	51.1	45.5	44.1			
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	2020-01-10	15:00:00	52.5	46.0	44.6		0   #NUM!
	2020-01-10	15:15:00	55.7	44.5	44.9		
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	2020-01-10	15:45:00	49.2	44.5	45.5		
	2020-01-10	16:00:00	47.6	43.7	45.6		0   #NUM!
	2020-01-10	16:15:00	49.0	43.3	45.6		
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<b>1807643</b>							
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3	2020-01-11	07:45:00	46.1	38.9	38.9	40702	
4	2020-01-11	08:00:00	44.3	38.9	39.0	26727	163853   46.1
5	2020-01-11	08:15:00	43.8	39.0	39.4	24039	
6	2020-01-11	08:30:00	46.1	40.0	39.4	40684	
7	2020-01-11	08:45:00	45.7	40.5	39.7	37093	
8	2020-01-11	09:00:00	47.6	40.9	39.7	57281	159096   46.0
9	2020-01-11	09:15:00	48.6	40.7	39.7	73153	
10	2020-01-11	09:30:00	43.5	40.9	39.8	22386	
11	2020-01-11	09:45:00	45.4	40.6	39.8	34550	
12	2020-01-11	10:00:00	44.5	40.3	39.9	27907	157995   46.0
13	2020-01-11	10:15:00	45.2	40.5	39.9	33160	
14	2020-01-11	10:30:00	47.4	40.2	40.0	54530	
15	2020-01-11	10:45:00	46.9	41.1	40.1	48951	
16	2020-01-11	11:00:00	44.9	40.5	40.1	30571	167212   47.5
17	2020-01-11	11:15:00	44.6	39.4	40.2	29154	
18	2020-01-11	11:30:00	44.1	40.4	40.2	25537	
19	2020-01-11	11:45:00	43.4	40.2	40.2	21682	
20	2020-01-11	12:00:00	44.1	40.1	40.2	25922	102295   45.3
21	2020-01-11	12:15:00	55.0	40.4	40.3	317700	
22	2020-01-11	12:30:00	53.4	41.2	40.3	218120	
23	2020-01-11	12:45:00	52.8	40.3	40.3	188516	
24	2020-01-11	13:00:00	47.0	40.2	40.4	50521	774857   54.1
25	2020-01-11	13:15:00	45.8	39.9	40.4	37642	
26	2020-01-11	13:30:00	46.4	39.7	40.4	43508	
27	2020-01-11	13:45:00	48.5	39.7	40.5	70067	
28	2020-01-11	14:00:00	47.7	39.7	40.5	59556	210773   47.2
29	2020-01-11	14:15:00	52.2	40.5	40.5	164200	
30	2020-01-11	14:30:00	44.0	40.8	40.5	24929	
31	2020-01-11	14:45:00	44.8	40.9	40.6	30007	
32	2020-01-11	15:00:00	44.2	40.9	40.7	26373	245509   47.9
33	2020-01-11	15:15:00	43.8	39.9	40.7	23850	
34	2020-01-11	15:30:00	43.8	40.3	40.8	23830	
35	2020-01-11	15:45:00	44.6	40.9	40.8	29127	
36	2020-01-11	16:00:00	44.1	41.1	40.9	25677	102484   44.1
37	2020-01-11	16:15:00	44.8	40.8	40.9	30029	

38	2020-01-11	16:30:00	45.7	40.2	40.9	37475	
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41	2020-01-11	17:15:00	44.0	40.1	41.1	24886	
42	2020-01-11	17:30:00	42.8	39.8	41.1	18933	
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44	2020-01-11	18:00:00	56.4	49.2	49.2	434333	530282   51.2
<b>2731146</b>							
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5	2020-01-12	08:15:00	44.9	37.7	36.6	30917	
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9	2020-01-12	09:15:00	45.1	39.6	37.5	32539	
10	2020-01-12	09:30:00	46.1	39.2	37.6	41079	
11	2020-01-12	09:45:00	42.8	37.3	37.7	19109	
12	2020-01-12	10:00:00	45.3	37.4	37.7	34053	126779   45.0
13	2020-01-12	10:15:00	42.2	37.1	37.8	16521	
14	2020-01-12	10:30:00	44.1	38.7	37.9	25474	
15	2020-01-12	10:45:00	47.4	37.8	38.0	54725	
16	2020-01-12	11:00:00	45.1	38.9	38.0	32491	129212   45.1
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18	2020-01-12	11:30:00	48.4	44.0	38.3	69138	
19	2020-01-12	11:45:00	48.4	43.1	38.7	69653	
20	2020-01-12	12:00:00	45.9	40.3	38.7	39241	246568   47.9
21	2020-01-12	12:15:00	43.8	38.7	38.7	24203	
22	2020-01-12	12:30:00	47.7	41.8	38.8	59387	
23	2020-01-12	12:45:00	47.9	43.5	38.9	61008	
24	2020-01-12	13:00:00	45.7	39.9	39.1	37177	181776   46.6
25	2020-01-12	13:15:00	45.7	39.1	39.1	36745	
26	2020-01-12	13:30:00	46.9	39.9	39.2	48869	
27	2020-01-12	13:45:00	42.2	38.0	39.3	16679	
28	2020-01-12	14:00:00	49.4	39.1	39.4	88030	190323   46.8
29	2020-01-12	14:15:00	48.7	38.7	39.4	73908	
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31	2020-01-12	14:45:00	43.4	39.6	39.6	21640	
32	2020-01-12	15:00:00	43.8	38.1	39.6	24216	141241   45.5
33	2020-01-12	15:15:00	42.0	36.1	39.6	15910	
34	2020-01-12	15:30:00	45.2	36.6	39.7	32991	
35	2020-01-12	15:45:00	45.4	39.6	39.9	34803	
36	2020-01-12	16:00:00	46.0	41.4	39.9	40010	123714   44.9
37	2020-01-12	16:15:00	43.0	37.5	40.3	19880	
38	2020-01-12	16:30:00	44.5	37.9	40.8	28505	
39	2020-01-12	16:45:00	46.1	36.0	41.4	40336	
40	2020-01-12	17:00:00	42.5	36.4	41.8	17766	106487   44.3
41	2020-01-12	17:15:00	43.0	36.4	43.1	19966	
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43	2020-01-12	17:45:00	45.1	39.4	43.5	32275	
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<b>2070060</b>							
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9	2020-01-13	09:15:00	53.2	39.4	38.2	208248			
10	2020-01-13	09:30:00	44.8	39.0	38.2	30216			
11	2020-01-13	09:45:00	54.7	38.5	38.2	297143			
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17	2020-01-13	11:15:00	49.2	37.8	38.7	82738			
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21	2020-01-13	12:15:00	44.3	38.5	38.9	26734			
22	2020-01-13	12:30:00	46.4	38.9	39.0	43453			
23	2020-01-13	12:45:00	43.4	38.0	39.0	21961			
24	2020-01-13	13:00:00	44.5	36.9	39.1	28291	120438	44.8	
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26	2020-01-13	13:30:00	45.3	38.2	39.2	33856			
27	2020-01-13	13:45:00	43.4	38.7	39.2	21692			
28	2020-01-13	14:00:00	60.1	38.8	39.3	1021022	1093244	54.4	
29	2020-01-13	14:15:00	51.3	38.6	39.4	135108			
30	2020-01-13	14:30:00	44.4	38.2	39.5	27293			
31	2020-01-13	14:45:00	44.9	39.2	39.5	30629			
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34	2020-01-13	15:30:00	43.4	39.1	39.8	21933			
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37	2020-01-13	16:15:00	49.2	39.2	40.0	82305			
38	2020-01-13	16:30:00	50.3	40.0	40.1	107211			
39	2020-01-13	16:45:00	46.2	39.7	40.2	42158			
40	2020-01-13	17:00:00	56.1	39.6	40.3	404181	635855	52.0	
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42	2020-01-13	17:30:00	45.8	39.5	41.8	37928			
43	2020-01-13	17:45:00	43.6	39.3	41.8	22778			
44	2020-01-13	18:00:00	45.6	38.7	43.4	36293	475243	50.7	
<b>4731793</b>									
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2	2/12/2019	7:30:00	53.1	42.4	38.2	204174			
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4	2/12/2019	8:00:00	51.2	41	38.4	131826	502036	51.0	
5	2/12/2019	8:15:00	44.6	39.7	38.5	28840			
6	2/12/2019	8:30:00	43.5	39.3	38.6	22387			
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	2/12/2019	9:15:00	44.8	38.5	38.9				
	2/12/2019	9:30:00	41.8	38.2	39				
	2/12/2019	9:45:00	48	40.3	39.1				
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2/12/2019	11:15:00	50.4	43.8	40.4
2/12/2019	11:30:00	52.5	41.7	40.8
2/12/2019	11:45:00	53.6	45.4	40.8
2/12/2019	12:00:00	54.1	46.4	41
2/12/2019	12:15:00	51.2	42.9	41
2/12/2019	12:30:00	46.8	41.4	41.4
2/12/2019	12:45:00	44.7	38.6	41.7
2/12/2019	13:00:00	47.7	38.4	41.9
2/12/2019	13:15:00	49	42.4	42
2/12/2019	13:30:00	50.5	43.3	42
2/12/2019	13:45:00	51	43.6	42.3
2/12/2019	14:00:00	51.8	44.4	42.3
2/12/2019	14:15:00	57.6	43	42.4
2/12/2019	14:30:00	48.2	42.3	42.4
2/12/2019	14:45:00	47.5	42	42.7
2/12/2019	15:00:00	49.6	40.8	42.9
2/12/2019	15:15:00	51.3	41.9	43
2/12/2019	15:30:00	55.7	47	43.3
2/12/2019	15:45:00	47.6	41	43.4
2/12/2019	16:00:00	52.2	38.7	43.6
2/12/2019	16:15:00	53	44.4	43.8
2/12/2019	16:30:00	49.8	44	44
2/12/2019	16:45:00	52.1	44.6	44.4
2/12/2019	17:00:00	47.6	40.8	44.4
2/12/2019	17:15:00	52	39.4	44.6
2/12/2019	17:30:00	51.6	39.1	45.4
2/12/2019	17:45:00	45.7	39	46.4
2/12/2019	18:00:00	43	36.1	47

0 | #NUM! |

0 | #NUM! |

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1	3/12/2019	7:15:00	44.3	35.3	31.7
2	3/12/2019	7:30:00	42.7	35.6	31.7
3	3/12/2019	7:45:00	40.7	33.5	31.9
4	3/12/2019	8:00:00	42.7	32.3	32.3
5	3/12/2019	8:15:00	41.1	33.2	32.3
6	3/12/2019	8:30:00	45.5	34.2	32.8
7	3/12/2019	8:45:00	45.6	38	33.2
8	3/12/2019	9:00:00	43.5	35.5	33.5
9	3/12/2019	9:15:00	40.3	31.9	34.2
10	3/12/2019	9:30:00	41.6	31.7	35.3
11	3/12/2019	9:45:00	40.2	32.3	35.5
12	3/12/2019	10:00:00	41.7	31.7	35.6
13	3/12/2019	10:15:00	41.1	32.8	35.9
14	3/12/2019	10:30:00	45.6	35.9	37
15	3/12/2019	10:45:00	45.7	37.8	37.7
16	3/12/2019	11:00:00	45	37	37.8
17	3/12/2019	11:15:00	45.2	37.7	38
	3/12/2019	11:30:00	45.6	38.7	38.7
	3/12/2019	11:45:00	45.4	38.9	38.9

1

646589

26915

18621

11749

18621

12882

35481

36308

22387

10715

14454

10471

14791

12882

36308

37154

31623

33113

75906 | 42.8 |

107059 | 44.3 |

50432 | 41.0 |

117967 | 44.7 |

384477

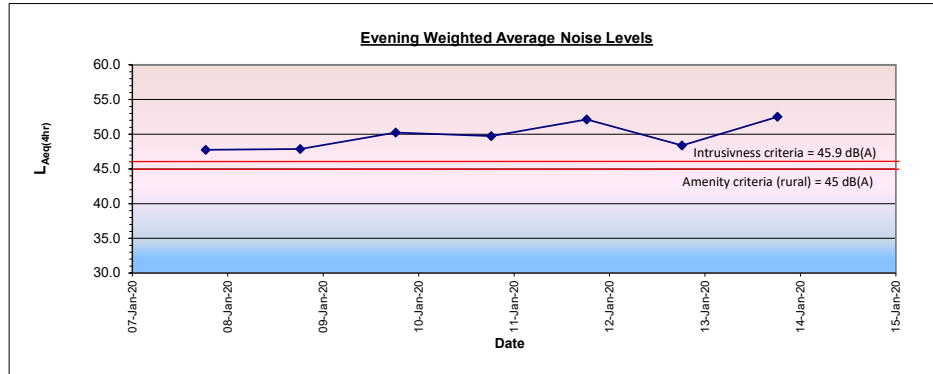
33113 | 39.2 |

| |

# Noise Assessment

Evening Period 6pm to 10pm  
 amenity criteria 45 dB(A) Suburban  
 Intrusiveness criteria (RBL+ 5) 45.9 dB(A)

Day	Date	L <sub>Aeq(evening)</sub>	ABL	RBL
Tuesday Evening	7/01/2020	47.8	40.0	<b>40.9</b>
Wednesday Evening	8/01/2020	47.9	42.3	
Thursday Evening	9/01/2020	50.2	40.9	
Friday Evening	10/01/2020	49.7	41.4	
Saturday Evening	11/01/2020	52.1	44.5	
Sunday Evening	12/01/2020	48.4	39.1	
Monday Evening	13/01/2020	52.5	39.4	
		49.7		



item	Date	time	L <sub>Aeq(15 minute)</sub>	L <sub>A90(15minute)</sub>	L <sub>A90(15min)</sub>	ascending order	10 <sup>^(L<sub>Aeq(15 minute)</sub>/10)</sup>	period sums	hrly sums	hrly Laeq
1	2020-01-07	18:15:00	48.4	43.1		40.0	69693			
2	2020-01-07	18:30:00	47.1	41.0		40.6	51319			
3	2020-01-07	18:45:00	46.2	41.2		41.0	41617			
	2020-01-07	19:00:00	53.1	40.0		41.2		162629	47.3	
	2020-01-07	19:15:00	45.8	40.6		41.9				
	2020-01-07	19:30:00	52.6	41.9		43.1				
	2020-01-07	19:45:00	51.4	43.1		43.1				
	2020-01-07	20:00:00	53.5	46.4		46.0		0	#NUM!	
	2020-01-07	20:15:00	51.2	47.9		46.0				
4	2020-01-07	20:30:00	47.5	46.0		46.3	56116			
5	2020-01-07	20:45:00	47.3	46.0		46.3	53418			
6	2020-01-07	21:00:00	48.4	46.3		46.4	69263		178797	47.8
7	2020-01-07	21:15:00	47.9	46.5		46.4	61250			
8	2020-01-07	21:30:00	48.2	46.4		46.4	66215			
9	2020-01-07	21:45:00	48.0	46.3		46.5	62415			
10	2020-01-07	22:00:00	48.1	46.4		47.9	65274		255154	48.0
								596581		
	2020-01-08	18:15:00	48.2	44.2		42.3				
	2020-01-08	18:30:00	47.5	42.8		42.4				
	2020-01-08	18:45:00	55.1	43.3		42.4				
	2020-01-08	19:00:00	49.7	42.3		42.8		0		
	2020-01-08	19:15:00	49.9	42.4		43.3				
	2020-01-08	19:30:00	54.6	42.4		43.3				
	2020-01-08	19:45:00	51.4	43.3		43.8				
	2020-01-08	20:00:00	55.5	47.2		44.0		0		
1	2020-01-08	20:15:00	48.2	45.4		44.2	65825			
2	2020-01-08	20:30:00	52.0	44.6		44.4	159746			
3	2020-01-08	20:45:00	47.8	45.8		44.6	60310			
4	2020-01-08	21:00:00	46.4	44.8		44.8	43327		329208	49.2
5	2020-01-08	21:15:00	46.0	44.4		44.8	39510			
6	2020-01-08	21:30:00	46.5	44.8		45.4	44576			
7	2020-01-08	21:45:00	45.9	44.0		45.8	39174			
8	2020-01-08	22:00:00	45.9	43.8		47.2	38604		161865	46.1
								491073		
1	2020-01-09	18:15:00	47.6	42.5		40.3	57537			





2020-01-12	19:45:00	51.3	46.8	46.8
2020-01-12	20:00:00	51.2	47.7	47.7
2020-01-12	20:15:00	52.5	49.4	48.7
2020-01-12	20:30:00	52.6	49.7	48.8
2020-01-12	20:45:00	53.0	50.3	49.4
2020-01-12	21:00:00	53.3	50.5	49.6
2020-01-12	21:15:00	53.3	50.8	49.7
2020-01-12	21:30:00	52.7	49.6	50.3
2020-01-12	21:45:00	52.1	48.7	50.5
2020-01-12	22:00:00	52.0	48.8	50.8

1	2020-01-13	18:15:00	44.3	38.1	38.1	26995
2	2020-01-13	18:30:00	46.5	39.6	39.4	44682
3	2020-01-13	18:45:00	47.8	40.2	39.6	60943
4	2020-01-13	19:00:00	47.4	39.4	40.2	55326
5	2020-01-13	19:15:00	50.5	42.0	42.0	111916
6	2020-01-13	19:30:00	50.6	42.0	42.0	115136
7	2020-01-13	19:45:00	53.2	47.8	47.8	207141
8	2020-01-13	20:00:00	55.5	49.1	48.4	352504
9	2020-01-13	20:15:00	56.7	50.4	48.6	468767
10	2020-01-13	20:30:00	54.2	50.7	49.1	265471
11	2020-01-13	20:45:00	53.8	50.9	49.2	237187
12	2020-01-13	21:00:00	53.2	50.6	49.5	208661
13	2020-01-13	21:15:00	53.3	49.5	50.4	212399
14	2020-01-13	21:30:00	52.3	49.2	50.6	170159
15	2020-01-13	21:45:00	52.0	48.6	50.7	157352
16	2020-01-13	22:00:00	51.9	48.4	50.9	154840

2/12/2019	18:15:00	47	38.6	33.6		
2/12/2019	18:30:00	45.6	39.4	33.8		
2/12/2019	18:45:00	45.7	37.2	34.2		
2/12/2019	19:00:00	44.5	37.2	34.4		
2/12/2019	19:15:00	46.5	35.5	34.5		
2/12/2019	19:30:00	43.8	35.5	35		
2/12/2019	19:45:00	43.1	34.5	35.5		
2/12/2019	20:00:00	42.6	34.4	35.5		
1	2/12/2019	20:15:00	37.3	35.7	35.7	5370
2	2/12/2019	20:30:00	37.4	35.9	35.7	5495
3	2/12/2019	20:45:00	37.3	36.2	35.9	5370
4	2/12/2019	21:00:00	36.9	35.7	36.2	4898
5	2/12/2019	21:15:00	37.1	35	37.2	5129
6	2/12/2019	21:30:00	35.3	34.2	37.2	3388
7	2/12/2019	21:45:00	35.5	33.8	38.6	3548
8	2/12/2019	22:00:00	35.3	33.6	39.4	3388

225143 | 47.5 |

0 | #NUM! |

0 | #NUM! |

412842

187945 | 46.7 |

786698 | 52.9 |

1180086 | 54.7 |

694751 | 52.4 |

2849479

0 | #NUM! |

0 | #NUM! |

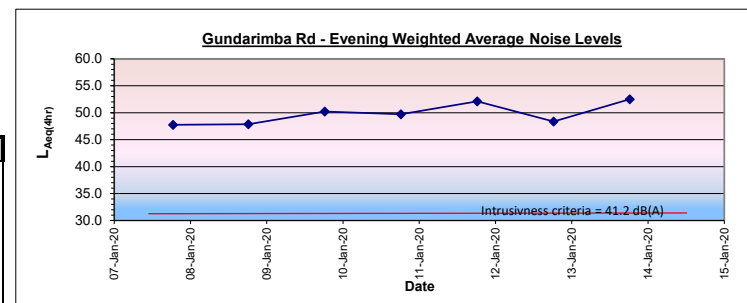
21134 | 37.2 |

15454 | 35.9 |

36587

## Previous Noise Assessment October 2016

Evening Period 6pm to 10pm  
 amenity criteria 50-55 dB(A) urban  
 Intrusiveness criteria (RBL+ 5) #REF! dB(A)



Day	Date	L <sub>Aeq</sub> (evening)	ABL	RBL
Monday Evening	#REF!	#REF!	#REF!	
Tuesday Evening	18/10/2016	41.0	30.1	
Wednesday Evening	19/10/2016	58.4	32.7	
Thursday Evening	20/10/2016	40.8	31.0	#REF!
Friday Evening	21/10/2016			
Saturday Evening	22/10/2016	58.9	30.9	
Sunday Evening	23/10/2016	36.8	26.6	

15	17/10/2016	21:45	33.9	29.5	50	2455		
16	17/10/2016	22:00	38.6	31.3	57.3	7244	9699	33.8
	18/10/2016	18:15	49	40.3	30.1		9699	
	18/10/2016	18:30	49.8	39.7	30.4			
	18/10/2016	18:45	45.6	39.2	30.9			
	18/10/2016	19:00	65.9	43.4	31.9			0
	18/10/2016	19:15	64.9	60.6	35.9			
	18/10/2016	19:30	62.8	59.2	37.3			
	18/10/2016	19:45	58.1	44	37.4			
	18/10/2016	20:00	55.3	40.1	38.8			0
1	18/10/2016	20:15	44.7	38.8	39.2	29512		
2	18/10/2016	20:30	43	37.3	39.7	19953		
3	18/10/2016	20:45	43.9	37.4	40.1	24547		
4	18/10/2016	21:00	42.4	35.9	40.3	17378	91390	43.6
5	18/10/2016	21:15	35.4	31.9	43.4	3467		
6	18/10/2016	21:30	33.1	30.1	44	2042		
7	18/10/2016	21:45	33.6	30.4	59.2	2291		
8	18/10/2016	22:00	33.8	30.9	60.6	2399	10199	34.1
	19/10/2016	18:15	50	41.1	30.4	100000	101589	
	19/10/2016	18:30	45.6	37.8	32.7	36308		
	19/10/2016	18:45	57.3	38.3	35.3	537032		
	19/10/2016	19:00	68.4	40.5	35.7	6918310	7591649	62.8
	19/10/2016	19:15	64.1	50.1	36.1	2570396		
	19/10/2016	19:30	57.9	55.8	36.6	616595		
	19/10/2016	19:45	49.3	38.7	37.1	85114		
	19/10/2016	20:00	38.1	36.6	37.1	6457	3278561	59.1
	19/10/2016	20:15	38.1	35.7	37.8	6457		
	19/10/2016	20:30	41.1	37.1	37.8	12882		
	19/10/2016	20:45	43.2	37.1	38.3	20893		
	19/10/2016	21:00	40.4	36.1	38.7	10965	51197	41.1
	19/10/2016	21:15	36.3	32.7	40.5	4266		
	19/10/2016	21:30	34.3	30.4	41.1	2692		
	19/10/2016	21:45	39.8	35.3	50.1	9550		
	19/10/2016	22:00	40.8	37.8	55.8	12023	28530	38.5

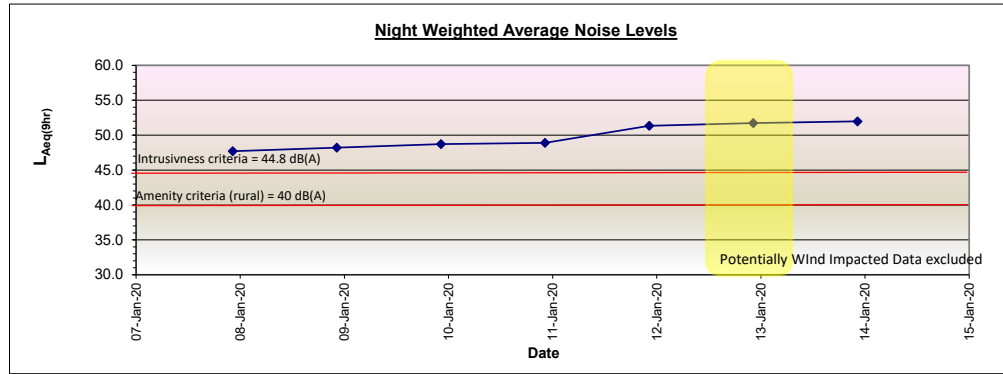
	20/10/2016	18:15	49.3	39.5	31		10949937	
	20/10/2016	18:30	47.4	38.1	31.1			
	20/10/2016	18:45	54.6	37.5	31.2			
	20/10/2016	19:00	67.4	39.3	31.4			0   _____
	20/10/2016	19:15	65.2	55.5	31.4			
	20/10/2016	19:30	59.5	57.2	33			
1	20/10/2016	19:45	48.4	39	33.9	69183		
2	20/10/2016	20:00	38.2	36	34.1	6607		75790   _____
3	20/10/2016	20:15	36.6	34.1	36	4571		
4	20/10/2016	20:30	38.2	33.9	37.5	6607		
5	20/10/2016	20:45	36.1	33	38.1	4074		
6	20/10/2016	21:00	35.3	31.4	39	3388		18640   36.7   _____
7	20/10/2016	21:15	34.1	31.2	39.3	2570		
8	20/10/2016	21:30	42.7	31.4	39.5	18621		
9	20/10/2016	21:45	34	31	55.5	2512		
10	20/10/2016	22:00	33.5	31.1	57.2	2239		25942   38.1   _____
	21/10/2016	18:15	51.4	38.6	32		120372	
	21/10/2016	18:30	51.2	38.3	32.6			
	21/10/2016	18:45	56.2	38.7	33.1			0   _____
	21/10/2016	19:00	67.9	41.4	33.6			
	21/10/2016	19:15	64.1	52.7	33.8			
	21/10/2016	19:30	59.6	54.2	34.5			
	21/10/2016	19:45	50.4	46.6	34.7			
	21/10/2016	20:00	41.4	36.3	35.1			0   _____
	21/10/2016	20:15	38.9	35.1	36.3			
	21/10/2016	20:30	38.4	34.5	38.3			
	21/10/2016	20:45	41.3	34.7	38.6			
	21/10/2016	21:00	36.1	33.6	38.7			0   _____
	21/10/2016	21:15	36.4	33.1	41.4			
	21/10/2016	21:30	41.8	33.8	46.6			
1	21/10/2016	21:45	34.3	32	52.7	2692		
2	21/10/2016	22:00	36.4	32.6	54.2	4365		7057   _____
	22/10/2016	18:15	60.6	35.7	30	1148154		
	22/10/2016	18:30	62.9	33.8	30.9	1949845		
	22/10/2016	18:45	66.6	34.6	31.1	4570882		
	22/10/2016	19:00	65.7	38.2	31.7	3715352		11384232   64.5   _____
	22/10/2016	19:15	58.4	55.7	31.8	691831		
	22/10/2016	19:30	52.1	46.4	31.9	162181		
	22/10/2016	19:45	42.4	40.5	32	17378		
	22/10/2016	20:00	40.6	33.3	32.3	11482		882872   53.4   _____
	22/10/2016	20:15	34.6	31.8	33.3	2884		
	22/10/2016	20:30	34.5	31.9	33.8	2818		
	22/10/2016	20:45	34.4	31.1	34.6	2754		
	22/10/2016	21:00	34.8	32	35.7	3020		11477   34.6   _____
	22/10/2016	21:15	34.3	32.3	38.2	2692		
	22/10/2016	21:30	36.2	31.7	40.5	4169		
	22/10/2016	21:45	33.2	30	46.4	2089		
	22/10/2016	22:00	32.9	30.9	55.7	1950		10899   34.4   _____
	23/10/2016	18:15	40	35.2	25.4	10000	12289480	
	23/10/2016	18:30	39.1	36.1	26.6	8128		
	23/10/2016	18:45	40.6	34.3	26.7	11482		
	23/10/2016	19:00	42.6	33.2	27	18197		47807   40.8   _____

23/10/2016	19:15	36.7	32	27.6	4677	
23/10/2016	19:30	38.2	31.4	27.6	6607	
23/10/2016	19:45	34.2	30.7	27.9	2630	
23/10/2016	20:00	31.5	27.6	28.2	1413	15327   35.8
23/10/2016	20:15	32.3	27.9	28.5	1698	
23/10/2016	20:30	32.7	28.5	30.7	1862	
23/10/2016	20:45	32.1	27.6	31.4	1622	
23/10/2016	21:00	31.9	28.2	32	1549	6731   32.3
23/10/2016	21:15	31.5	27	33.2	1413	
23/10/2016	21:30	32.6	26.6	34.3	1820	
23/10/2016	21:45	33	26.7	35.2	1995	
23/10/2016	22:00	31.3	25.4	36.1	1349	6576   32.2
<hr/>						
24/10/2016	18:15	51.5	39.6	29		76441
24/10/2016	18:30	45	38.3	30.6		
24/10/2016	18:45	42.4	37.5	30.8		
24/10/2016	19:00	61.6	38	31.1		0
24/10/2016	19:15	61.4	46.9	31.3		
24/10/2016	19:30	55.7	52.6	32.1		
1 24/10/2016	19:45	43	38	33.5	19953	
2 24/10/2016	20:00	39.1	37.1	34.7	8128	28081
3 24/10/2016	20:15	38	34.7	37.1	6310	
4 24/10/2016	20:30	36.2	33.5	37.5	4169	
5 24/10/2016	20:45	35.7	32.1	38	3715	
6 24/10/2016	21:00	34.9	31.3	38	3090	17284   36.4
7 24/10/2016	21:15	33.6	30.6	38.3	2291	
8 24/10/2016	21:30	34.9	30.8	39.6	3090	
9 24/10/2016	21:45	33.1	31.1	46.9	2042	

## Noise Assessment

Night Period 10pm to 7am  
 amenity criteria **40** dB(A) Suburban  
 Intrusiveness criteria (RBL+ 5) 44.8 dB(A)  
 Sleep Disturbance criteria (RBL+ 15) 54.8 dB(A)

Night	Date	L <sub>aeq</sub> (night)	ABL	RBL
Tuesday Night	7/01/2020	47.7	38.9	<b>39.8</b>
Wednesday Night	8/01/2020	48.2	38.3	
Thursday Night	9/01/2020	48.7	41.2	
Friday Night	10/01/2020	48.9	39.8	
Saturday Night	11/01/2020	51.3	41.1	
Sunday Night	12/01/2020	51.7		
Monday Night	13/01/2020	52.0	39.7	



no.	date	time	L <sub>Aeq</sub> (15 minute)	L <sub>A90</sub> (15minute)	L <sub>A90</sub> (15min)	ascending order	10 <sup>A</sup> ((L <sub>Aeq</sub> (15 minute)/10))	period sums	hrly sums	hrly Laeq	Sleep Disturbance events
1	2020-01-07	22:15:00	48.2	46.2	37.5	37.5	66173				0
2	2020-01-07	22:30:00	47.9	45.4	38.1	38.1	61840				0
3	2020-01-07	22:45:00	46.0	44.4	38.7	38.7	39982				0
4	2020-01-07	23:00:00	45.6	44.1	38.9	38.9	36274		204269	47.1	0
5	2020-01-07	23:15:00	46.9	45.2	39.1	39.1	48422				0
6	2020-01-07	23:30:00	46.8	45.0	39.2	39.2	48172				0
7	2020-01-07	23:45:00	47.3	45.6	42.4	42.4	53602				0
8	2020-01-08	00:00:00	47.6	45.8	44.0	44.0	57576		207772	47.2	0
9	2020-01-08	00:15:00	45.8	44.0	44.1	44.1	38267				0
10	2020-01-08	00:30:00	46.2	44.3	44.3	44.3	41674				0
11	2020-01-08	00:45:00	46.9	45.0	44.4	44.4	48520				0
12	2020-01-08	01:00:00	46.7	45.1	44.8	44.8	47258		175719	46.4	0
13	2020-01-08	01:15:00	46.8	45.2	45.0	45.0	48132				0
14	2020-01-08	01:30:00	47.1	45.7	45.0	45.0	51479				0
15	2020-01-08	01:45:00	47.3	46.1	45.1	45.1	53657				0
16	2020-01-08	02:00:00	48.2	46.7	45.2	45.2	65379		218648	47.4	0
17	2020-01-08	02:15:00	48.1	46.6	45.2	45.2	64987				0
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19	2020-01-08	02:45:00	47.8	46.2	45.6	45.6	59804				0
20	2020-01-08	03:00:00	49.1	47.3	45.7	45.7	80652		271277	48.3	0
21	2020-01-08	03:15:00	49.1	47.2	45.8	45.8	81028				0
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23	2020-01-08	03:45:00	48.7	46.8	46.1	46.1	74296				0
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25	2020-01-08	04:15:00	48.6	47.0	46.2	46.2	71985				0
26	2020-01-08	04:30:00	49.8	48.1	46.5	46.5	95759				0
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30	2020-01-08	05:30:00	46.0	42.4	46.8	46.8	39435				0
31	2020-01-08	05:45:00	45.2	38.9	47.0	47.0	33215				0
32	2020-01-08	06:00:00	44.5	37.5	47.2	47.2	28016		162849	46.1	0
33	2020-01-08	06:15:00	46.8	39.2	47.3	47.3	47620				0
34	2020-01-08	06:30:00	46.8	38.7	47.7	47.7	48191				0
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36	2020-01-08	07:00:00	49.4	38.1	48.1	87641		0
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2	2020-01-08	22:30:00	46.8	43.5	37.6	47549		0
3	2020-01-08	22:45:00	47.1	44.4	38.2	51325		0
4	2020-01-08	23:00:00	47.3	44.4	38.3	53501	192654   46.8	0
5	2020-01-08	23:15:00	47.5	45.0	39.1	55720		0
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7	2020-01-08	23:45:00	47.7	44.9	41.4	58700		0
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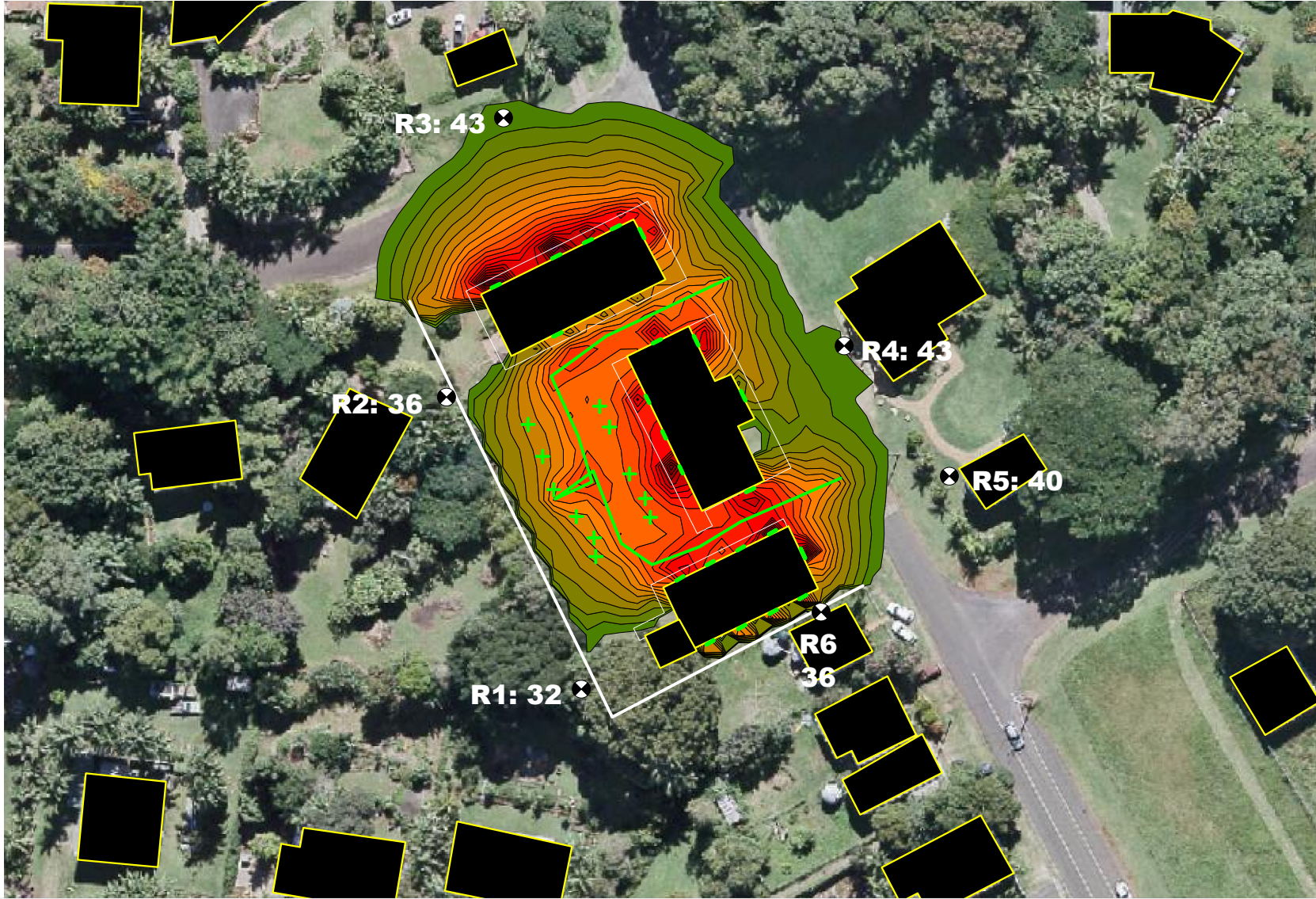
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22	2020-01-14	03:30:00	50.5	47.3	49.0	112010		0
23	2020-01-14	03:45:00	52.1	48.4	49.1	162711		0
24	2020-01-14	04:00:00	53.1	50.4	49.1	202175	584352   51.6	0
25	2020-01-14	04:15:00	53.0	50.1	49.2	198179		0
26	2020-01-14	04:30:00	52.9	50.4	49.2	195933		0
27	2020-01-14	04:45:00	52.6	49.9	49.3	180621		0
28	2020-01-14	05:00:00	52.1	49.2	49.7	163657	738389   52.7	0
29	2020-01-14	05:15:00	52.1	49.2	49.9	162124		0
30	2020-01-14	05:30:00	52.3	48.4	49.9	169215		0
31	2020-01-14	05:45:00	50.6	46.5	49.9	113902		0
32	2020-01-14	06:00:00	49.7	44.3	50.0	93146	538386   51.3	0
33	2020-01-14	06:15:00	45.5	39.7	50.1	35777		0
34	2020-01-14	06:30:00	44.4	37.9	50.2	27836		0
35	2020-01-14	06:45:00	45.4	38.6	50.4	34819		0
36	2020-01-14	07:00:00	43.5	39.0	50.4	22256	120689   44.8	0
5682480								1

1	2/12/2019	22:15:00	34.6	33.2	28.9	2884		0	
2	2/12/2019	22:30:00	34.9	33.1	29.2	3090		0	
3	2/12/2019	22:45:00	35.6	33.8	29.4	3631		0	
	2/12/2019	23:00:00	36.6	33.7	29.7		9605   33.8	0	
4	2/12/2019	23:15:00	35.6	34.1	29.9	3631		0	
5	2/12/2019	23:30:00	35.8	33.9	30.2	3802		0	
6	2/12/2019	23:45:00	34.4	33.1	30.3	2754		0	
7	3/12/2019	0:00:00	36	33.5	30.7	3981	14168   35.5	0	
8	3/12/2019	0:15:00	35.2	33.1	30.9	3311		0	
9	3/12/2019	0:30:00	35.4	32.6	30.9	3467		0	
10	3/12/2019	0:45:00	35.6	33.2	30.9	3631		0	
11	3/12/2019	1:00:00	36.4	32.8	30.9	4365	14775   35.7	0	
12	3/12/2019	1:15:00	33.9	32.4	31.3	2455		0	
13	3/12/2019	1:30:00	34.6	32.1	31.3	2884		0	
14	3/12/2019	1:45:00	34.1	31.7	31.5	2570		0	
15	3/12/2019	2:00:00	33.6	30.9	31.7	2291	10200   34.1	0	
16	3/12/2019	2:15:00	34.4	31.3	31.8	2754		0	
17	3/12/2019	2:30:00	33.9	31.3	32.1	2455		0	
18	3/12/2019	2:45:00	34.7	30.9	32.3	2951		0	
19	3/12/2019	3:00:00	34.9	31.8	32.3	3090	11250   34.5	0	
20	3/12/2019	3:15:00	33.9	30.7	32.3	2455		0	
21	3/12/2019	3:30:00	35.1	30.9	32.4	3236		0	
22	3/12/2019	3:45:00	33.4	29.9	32.6	2188		0	
23	3/12/2019	4:00:00	32.7	28.9	32.8	1862	9740   33.9	0	
24	3/12/2019	4:15:00	32	29.2	32.8	1585		0	
25	3/12/2019	4:30:00	31.7	29.4	33.1	1479		0	
26	3/12/2019	4:45:00	45.2	30.2	33.1	33113		0	
27	3/12/2019	5:00:00	35.6	29.7	33.1	3631	39808   40.0	0	
28	3/12/2019	5:15:00	38.7	30.3	33.2	7413		0	
29	3/12/2019	5:30:00	47.6	32.3	33.2	57544		0	
30	3/12/2019	5:45:00	44.6	32.8	33.2	28840		0	
31	3/12/2019	6:00:00	40.1	32.3	33.5	10233	104030   44.2	0	
32	3/12/2019	6:15:00	39.5	32.3	33.7	8913		0	
33	3/12/2019	6:30:00	42.8	31.5	33.8	19055		0	
34	3/12/2019	6:45:00	40.3	30.9	33.9	10715		0	
35	3/12/2019	7:00:00	46.1	33.2	34.1	40738	79420   43.0	0	
							292997		0

**APPENDIX B**

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B**

**APPENDIX B**



**Operational Noise Assessment**

**Scenario 1.1**

**\*\* NOISE SOURCES \*\***

~ All tenancies operating at predicted maximum capacity with all windows and doors open

Note:  
- LAeq,15minutes noise contours and receivers are at a height of 1.5 m above the natural ground level

- The maximum reading at the nearest resident is 43 dB.

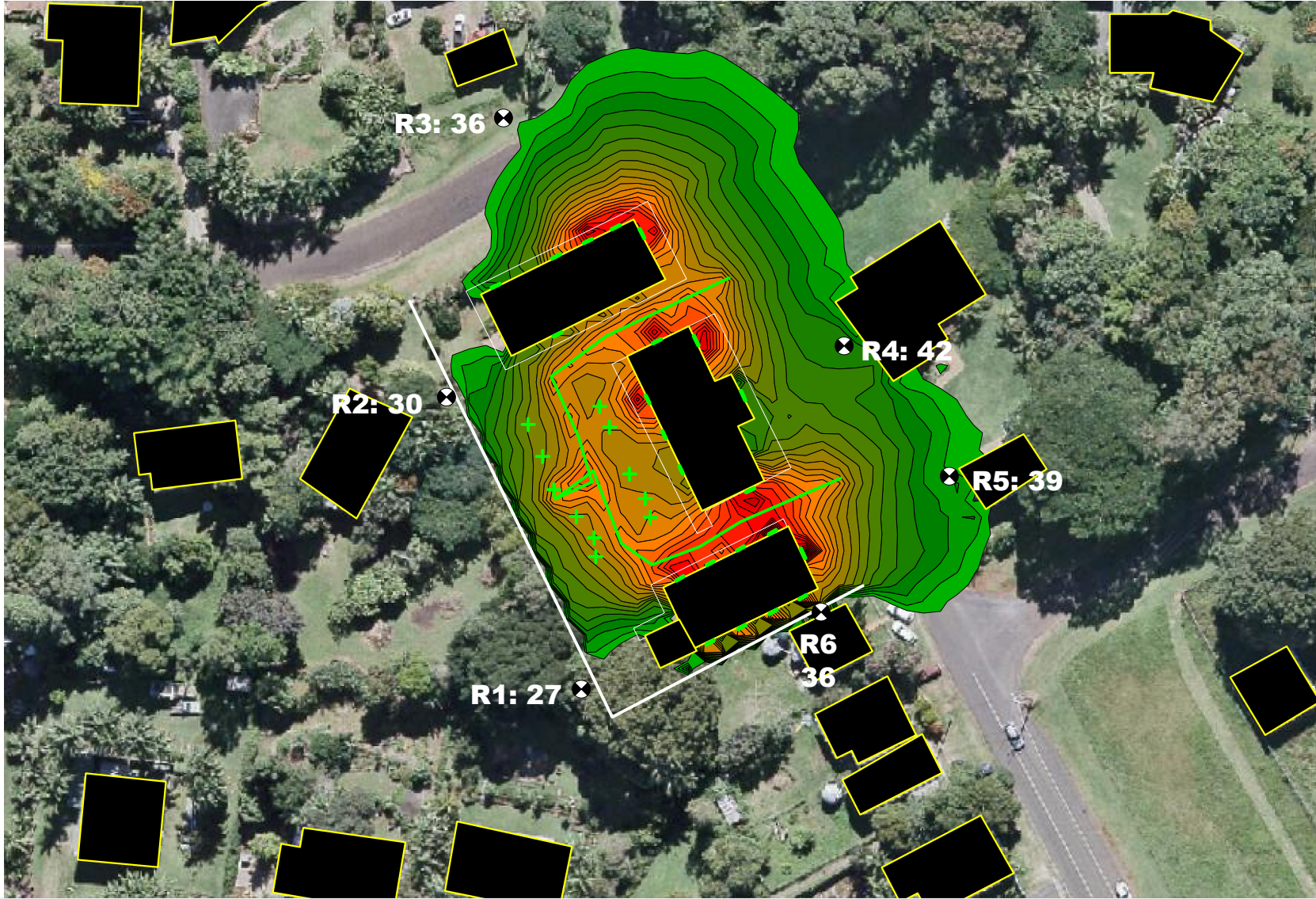
PRINT DATE: 01/12/2020

- + Point Source
- Line Source
- vert. Area Source
- Building
- Barrier
- 3D-Reflector
- Contour Line
- ⊗ Receiver
- Calculation Area

- > 40.0 dB
- > 45.0 dB
- > 50.0 dB
- > 55.0 dB
- > 60.0 dB
- > 65.0 dB
- > 70.0 dB
- > 75.0 dB
- > 80.0 dB

**koikas acoustics** PTY LTD  
CONSULTANTS IN NOISE & VIBRATION

JOB NUMBER: 4452  
 CLIENT: Davgav Pty Ltd  
 SITE ADDRESS: Lot 10, DP790360, Federal Drive, Federal  
 ASSESSED TO: EPA's Noise Policy for Industry  
 LIMITING CRITERIA: 43 dB(A) - Residential (1800-2200)  
 63 dB(A) - Commercial (Business Hours)



**Operational Noise Assessment**

**Scenario 1.2**

**\*\* NOISE SOURCES \*\***

~ All tenancies operating at predicted maximum capacity with all windows and doors closed

Note:  
- LAeq,15minutes noise contours and receivers are at a height of 1.5 m above the natural ground level

- The maximum reading at the nearest resident is 36 dB.

PRINT DATE: 01/12/2020

- + Point Source
- Line Source
- vert. Area Source
- Building
- Barrier
- 3D-Reflector
- Contour Line
- ⊗ Receiver
- Calculation Area

- > 35.0 dB
- > 40.0 dB
- > 45.0 dB
- > 50.0 dB
- > 55.0 dB
- > 60.0 dB
- > 65.0 dB
- > 70.0 dB
- > 75.0 dB
- > 80.0 dB

**koikasacoustics** PTY LTD  
CONSULTANTS IN NOISE & VIBRATION

JOB NUMBER: 4452  
CLIENT: Davgav Pty Ltd  
SITE ADDRESS: Lot 10, DP790360, Federal Drive, Federal  
ASSESSED TO: EPA's Noise Policy for Industry  
LIMITING CRITERIA: 38 dB(A) - Residential (2200-0700)  
63 dB(A) - Commercial (Business Hours)