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## ACOUSTICAL REPORT

### PROPOSED SERVICE STATION

**14456 NEWELL HIGHWAY, EDGEROI NSW**

**Date:** Thursday, 1<sup>st</sup> June 2023

**File Reference:** 5869R20230531mj14456NewellHighwayEdgeroi\_DA.docx

<b>Project title</b>	Acoustical Report Proposed Service Station 14456 Newell Highway, Edgeroi NSW
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V1	01/06/2023	MJ	NK	Report version 1 available for issue

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**ACOUSTICAL REPORT**  
**PROPOSED SERVICE STATION**  
**14456 NEWELL HIGHWAY, EDGEROI NSW**

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## 1.0 INTRODUCTION

Koikas Acoustics Pty Ltd was commissioned to conduct a noise impact assessment of the proposed development at 14456 Newell Highway, Edgeroi seeking approval for the construction of a new service station.

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

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

- Operational and mechanical plant noise emissions from the proposed development to neighbouring dwellings.

This report presents the results and findings of an acoustical assessment of the subject proposal. In-principle acoustic treatments and noise control measures detailed within this report are deemed necessary for the development to comply with the nominated acoustical planning levels/project noise objectives.





## 2.0 THE PROPOSED DEVELOPMENT

The development is proposed to occupy the site at 14456 Newell Highway, Edgeroi NSW.

This location is situated in a primarily rural area classified as RU5 'Village' as per relevant land zoning maps included in the Narrabri Shire Council Local Environment Plan 2012. Surrounding properties are also predominantly residential in classification, and also located within RU5 'Village' and RU1 'Primary Production' Zoning.

The subject site and surrounding properties are identified in the aerial photograph in Figure 1.



**Figure 1.** Aerial photo of the subject site, monitoring location and surrounding area – Image from SixMaps

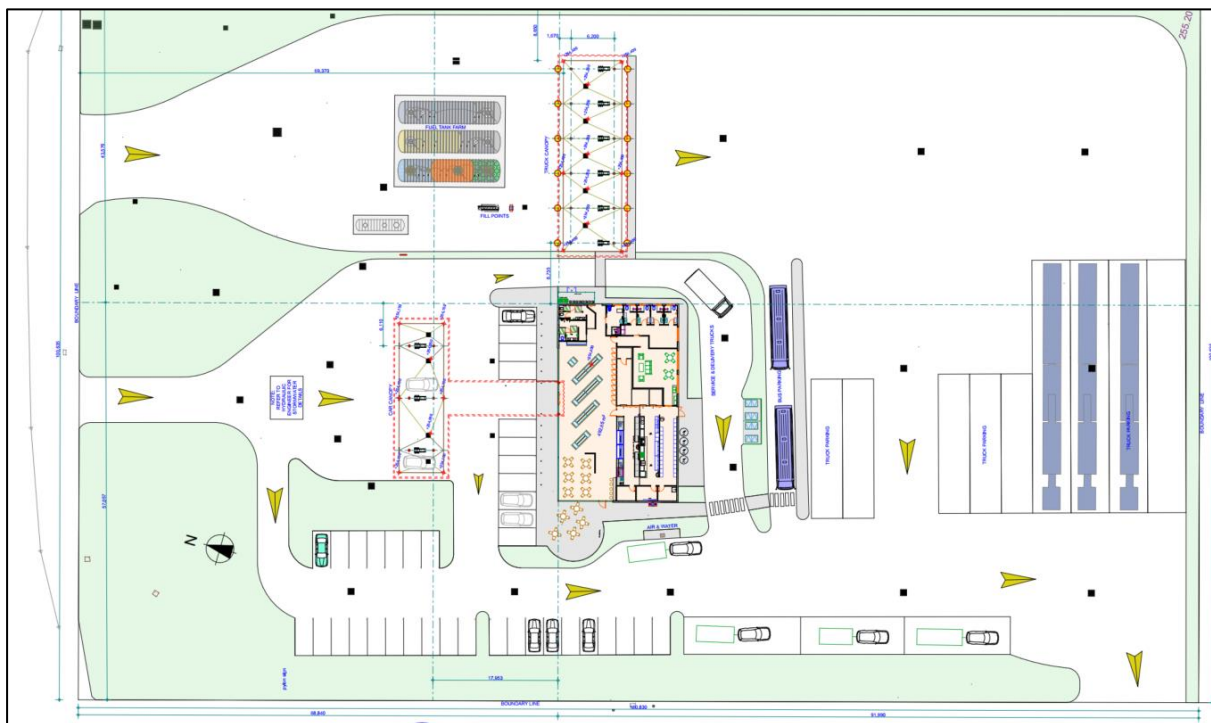
Prevailing ambient noise conditions on-site and in the local area are generally the result of typical environmental noise such as traffic and localised rural noise sources.

This acoustic report and any associated recommendations are based solely on the architectural design and drawings prepared by A.Blefari (their Project No. 10322, Plot Date 22/04/2023). Any changes to the design may impact the findings of this report and associated noise control recommendations.

As per the architectural drawings, the proposed development will include:

- Car and truck filling stations
- Car, truck and bus parking areas
- Truckers lounge, ensuite and gymnasium facilities
- Outdoor sitting areas
- Service station convenience shop
- The general public and staff toilets

The service station is proposed to operate 24/7.



**Figure 2.** Site plan of the service station – Image from A.Blefari

### 3.0 UNATTENDED AMBIENT NOISE SURVEY

An unattended noise logging survey was conducted at the subject site between 10<sup>th</sup> May 2023 and 16<sup>th</sup> May 2023.

The measurement microphone was set at a height of 1.5 metres above the ground and was clear of any sound-reflective surfaces (excl. the ground) by at least 3.5 metres. This satisfies the requirements for a free-field measurement under AS1055-2018 and Fact Sheet B of the NSW EPA Noise Policy for Industry

A Type 1 Convergence Instruments Noise Sentry noise logger was used for this noise survey. The instrument was set up to measure sound pressure levels as 'A' frequency weighting and 'Fast' time response. Noise levels were saved on the quarter-hour within the logger memory.

A NATA-calibrated and certified Larson Davis CAL200 precision acoustic calibrator was used to field calibrate the sound level meter before and after the noise survey. No system drift was observed for this sound level meter.

A review of the weather records from the Bureau of Meteorology shows that adverse weather conditions did not influence the noise environment during the measurement period. Observable short-duration extraneous noise events were removed from the survey data.

A summary of the noise survey data is presented below.

Table 2. Summary of noise logger results [dB]			
Location	Period, T <sup>1</sup>	Ambient noise level L <sub>Aeq</sub>	Rating background level L <sub>A90</sub>
14456 Newell Highway	Day	51	33
	Evening	53	31
	Night	50	30
Notes	1. The <a href="#">NSW EPA Noise Policy for Industry (NPfI)</a> 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.		

Daily logger graphs are attached in **Appendix A**.



## 4.0 ACOUSTIC REQUIREMENTS

### 4.1 EPA NOISE POLICY FOR INDUSTRY

Noise emission design targets have been referenced from the *NSW Environmental Protection Authority (EPA) Noise Policy for Industry (NPfI)*.

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 used as a reference tool for establishing suitable planning levels for noise generated by mechanical plant and equipment and noise emission from commercial operations.

For residential receivers, 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 (PNTL)**. To determine which of the intrusive and amenity noise criteria is more stringent, the underlying noise metrics must be the same.

As the intrusive noise level is defined in terms of an  $L_{Aeq, 15 \text{ minutes}}$  and the amenity noise level is defined in terms of an  $L_{Aeq, \text{Period}}$ , a +3 dB correction is applied to the project amenity noise level.

Non-residential receivers are assessed to project amenity noise levels relevant to the applicable receiver category (industrial/commercial).

Where noise is measured or predicted below the project noise trigger level, the noise outcome is deemed acceptable. Above the project noise trigger level, management responses such as applying reasonable and feasible noise mitigation measures are to be recommended, along with assessing any residual noise impacts once noise mitigation has been considered.

The policy is designed in such a way that the assessing authority would consider the project noise trigger levels, reasonable and feasible mitigation measures, and any residual noise impacts when deciding on acceptable noise outcomes.



The site-specific project noise trigger levels need only be considered for the hours under which the noise or activity occurs.

Table 1. NPfl planning levels – L <sub>Aeq, 15 minutes</sub> [dB]								
Period, T	Intrusive		Amenity					Project noise trigger level
(Note 1)	RBL	RBL + 5	Area classification	Recommended amenity noise level	High traffic area	<sup>2</sup> Project amenity noise level		
						+3dB correction		
Day	33	38	Rural	50	No	45	48	38
Evening	31	36	Rural	45	No	40	43	36
Night	30	35	Rural	40	No	35	38	35
Notes:								
1.	<b>EPA</b> defines the following periods: <b>Day:</b> 7 am to 6 pm Mon to Sat and 8 am to 6 pm Sun and public holidays, <b>Evening:</b> 6 pm to 10 pm Mon to Sun, <b>Night:</b> 10 pm to 7 am Mon to Sat and 10 pm to 8 am Sun and public holidays.							
2.	Project noise amenity level = recommended noise amenity level – 5 dB, except where specific circumstances are met, such as high traffic.							

## 4.2 SLEEP DISTURBANCE/AROUSAL

The potential for noise-induced sleep disturbance should be considered where a noise source or activity from a particular development occurs before 7 am (Monday to Saturday) or 8 am (Sundays or public holidays) and/or after 10 pm (Monday to Sunday). The process followed by Koikas Acoustics when determining the potential for sleep disturbance is:

1. Conduct a screening assessment that identifies the potential for sleep disturbance impacts as per:
  - a. Section 2.5 of the NSW EPA Noise Policy for Industry (NPfl) ‘Maximum noise level event assessment’ and/or
  - b. Section 2.2.4 of the NSW EPA Noise Guide for Local Government (NGLG) ‘Assessment of sleep disturbance’
2. Where the screening assessment identifies a potential for sleep disturbance, a further and more rigorous analysis of the maximum noise levels attributed to the noise source or activity under assessment is prepared. This detailed assessment would:
  - a. Compare the maximum noise levels and the number of maximum noise events from the subject source or activity to that of typical ambient maximum noise events in the local area such as from passing traffic etc.



- b. Assess the maximum event noise level inside an affected residence and compare this to further guidance on sleep disturbance impacts presented in the NSW EPA Road Noise Policy (RNP).
3. Present a final opinion on the potential for sleep disturbance and/or the need for any specific noise mitigation and/or management.

For reference, the NPfl and NGLG screening levels and RNP internal maximum noise levels are presented below.

Table 1. Sleep disturbance assessment levels			
Description	Assessment period	L <sub>Aeq</sub> noise level	L <sub>Amax</sub> noise level
<b>Screening assessment 'a'</b> NSW EPA Noise Policy for Industry (2017)	<b>Night only</b> 10 pm to 7 am (Mon-Sat) 10 pm to 8 am (Sun & pub hols)	L <sub>Aeq</sub> 15 mins ≤ 40 dB or the RBL + 5, whichever is the greater	L <sub>Amax</sub> outdoors ≤ 52 dB or the RBL + 15, whichever is the greater
<b>Screening assessment 'b'</b> NSW EPA Noise Guide for Local Government (2013)	<b>Night only</b> 10 pm to 7 am (Mon-Sat) 10 pm to 8 am (Sun & pub hols)	n/a	L <sub>Amax</sub> outdoors ≤ RBL + 15 (L <sub>A1,1 minute</sub> may also be used where appropriate)
<b>Internal L<sub>Amax</sub> assessment</b> NSW EPA Road Noise Policy (2013)	<b>Night only</b> 10 pm to 7 am (Mon-Sat) 10 pm to 8 am (Sun & pub hols)	n/a	L <sub>Amax</sub> indoors ≤ 50-55 dB is "unlikely to cause awakenings"

Based on the above, the following criteria have been adopted for the subject site at 14456 Newell Highway, Edgeroi:

Table 1. Sleep disturbance assessment levels		
Description	L <sub>Aeq</sub> noise level	L <sub>Amax</sub> noise level
<b>Screening assessment 'a'</b> NSW EPA Noise Policy for Industry (2017)	40	52
<b>Screening assessment 'b'</b> NSW EPA Noise Guide for Local Government (2013)	N/A	45
<b>Internal L<sub>Amax</sub> assessment</b> NSW EPA Road Noise Policy (2013)	N/A	50-55

It is also important to recognise that the point at which noise causes sleep disturbance is currently not well known and that the EPA advises that "more research is needed to better understand this relationship". Therefore, the above should be used as a guide only and applied with caution on a case-by-case basis.





## 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*. 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.

The noise prediction model has been assessed as per the architectural drawings as outlined in Section 2.0 of this report and the traffic impact assessment prepared by Stantec (their Project No. 300303962, dated January 12<sup>th</sup> 2023).

### 5.2 ASSESSMENT SCENARIOS

The following noise sources have been considered in the noise model:



**Table 4. Acoustic design scenarios and parameters**

Design Scenario	Operational Use	
	Noise Sources Considered	
<b>Scenario 1 – Evening (EPA NPfl)</b>	<ul style="list-style-type: none"> <li>• 28 x Car movements in the car filling station and car park in the busiest hour</li> <li>• 57 x Truck movements in the truck filling station, truck parking areas and delivery areas in the busiest hour</li> <li>• 28 x Car door slams in the car filling station and car park in the busiest hour</li> <li>• 28 x Car engine ignition sequences in the car filling station and car park in the busiest hour</li> <li>• 57 x Truck engine ignition sequences in the truck filling station, truck parking areas and delivery areas in the busiest hour</li> <li>• 57 x Truck car door slams in the truck filling station, truck parking areas and delivery areas in the busiest hour</li> <li>• 10 x people in the outdoor sitting area (50% speaking)</li> </ul>	
<b>Scenario 2 – Nighttime (EPA NPfl)</b>	<ul style="list-style-type: none"> <li>• 19 x Car movements in the car filling station and car park in the busiest hour</li> <li>• 37 x Truck movements in the truck filling station, truck parking areas and delivery areas in the busiest hour</li> <li>• 19 x Car door slams in the car filling station and car park in the busiest hour</li> <li>• 19 x Car engine ignition sequences in the car filling station and car park in the busiest hour</li> <li>• 37 x Truck engine ignition sequences in the truck filling station, truck parking areas and delivery areas in the busiest hour</li> <li>• 37 x Truck car door slams in the truck filling station, truck parking areas and delivery areas in the busiest hour</li> </ul>	
<b>Scenario 3 – Nighttime (Sleep Disturbance)</b>	<ul style="list-style-type: none"> <li>• 1 x Car engine ignition sequence</li> <li>• 1 x Truck engine ignition sequence</li> </ul>	
Notes:	1.	<p><b>EPA</b> defines the following periods:</p> <p><b>Day:</b> 7 am to 6 pm Mon to Sat and 8 am to 6 pm Sun and public holidays,</p> <p><b>Evening:</b> 6 pm to 10 pm Mon to Sun,</p> <p><b>Night:</b> 10 pm to 7 am Mon to Sat and 10 pm to 8 am Sun and public holidays.</p>

Koikas Acoustics has been advised through the traffic impact assessment that the peak time for service station operations would likely be during the evening. As such, peak evening operations have been assessed as Scenario 1. Compliance with peak operations during the evening period implies that compliance will also be achieved with these peak operations during the daytime when





the noise emissions criteria are less stringent.

Nighttime operations are expected to be reduced, compared to the peak hour operations, and as such, Koikas Acoustics has assumed that as a worst-case scenario, nighttime operations would be operating at two-thirds capacity. This is reflected in Scenario 2.

The design of the mechanical systems is not typically completed at the DA stage and thus an assessment of noise emission cannot yet be completed, as adequate documentation and information in the form of mechanical services drawings have not been prepared. A detailed review of mechanical plant noise emission is often conditioned within the development consent as a requirement for the Construction Certificate, as any assumptions made at this stage regarding mechanical plant, will be rendered irrelevant when the mechanical services drawings are prepared.

Mechanical plant and equipment installed within the development must not emit noise levels that exceed the EPA's NPfI project noise trigger levels at nearby residential premises when assessed cumulatively with operational noise emissions from the service station. The adopted project noise trigger levels for the subject site are outlined in Section 4.1 of this report. A detailed review of mechanical noise emissions from the development should be completed at the CC stage and assessed cumulatively with operational noise sources from the service station. Mechanical noise sources from any external fans, outlets, inlets and noise emissions from the internal plant room will also need to be assessed.

An example of a development condition for mechanical plant noise is included below:

*“Mechanical plant and equipment must be located, designed and/or acoustically attenuated so that noise emitted from the plant and equipment does not exceed the adopted Project Noise Trigger Levels as defined by the EPA's Noise Policy for Industry 2017 at surrounding residential premises. Noise emissions from mechanical plant and equipment must be assessed cumulatively with operational noise emissions such as the use of the internal and external factory operations and vehicle noise.”*

### 5.3 SOURCE NOISE LEVELS

The following noise sources have been adopted for the noise modelling assessment. Source noise levels have been referenced from measurements previously conducted by Koikas Acoustics at similar sites, or from published noise data from ANSI S3.5.



Table 5. Source sound power levels [dB]										
Noise source	Classification of noise data	1/1 octave band centre frequency [Hz]								Total
		63	125	250	500	1k	2k	4k	8k	
L <sub>Aeq</sub> , 15-minutes – Scenarios 1 and 2										
Cars	Car movement ( <i>constant noise source</i> )	59	65	68	72	74	69	64	56	78
	Car door slam ( <i>Corrected to 1 event in 15-minutes</i> )	37	45	44	49	47	49	43	34	55
	Car engine ignition sequence ( <i>Corrected to 1 event in 15-minutes</i> )	31	35	34	42	45	48	47	42	53
Truck	Heavy rigid truck moving in the car park ( <i>1 x truck entering/exiting – constant noise source</i> )	72	77	83	85	86	83	80	70	91
	Heavy rigid truck ignition sequence ( <i>Corrected to a 1.5-second event</i> )	41	46	53	65	70	66	65	64	74
	Heavy rigid truck door slam ( <i>Corrected to 1 event in 15-minutes</i> )	39	47	46	51	49	51	45	36	57
Human	Human speaking with a normal vocal effort	48	57	65	62	58	53	46	50	68
L <sub>Amax</sub> – Scenario 3										
Cars	Car engine ignition sequence ( <i>Maximum single-event noise level</i> )	70	72	78	80	81	79	80	73	87
Truck	Heavy rigid truck ignition sequence ( <i>Maximum single-event noise level</i> )	71	79	84	99	102	97	97	96	106

## 5.4 CALCULATED NOISE LEVEL RESULTS

All calculations consider the noise sources as described in Section 5.3 of this report.

Reference should also be made to additional noise control recommendations included within Section 5.5 of this report, which also govern the calculated receiver noise levels.

Due to the size of the development, several potentially affected receiver locations must be assessed in terms of their respective noise exposure from the operational noise associated with the development. The most noise-sensitive receiver locations are summarised below and are shown in Figure 3.

Table 6. Assessment locations		
ID	Receiver type and address	Assessment location
R1	Residential / 38 Queen Street	Most noise-affected boundary
R2	Residential / 32 Queen Street	Most noise-affected boundary
R3	Residential / 26 Queen Street	Most noise-affected boundary
R4	Residential / 14448 Newell Highway	Most noise-affected boundary
R5	Residential / 14448 Newell Highway	Most noise-affected boundary



**Figure 3.** Receiver locations and Identifications

Predicted operational noise levels are as follows. Refer to **Appendix B** for the receiver locations and Cadna/A noise contour maps.

#### 5.4.1 Scenarios 1 and 2 – EPA NPfI

**Table 7. Scenario 1 – Daytime/Evening– Operational Noise Levels at the Surrounding Premises [dB]**

Receivers		Calculated External Noise Levels LAeq,15min	Project Noise Trigger Level LAeq,15min	Exceeding
Residential	R1	36	Daytime – 38  Evening – 36	--
Residential	R2	35		--
Residential	R3	32		--
Residential	R4	36		--
Residential	R5	36		--

**Table 7. Scenario 2 – Nighttime– Operational Noise Levels at the Surrounding Premises [dB]**

Receivers		Calculated External Noise Levels LAeq,15min	Project Noise Trigger Level LAeq,15min	Exceeding
Residential	R1	34	Nighttime – 35	--
Residential	R2	33		--
Residential	R3	29		--
Residential	R4	33		--
Residential	R5	33		--

The assessment predicts noise to comply with the adopted project noise trigger levels during the daytime and nighttime period provided the noise mitigation measures as described in Section 5.5 of this report are followed.

#### 5.4.2 Scenario 3 – Sleep Disturbance

**Table 7. Scenario 3 – Nighttime– Sleep Disturbance Assessment at the Surrounding Premises [dB]**

Receivers		Calculated External Noise Levels L <sub>Amax</sub>	Sleep Disturbance Criteria L <sub>Amax</sub>
Residential	R1	53	<i>Screening Assessment ‘A’ – 52</i> <i>Screening Assessment ‘B’ – 45</i> <i>Screening Assessment ‘C’ – 50-55</i>
Residential	R2	51	
Residential	R3	48	
Residential	R4	N/A <sup>1</sup>	
Residential	R5	47	
Notes:	1.	This receiver point is on a property boundary and not at a building façade, and therefore not relevant for a sleep disturbance assessment	

The following is noted:

- All receivers have complied with Screening Assessment 'C'
- All receivers (except for R1) have complied with Screening Assessment 'A'



- All receivers have been calculated to exceed the criteria adopted by Screening Assessment 'B'.
- As stated previously in this report, the point at which noise causes sleep disturbance is currently **not well known** and that the EPA advises that “more research is needed to better understand this relationship”.
- Due to the existing residential receivers' proximity to the existing highway, and as compliance has mostly been achieved using Screening Assessments 'A' and 'C' (*expect for a 1 dB exceedance at R1 for Screening Assessment 'A'*), it is the opinion of Koikas Acoustics that the service station's operations are unlikely to cause sleep disturbance to surrounding residential receivers, provided the premises implements the recommendations as outlined in the following section of this report. Further, vehicular movements along the road are likely to generate significantly greater noise impacts on surrounding residents compared to incidental noise that may occur from the development site.

## 5.5 RECOMMENDATIONS

The following noise mitigation measures are required to comply with the relevant noise control guidelines.

- The petrol tanker delivery to the site should only occur during daytime hours, these hours (*as defined by the EPA*) are outlined below:
  - Mondays-Saturdays: 7:00 am – 6:00 pm
  - Sundays and Public Holidays: 8:00 am – 6:00 pm

All deliveries other than by the petrol tanker can occur during daytime and evening hours, these hours (*as defined by the EPA*) are outlined below:

- Mondays-Saturdays: 7:00 am – 10:00 pm
- Sundays and Public Holidays: 8:00 am – 10:00 pm

No deliveries should occur during nighttime hours.

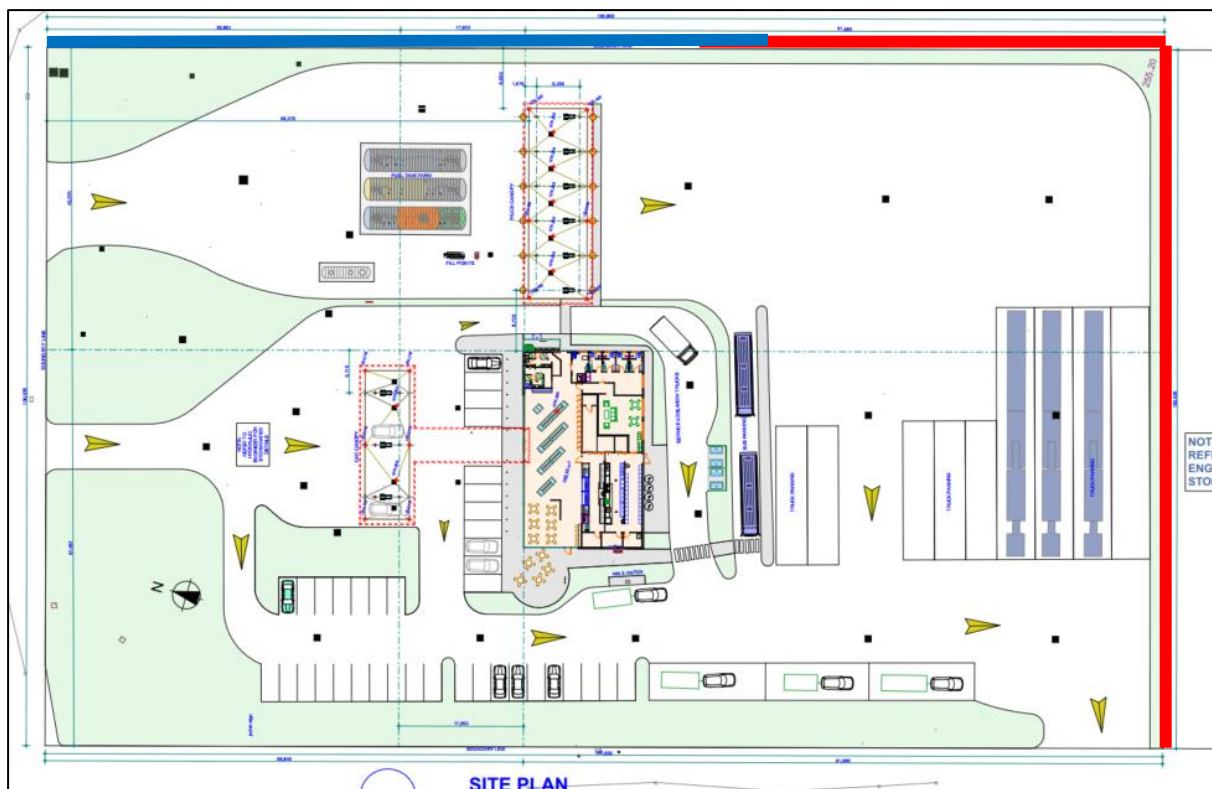
- Trucks and cars should not idle whilst stationary at the facility.
- A boundary fence should be constructed along the extent of the southern and eastern boundaries. The southern boundary and southern half of the eastern boundary should have a 1.8 m high solid boundary fence. The northern half of the eastern boundary should have a 2.4 m high boundary fence. The extent of the boundary heights is shown in the Figure below.

The boundary fence should be constructed out of the following materials:

- Double-lapped 15 mm thick timber fence palings offset so that there are no air gaps.  
This equates to a total barrier thickness of 30 mm; OR



- 15 mm compressed fibre cement panels with no air gaps at the joins; OR
- 6 mm compressed fibre cement panels on either side of a 50 mm steel frame with fibre-glass insulation batts (14 kg/m<sup>3</sup>) to the cavity; OR
- 110 mm brick wall; OR
- 100 mm concrete block wall OR
- Permanent plastic formwork filled with sand or media of not less than 600 kg/m<sup>3</sup>.
- A detailed mechanical plant noise assessment should be conditioned in the development consent and conducted at the CC stage. Mechanical plant noise emissions should be assessed cumulatively with operations noise sources from the proposed factory to comply with the EPA NPfI project noise trigger levels. This includes all external fans, outlets, inlets, and noise emissions from the internal plant room. An example condition is outlined in Section 5.2 of this report.



**Figure 4:** Extent of Boundary Fences Required – Image Source: A.Blefari

■ = 1.8 m high boundary fence

■ = 2.4 m high boundary fence



## 6.0 CONCLUSION

Koikas Acoustics was requested to conduct an acoustical assessment and prepare a report for the proposed service station at 14456 Newell Highway, Edgeroi. The acoustical report is to accompany a development application to be submitted to Narrabri Shire Council.

The assessment considers potential noise impacts on surrounding residents such that acceptable acoustic amenity 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 A.Blefari.

The conclusions reached in this acoustical report should assist Council in making their determination of the proposal. A further detailed acoustical 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:

- Operational noise emissions from the proposed service station can meet the required noise criteria as outlined in the relevant noise control guidelines.

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



**APPENDIX      A**

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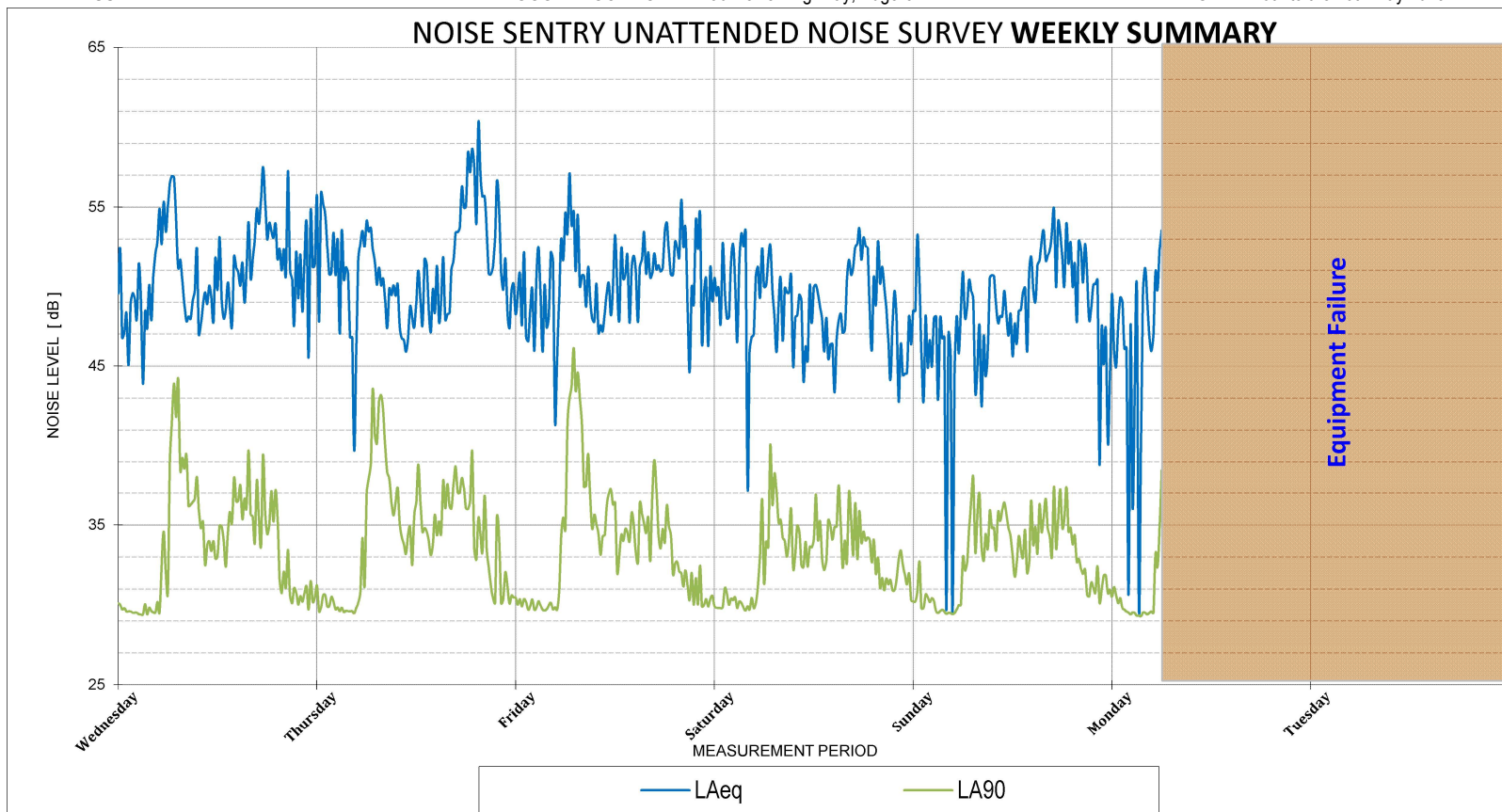
**APPENDIX      A**



## WEEKLY SUMMARY

LOGGER LOCATION: 14456 Newell Highway, Edgeroi

PERIOD: 10th to the 16th May 2023



Sundays and Public Holidays the hours change to 0800

SUMMARY OF AMBIENT LEVELS

	LA90 Daytime	LA90 Evening	LA90 Night-time
Day 1	33	30	29
Day 2	34	31	30
Day 3	33	31	30
Day 4	32	31	30
Day 5	33	31	30
Day 6	N/A	N/A	29
Day 7	N/A	N/A	N/A
<b>RBL</b>	<b>33</b>	<b>31</b>	<b>30</b>

	LAeq Daytime	LAeq Evening	LAeq Night-time
Day 1	51	53	52
Day 2	50	56	52
Day 3	51	52	51
Day 4	49	50	51
Day 5	50	51	47
Day 6	N/A	N/A	48
Day 7	N/A	N/A	N/A
<b>Average</b>	<b>51</b>	<b>53</b>	<b>50</b>

SUMMARY OF TRAFFIC LEVELS

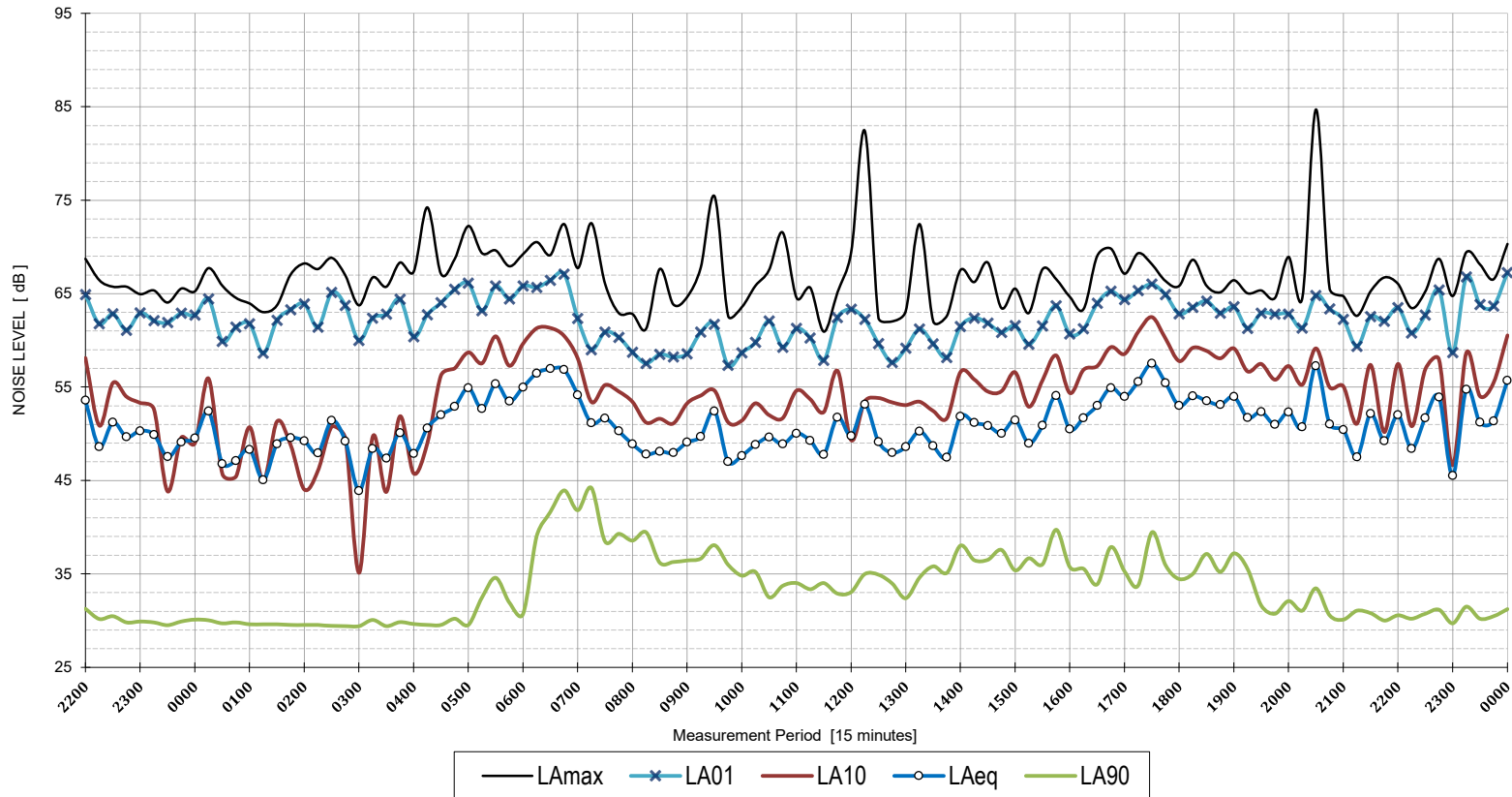
LAeq 15 hrs	0700-2200	51	dB
LAeq 9 hrs	2200-0700	51	dB
Max LAeq 1 hr	0700-2200	53	dB
Max LAeq 1 hr	2200-0700	53	dB

Maximum noise events as defined in the Environmental Noise Management Manual	24
7 day average - [L <sub>Amax</sub> - L <sub>Aeq</sub> ≥ 15]	

DAY 1

LOGGER LOCATION: 14456 Newell Highway, Edgeroi

DATE: Wednesday, 10 May 2023

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	33	dB
LA90 Evening	1800-2200	30	dB
LA90 Night-time	2200-0700	29	dB
LAeq Daytime	0700-1800	51	dB
LAeq Evening	1800-2200	53	dB
LAeq Night-time	2200-0700	52	dB

**TRAFFIC & MISC. NOISE METRICS**

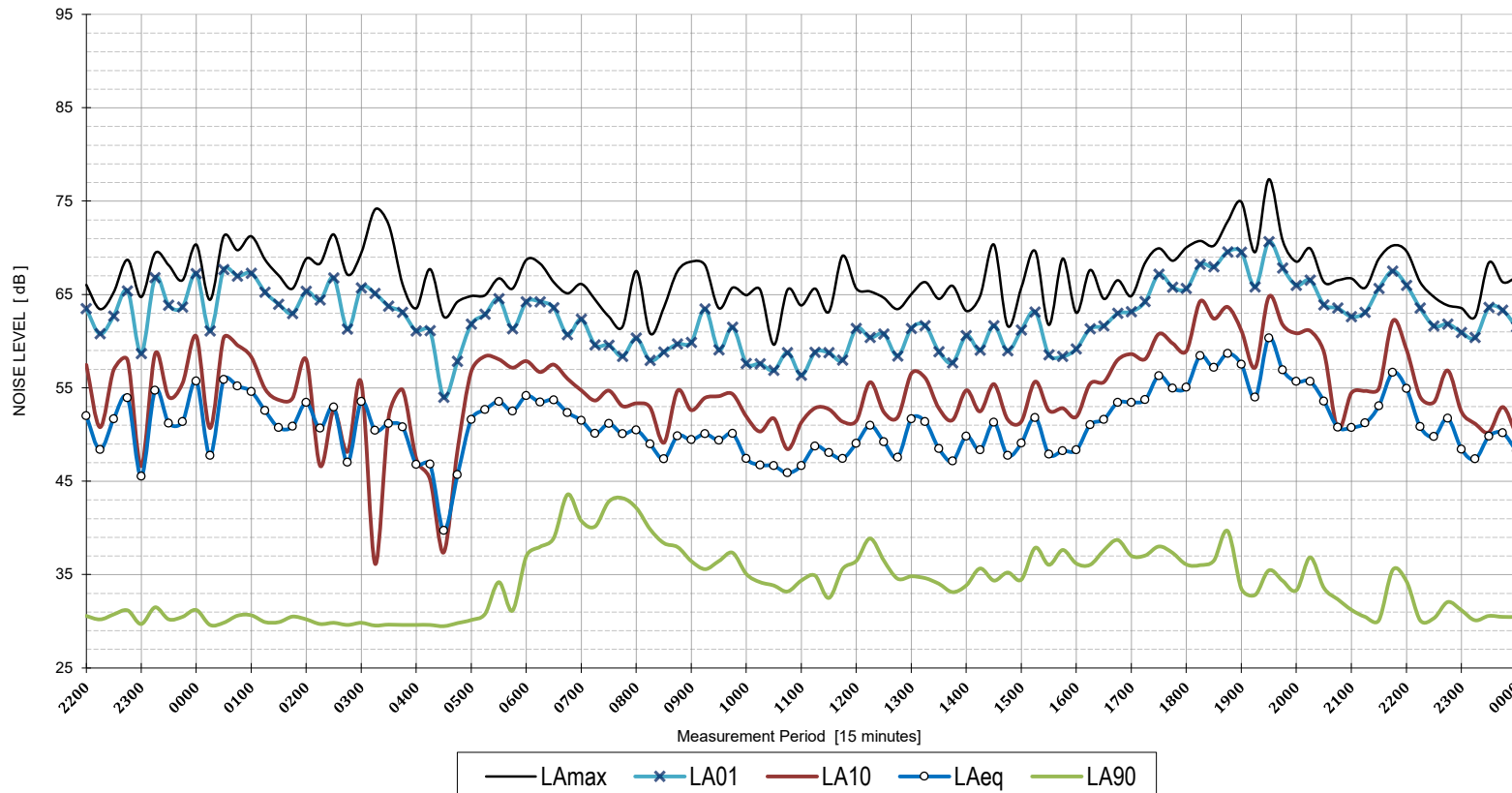
LAeq 15 hours	0700-2200	52	dB
LAeq 9 hours	2200-0700	52	dB
Max LAeq 1 hour	0700-2200	54	dB
Max LAeq 1 hour	2200-0700	54	dB

Maximum noise events as defined in the Environmental Noise Management Manual [ $LA_{max} - LA_{eq} \geq 15$ ]	28
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DAY 2

LOGGER LOCATION: 14456 Newell Highway, Edgeroi

DATE: Thursday, 11 May 2023

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	34	dB
LA90 Evening	1800-2200	31	dB
LA90 Night-time	2200-0700	30	dB
LAeq Daytime	0700-1800	50	dB
LAeq Evening	1800-2200	56	dB
LAeq Night-time	2200-0700	52	dB

**TRAFFIC & MISC. NOISE METRICS**

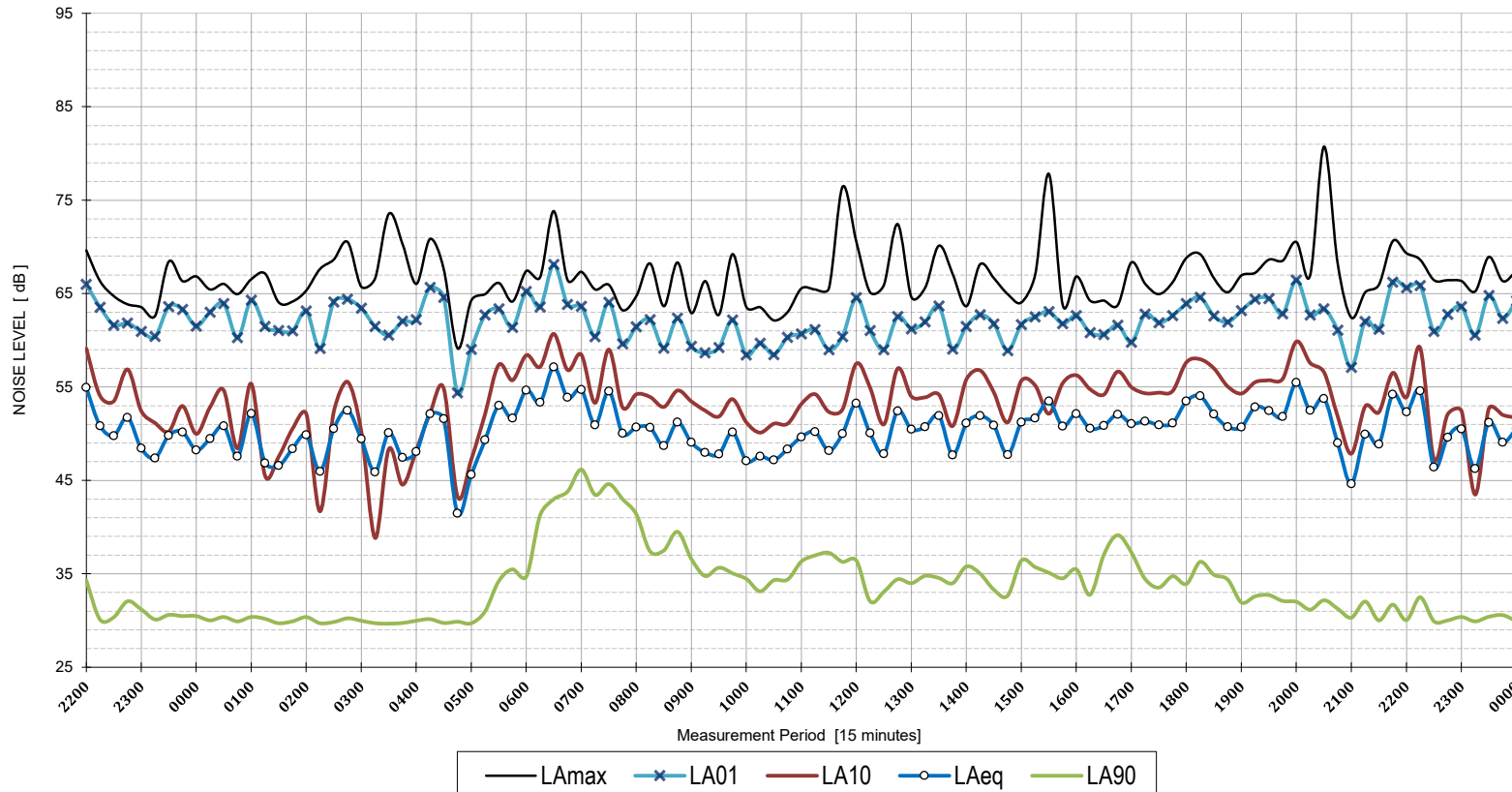
LAeq 15 hours	0700-2200	53	dB
LAeq 9 hours	2200-0700	52	dB
Max LAeq 1 hour	0700-2200	57	dB
Max LAeq 1 hour	2200-0700	54	dB

Maximum noise events as defined in the Environmental Noise Management Manual [ $L_{Amax} - L_{Aeq} \geq 15$ ]	21
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DAY 3

LOGGER LOCATION: 14456 Newell Highway, Edgeroi

DATE: Friday, 12 May 2023

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	33	dB
LA90 Evening	1800-2200	31	dB
LA90 Night-time	2200-0700	30	dB
LAeq Daytime	0700-1800	51	dB
LAeq Evening	1800-2200	52	dB
LAeq Night-time	2200-0700	51	dB

**TRAFFIC & MISC. NOISE METRICS**

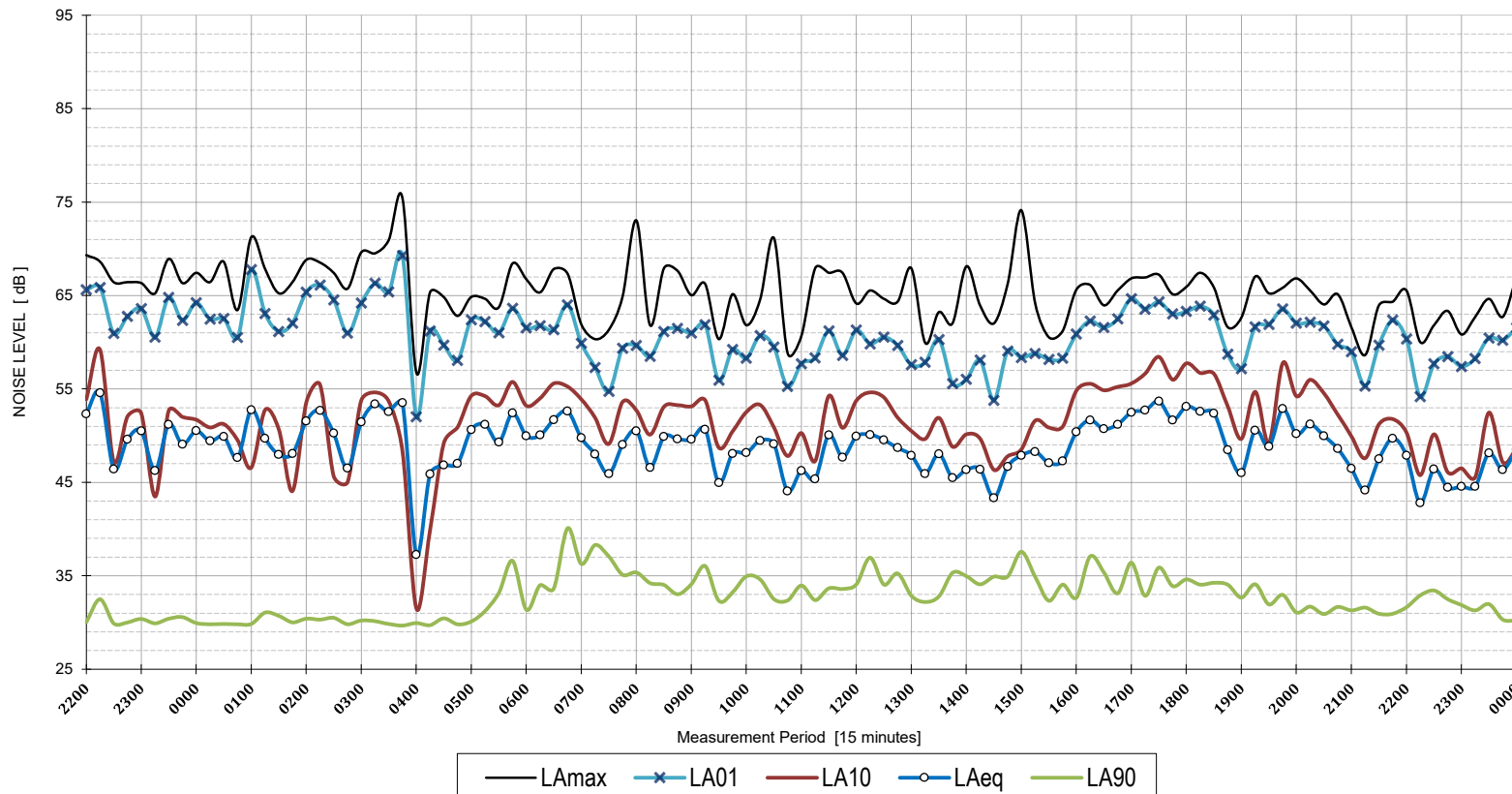
LAeq 15 hours	0700-2200	51	dB
LAeq 9 hours	2200-0700	51	dB
Max LAeq 1 hour	0700-2200	53	dB
Max LAeq 1 hour	2200-0700	53	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	27
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DAY 4

LOGGER LOCATION: 14456 Newell Highway, Edgeroi

DATE: Saturday, 13 May 2023

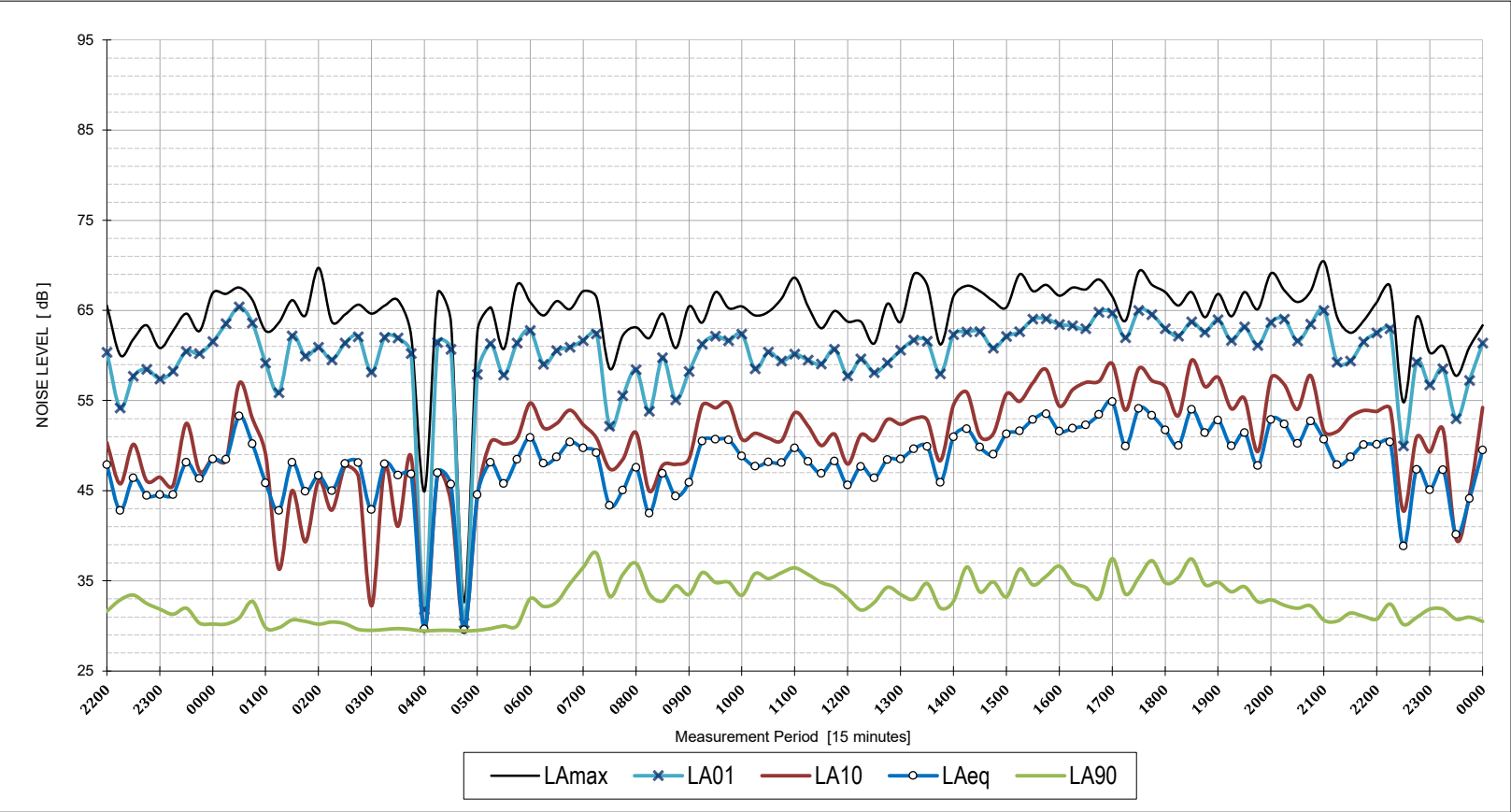
**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	32	dB
LA90 Evening	1800-2200	31	dB
LA90 Night-time	2200-0700	30	dB
LAeq Daytime	0700-1800	49	dB
LAeq Evening	1800-2200	50	dB
LAeq Night-time	2200-0700	51	dB

**TRAFFIC & MISC. NOISE METRICS**

LAeq 15 hours	0700-2200	49	dB
LAeq 9 hours	2200-0700	51	dB
Max LAeq 1 hour	0700-2200	52	dB
Max LAeq 1 hour	2200-0700	52	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	31
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AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	33	dB
LA90 Evening	1800-2200	31	dB
LA90 Night-time	2200-0700	30	dB
LAeq Daytime	0800-1800	50	dB
LAeq Evening	1800-2200	51	dB
LAeq Night-time	2200-0800	47	dB

TRAFFIC & MISC. NOISE METRICS

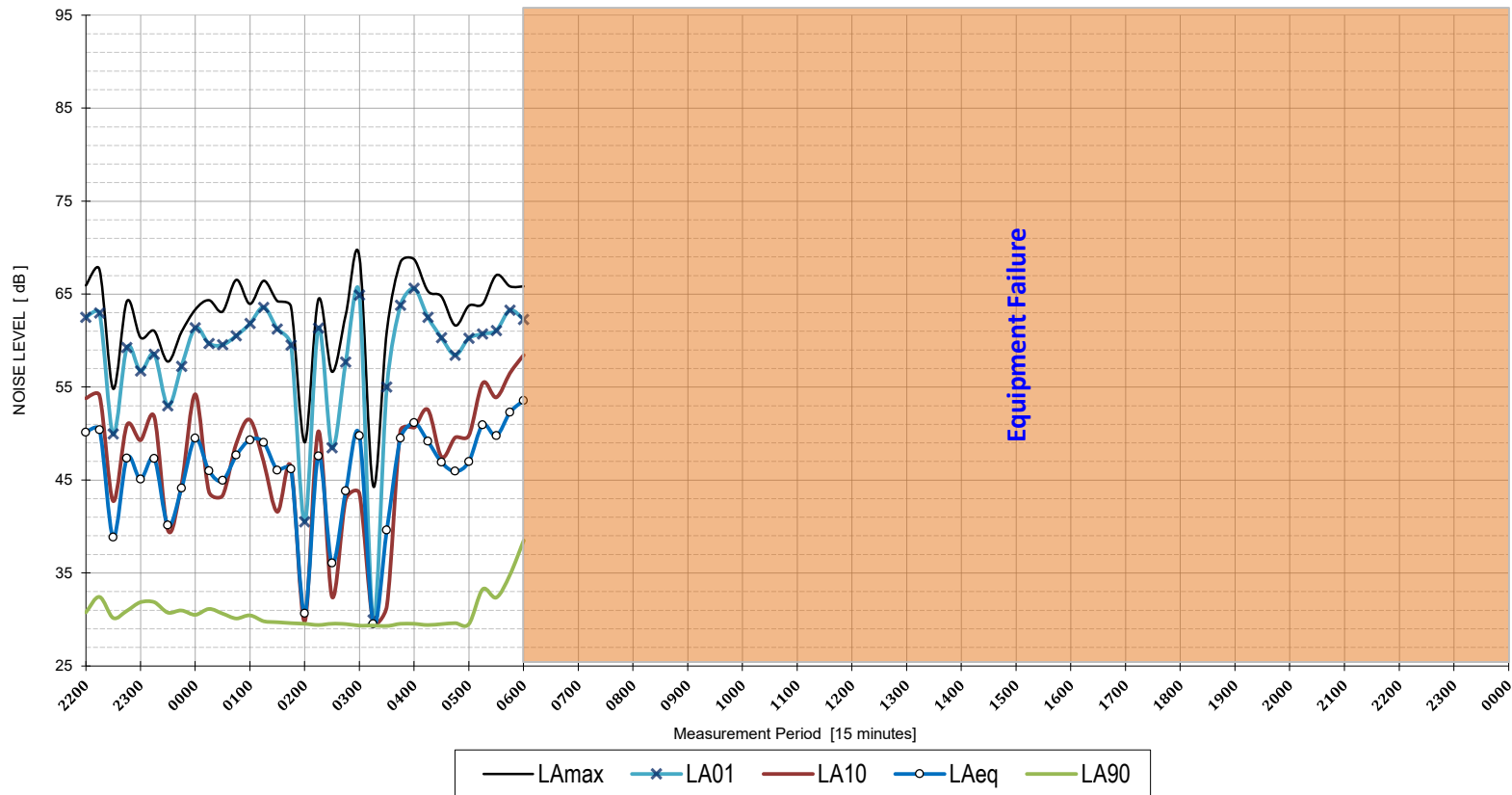
LAeq 15 hours	0700-2200	50	dB
LAeq 9 hours	2200-0700	47	dB
Max LAeq 1 hour	0700-2200	53	dB
Max LAeq 1 hour	2200-0700	50	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	32
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DAY 6

LOGGER LOCATION: 14456 Newell Highway, Edgeroi

DATE: Monday, 15 May 2023

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0800-1800	N/A	dB
LA90 Evening	1800-2200	N/A	dB
LA90 Night-time	2200-0800	29	dB
LAeq Daytime	0700-1800	#DIV/0!	dB
LAeq Evening	1800-2200	#DIV/0!	dB
LAeq Night-time	2200-0700	48	dB

**TRAFFIC & MISC. NOISE METRICS**

LAeq 15 hours	0700-2200	N/A	dB
LAeq 9 hours	2200-0700	48	dB
Max LAeq 1 hour	0700-2200	N/A	dB
Max LAeq 1 hour	2200-0700	49	dB

Maximum noise events as defined in the Environmental Noise Management Manual [ $L_{Amax} - L_{Aeq} \geq 15$ ]	26
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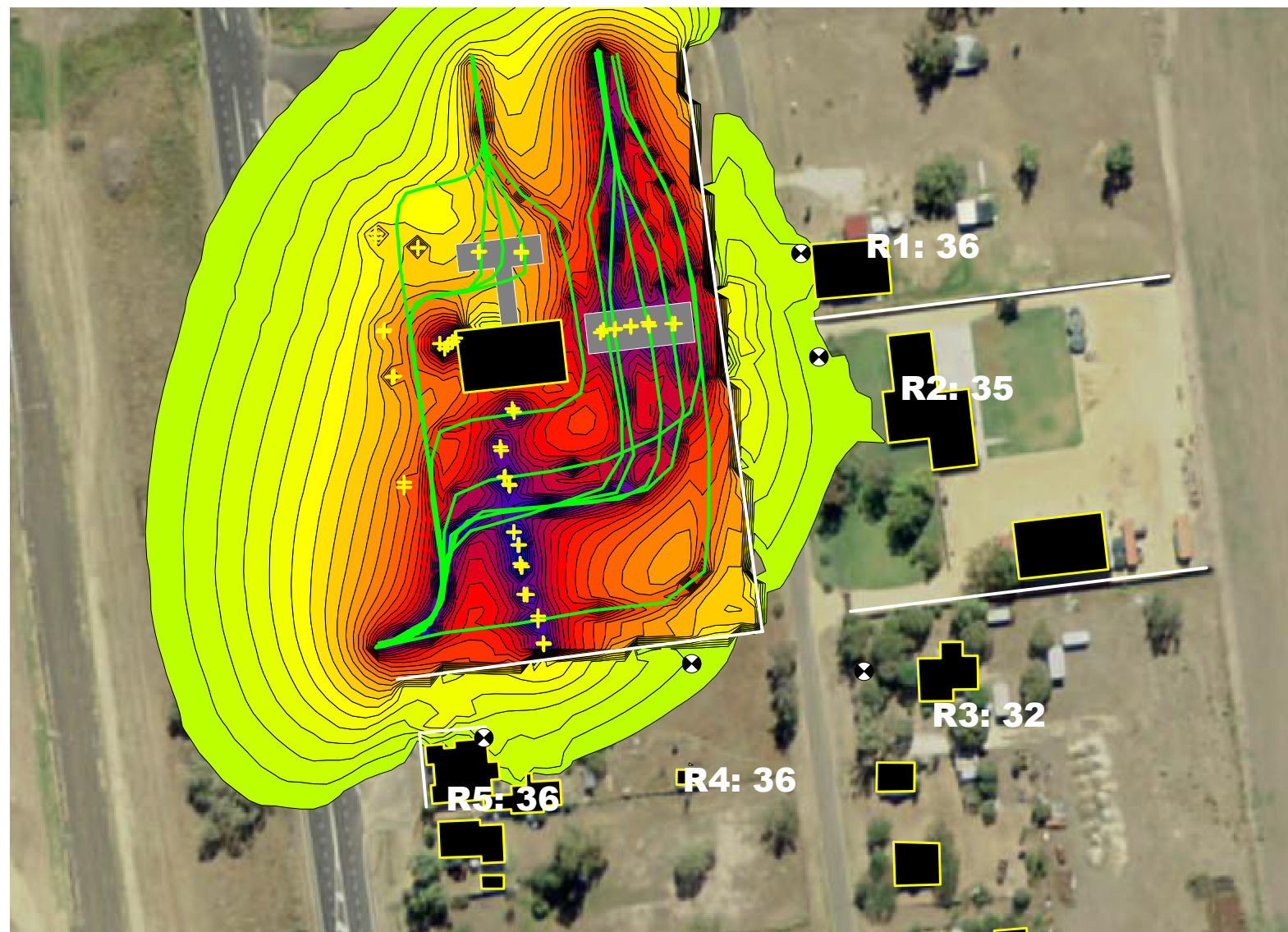


**\*\* SCENARIO 1 \*\***

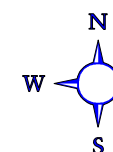
Noise Sources  
~ See Report

Note:  
- LAeq,15mins noise level contours and  
receiver points are at a height of 1.5 m above  
the natural ground level.

PRINT DATE:01/06/23



JOB NUMBER: 5869  
SITE ADDRESS: 14456 Newell Highway, Edgeroi  
ASSESSED TO: EPA NPfI  
LIMITING CRITERIA: LAeq 36 dB - Evening



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

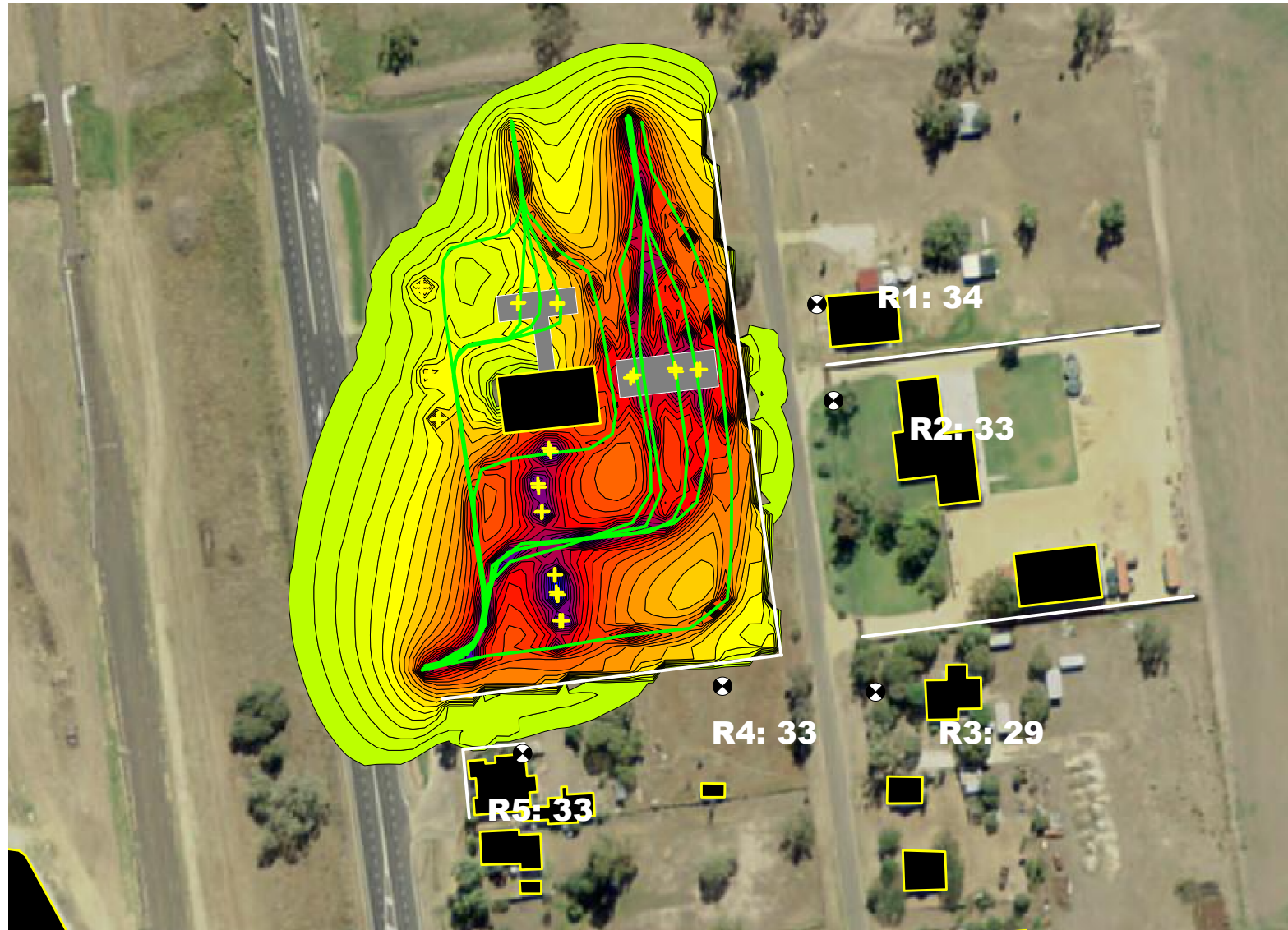
- > 35.0 dB
- > 40.0 dB
- > 45.0 dB
- > 50.0 dB
- > 55.0 dB
- > 60.0 dB
- > 65.0 dB
- > 70.0 dB

**\*\* SCENARIO 2 \*\***

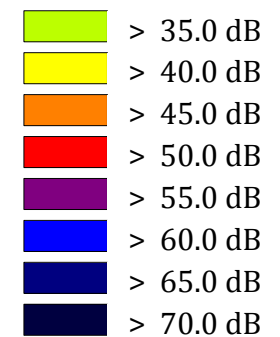
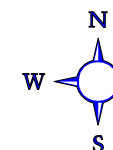
Noise Sources  
~ See Report

Note:  
- LAeq,15mins noise level contours and receiver points are at a height of 1.5 m above the natural ground level.

PRINT DATE:01/06/23



JOB NUMBER: 5869  
SITE ADDRESS: 14456 Newell Highway, Edgeroi  
ASSESSED TO: EPA NPfI  
LIMITING CRITERIA: LAeq 35 dB - Nighttime

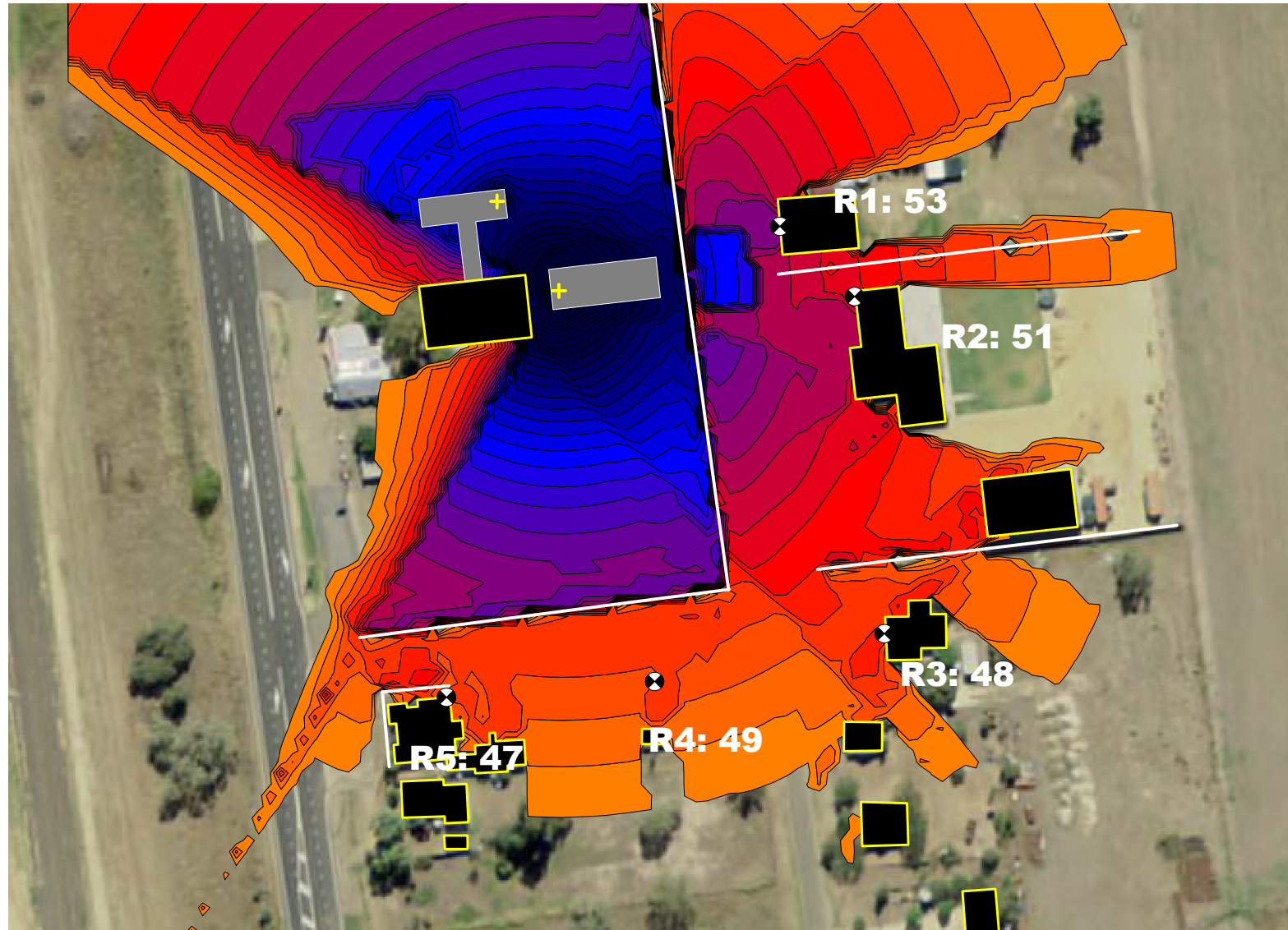


**\*\* SCENARIO 3 \*\***

Noise Sources  
~ See Report

Note:  
- LAeq,15mins noise level contours and  
receiver points are at a height of 1.5 m above  
the natural ground level.

PRINT DATE:01/06/23



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

> 45.0 dB	Orange
> 50.0 dB	Red
> 55.0 dB	Purple
> 60.0 dB	Blue
> 65.0 dB	Dark Blue
> 70.0 dB	Very Dark Blue

JOB NUMBER: 5869  
SITE ADDRESS: 14456 Newell Highway, Edgeroi  
ASSESSED TO: EPA Sleep Disturbance  
LIMITING CRITERIA: See Report

