



RAPT
CONSULTING

Noise Assessment – 58 Taylors Road Blackhill NSW

Prepared for

Jade Maddison C/O Perception Planning

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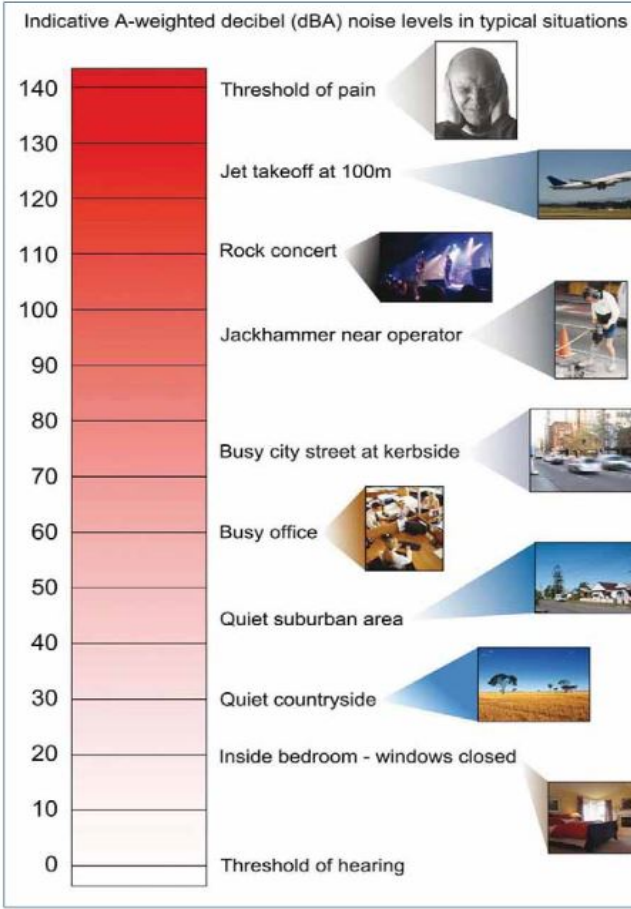
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Glossary of Acoustic Terms

Term	Definition
dB	<p>Decibel is the unit used for expressing the sound pressure level (SPL) or power level (SWL) in acoustics. The picture below indicates typical noise levels from common noise sources.</p> 
dB(A)	<p>Frequency weighting filter used to measure 'A-weighted' sound pressure levels, which conforms approximately to the human ear response, as our hearing is less sensitive at very low and very high frequencies.</p>
$L_{Aeq}(\text{period})$	<p>Equivalent sound pressure level: the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.</p>
$L_{A10}(\text{period})$	<p>The sound pressure level that is exceeded for 10% of the measurement period.</p>
$L_{A90}(\text{period})$	<p>The sound pressure level that is exceeded for 90% of the measurement period.</p>
L_{Amax}	<p>The maximum sound level recorded during the measurement period.</p>

Noise sensitive receiver	<ul style="list-style-type: none"> ▶ An area or place potentially affected by noise which includes: ▶ A residential dwelling. ▶ An educational institution, library, childcare centre or kindergarten. ▶ A hospital, surgery or other medical institution. ▶ An active (e.g. sports field, golf course) or passive (e.g. national park) recreational area. ▶ Commercial or industrial premises. ▶ A place of worship.
Rating Background Level (RBL)	The overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period.
Feasible and Reasonable (Noise Policy for Industry Definition)	<p>Feasible mitigation measure is a noise mitigation measure that can be engineered and is practical to build and/or implement, given project constraints such as safety, maintenance and reliability requirements.</p> <p>Selecting Reasonable measures from those that are feasible involves judging whether the overall noise benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the mitigation measure. To make a judgement, consider the following:</p> <ul style="list-style-type: none"> ▶ Noise impacts ▶ Noise mitigation benefits ▶ Cost effectiveness of noise mitigation ▶ Community views.
Sound power level (SWL)	The sound power level of a noise source is the sound energy emitted by the source. Notated as SWL, sound power levels are typically presented in dB(A).

1. Introduction

1.1 Background

RAPT Consulting has been engaged to undertake a noise assessment for Jade Maddison C/O Perception Planning at 58 Taylors Road Blackhill as the property is seeking an amendment to the LEP 'Dwelling Entitlement Map' to permit a dwelling on the land.

Feedback from Cessnock Council indicates an acoustic assessment is required to inform the amendment application as the site adjoins an active quarry operation which has previously been subject to complaints about its operation.

An image illustrating the site and surrounding area is provided in Figure 1-1.



Figure 1-1 Site and Surrounding Area (Source: Six Maps)

1.2 Limitations

The purpose of this report is to provide an independent noise assessment for the proposal.

It is not the intention of the assessment to cover every element of the acoustic environment, but rather to conduct the assessment with consideration to the prescribed work scope.

The findings of the noise assessment represent the findings apparent at the date and time of the assessment undertaken. It is the nature of environmental assessments that all variations in environmental conditions cannot be assessed and all uncertainty concerning the conditions of the ambient environment cannot be eliminated. Professional judgement must be exercised in the investigation and interpretation of observations.

In conducting this assessment and preparing the report, current guidelines for noise were referred to. This work has been conducted in good faith with RAPT Consulting's understanding of the client's brief and the generally accepted consulting practice.

No other warranty, expressed or implied, is made as to the information and professional advice included in this report. It is not intended for other parties or other uses.

2. Existing Environment

To establish background and ambient noise levels, noise monitoring was undertaken by RAPT Consulting at the western end of the property from 16 April to 22 April 2021. Site observations noted the location is considered indicative of the local ambient noise environment and this site also presented as secure location whereby minimising the risk of theft or vandalism to the monitoring equipment. Additionally, they are considered as acceptable locations for determination of the background noise with consideration to the NSW Environment Protection Authority's (EPA's) – Noise Policy for Industry (NPfI). During site visits it was noted that existing distant road traffic from the M1 and natural wildlife, primarily described the ambient noise environment and is indicative of a sub-urban noise environment.

The monitoring location is shown in Figure 2-1 and 2-2.



Figure 2-1 Monitoring Location



Figure 2-2 Monitoring Location

Monitoring was undertaken using a RION NL-42 noise logger with Type 2 Precision. Calibration was checked prior to and at the conclusion of the measurements with no significant drift. These loggers are capable of measuring continuous sound pressure levels and are able to record LAmin, LA90, LA10, LAmax and LAeq noise descriptors. The instrument was programmed to accumulate environmental noise data continuously over sampling periods of 15 minutes for the entire monitoring period.

The LA90 descriptor is used to measure the background noise level. This descriptor represents the noise level that is exceeded for 90 per cent of the time over a relevant period of measurement. The LA90 descriptor is used to establish the Rating Background Noise Level (RBL), which is the overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period. The RBL has been calculated, according to the procedures described in the EPA's NPfl and by following the procedures and guidelines detailed in Australian Standard AS1055-1997, "Acoustics - Description and Measurement of Environmental Noise, Part 1 General Procedures."

The LAeq is the equivalent continuous noise level which would have the same total acoustic energy over the measurement period as the varying noise actually measured, so it is in effect an energy average.

Logged data was reviewed and filtered to exclude any extraneous data during the monitoring period. Weather information for the unattended noise logging was obtained from the Bureau of Meteorology Maitland Airport all weather station for the monitoring period and any data adversely affected by rain, wind (more than 5 m/s as per NPfI) were discarded.

The RBL and ambient LAeq levels are provided in Table 2-1 below.

Table 2-1 Background and Ambient Noise Monitoring Results

Rating background level, LA90, dB(A)			Ambient noise levels, LAeq dB(A)		
Day	Evening	Night	Day	Evening	Night
37	41* (37)	37	49	45	44

Note 1 The NSW NPfI recommends evening and nighttime background noise levels be no higher than daytime recorded noise levels

The noise monitoring charts are provided in Appendix A.

To supplement the long term measurements, operator attended noise measurements were conducted using a RION NL-42 Sound Level Meter with Type 2 Precision. The attended noise surveys were conducted with consideration to the procedures described in Australian Standard AS 1055:2018, "Acoustics – Description and Measurement of Environmental Noise" and the NSW Noise Policy for Industry (NPfI). Calibration was checked before and after each measurement and no significant drift occurred. The acoustic instrumentation used carries current NATA calibration and complies with AS/NZS IEC 61672.1-2019-Electroacoustics – Sound level meters – Specifications.

During site visits it was noted that existing distant road traffic, natural wildlife and distant quarry operations were perceptible. The attended measurements were undertaken during calm conditions.

Logged data was reviewed and filtered to exclude any extraneous data results during the measurements. The results are provided in Table 2.2.

Table 2-2 Noise Monitoring Results dB(A)

Location	Noise Period	Noise Level		Noise Sources
		LAeq	LA90	
58 Taylors Road	22/04/2021 12:00pm – 12:15pm	43	40	Distant M1 38 Distant Quarry 38-40 Birds 40-46 Crickets 40-44,

3. Guidelines

From an acoustic point of view the potential impacts on the amenity of any future residents will come from the existing and future industrial noise and from noise from road traffic

3.1 Noise Policy for Industry (NPfI) Operational Noise Criteria

While this proposal is for a potential residential premises, The New South Wales Noise Policy for Industry (NPfI) provides guidance on the assessment of operational noise impacts from industrial sources. The guidelines include both intrusive and amenity criteria that are designed to protect receivers from noise significantly louder than the background level and to limit the total noise level from all sources near a receiver.

Intrusive noise levels set by the NPfI control the relative audibility of operational noise compared to the background level. Amenity criteria limit the total level of extraneous noise. Both sets of criteria are calculated and the lower of the two in each time period normally apply. Intrusive criteria are simply 5 decibels above the measured (or adopted) background level with a minimum of 40 dB(A) for daytime and 35 dB(A) for evening and night-time. In determining project noise trigger levels for a particular development, it is generally recommended that the project intrusiveness noise level for evening be set at no greater than the project intrusiveness noise level for daytime. The project intrusiveness noise level for night-time should be no greater than the project intrusiveness noise level for day or evening.

Amenity noise levels are determined based on the overall acoustic characteristics of the receiver area and the existing level of noise excluding other noises such as traffic and insects. Residential receiver areas are characterised into 'urban', 'suburban', 'rural' or other categories based on land uses, the existing level of noise from industry, commerce, and road traffic. Project amenity noise levels (ANL) are the ANL (Table 2.1 of the NPfI) minus 5 dB(A) and plus 3 dB(A) to convert from a period level to a 15-minute level. The project noise trigger level is the lower value between the intrusive and the amenity noise levels.

The NPfI noise criteria are planning levels and are not mandatory limits required by legislation however the noise criteria assist the regulatory authorities to establish licensing conditions. Where noise criteria are predicted to be exceeded, feasible and reasonable noise mitigation strategies should be considered. In circumstances where noise criteria cannot be achieved negotiation is required to evaluate the economic, social and environmental costs and benefits of the development against the noise impacts. The regulatory authority then sets statutory compliance levels that reflect the achievable and agreed noise limits from the development.

The NPfI is generally intended for large and complex industrial sources and recommends considerable monitoring and assessment measures that may not always be applicable to certain situations. However, the NPfI will be referred to for assessing amenity for this proposal.

The future residential receptors are considered sub-urban. Project noise trigger levels are provided for residences in Table 3-1.

Table 3-1 Project Noise Trigger Levels dB(A)

	Day 7 am to 6 pm	Evening 6 pm to 10 pm	Night 10pm to 7 am
Rating Background Level L _{A90} (Period)	37	41* (37)	37
Intrusiveness Noise Level, L _{Aeq} (15min)	42	42	42
Amenity Noise Level (Sub-Urban), L _{Aeq} (Period)	50	40	35
Project Amenity Noise Level L _{Aeq} (15min)	53	43	38
Project Noise Trigger Level Residential	42 L_{Aeq}(15min)	42 L_{Aeq}(15 min)	38 L_{Aeq}(15 min)

Note 2 In line with the NPfI, it is generally recommended that the project intrusiveness noise level for evening be set at no greater than the project intrusiveness noise level for daytime. The project intrusiveness noise level for night-time should be no greater than the project intrusiveness noise level for day or evening.

3.2 Development Near Rail Corridors and Busy Roads

The Department of Planning Guideline “Development near Rail Corridors and Busy Roads – Interim Guideline” (Guideline) Section 3.5 of the guideline specifies the internal noise criteria which is consistent with SEPP 87 for noise and is outlined in Table 3-2 Below.

Table 3-2 Internal Noise Level Goals

Type of Occupancy	Noise Level	Time Period
Sleeping areas / Bedrooms	35dB(A) Windows Closed	Night 10:00pm to 7:00am
Other Habitable Rooms (excluding garages, kitchens bathrooms and Hallways)	40dB(A) Windows Closed	Any Time

The guidelines outlined above originated from the Rail Infrastructure Corporation (RIC) publication “Consideration of Rail Noise and Vibration in the Planning Process” (2003) where it is specific that the criteria apply with windows and doors closed. If noise levels with windows or doors open exceed these criteria by more than 10 dBA, the design of the ventilation for these rooms should be such that occupants can leave windows closed, if they so desire.

4. Acoustic Assessment

4.1 External Noise

Attended observations and measurements noted the existing ambient noise environment is primarily described by natural sounds with distant M1 road traffic and distant quarry noise as perceptible. It is understood the existing Woodbury quarry located to the southwest of the proposal operates during daytime only. With this in mind, the long-term monitoring results and attended measurements indicate project noise trigger levels for amenity and intrusive noise can be met for the proposal. Attended measurements indicated the noise contribution from the quarry to be in the order of 38-40 dB(A). Based on the measurements and interpretation of logging data, it can be concluded the existing level of industrial noise is within acceptable levels and should not be an impediment to the proposed residential dwelling. This is not to say the quarry will not be perceptible. Rather, the noise contribution to the overall ambient noise environment falls within the parameters of the NPfl.

In future, if industrial developments or expansions are proposed in this area they would need to abide by the procedures set out in the NPfl. These assessments would need to identify all existing and approved residential receivers and detail all reasonable and feasible noise abatement measures to attain compliance with adopted noise goals. The noise goals would ensure suitable acoustic amenity for all existing and proposed residential receivers.

4.2 Internal Noise

The NSW Environmental Noise Management Manual specifies that standard window glazing of a building will typically attenuate the external noise levels by at least 20dB(A) with the windows closed and 10 dB(A) with the windows open (allowing for natural ventilation). This means that an external noise level of 60 Leq dB(A) during the day and 55 Leq dB(A) night would result in compliance with the internal noise level goals outlined in Table 3-2.

The predicted internal noise levels for standard façade glazing for monitoring location is presented in Table 4-1 and is based on the noise monitoring results.

Table 4-1 Internal Noise Comparison

Type of Occupancy	Recorded Ambient Noise Level	Internal Noise Level	Noise Goal Level	Time Period
Sleeping areas / Bedrooms	44 dB(A)	24 dB(A)	35dB(A) Windows Closed	Night 10:00pm to 7:00am
Other Habitable Rooms (excluding garages, kitchens bathrooms and Hallways)	48 dB(A)	28 dB(A)	40dB(A) Windows Closed	Any Time

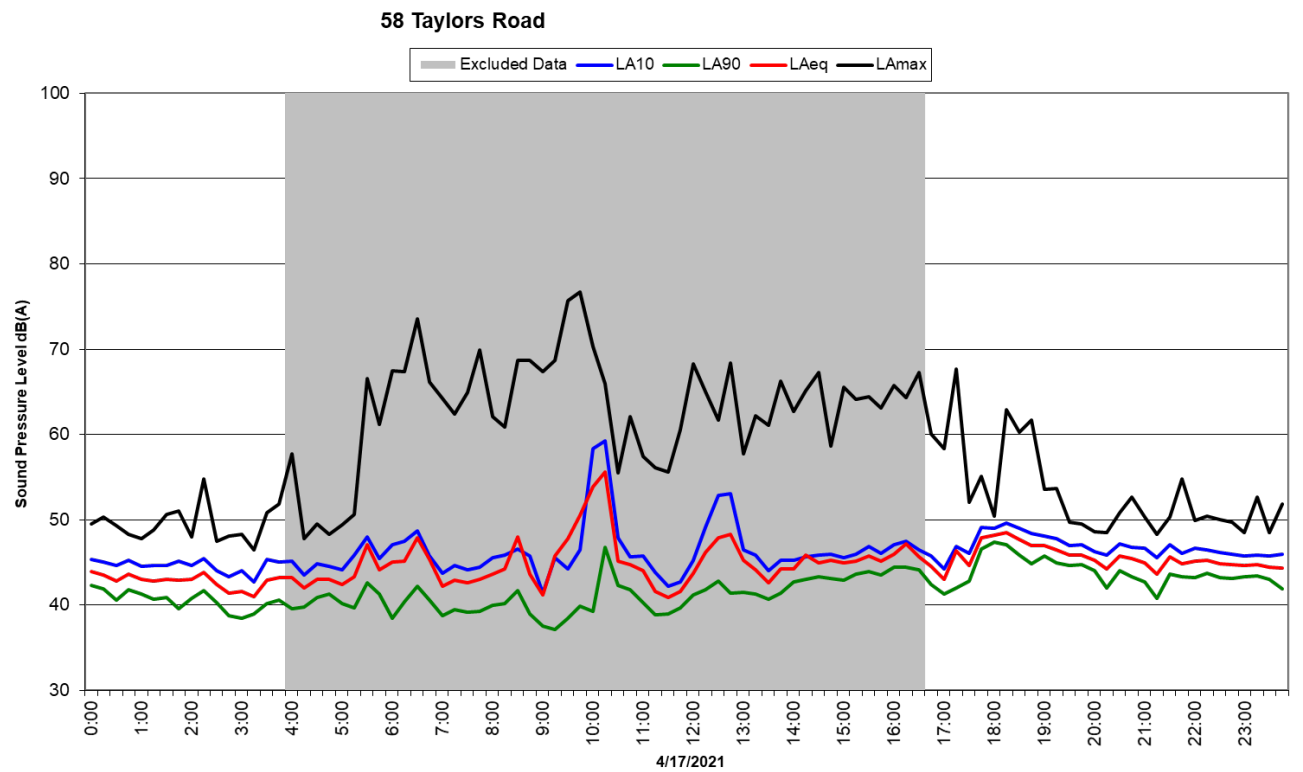
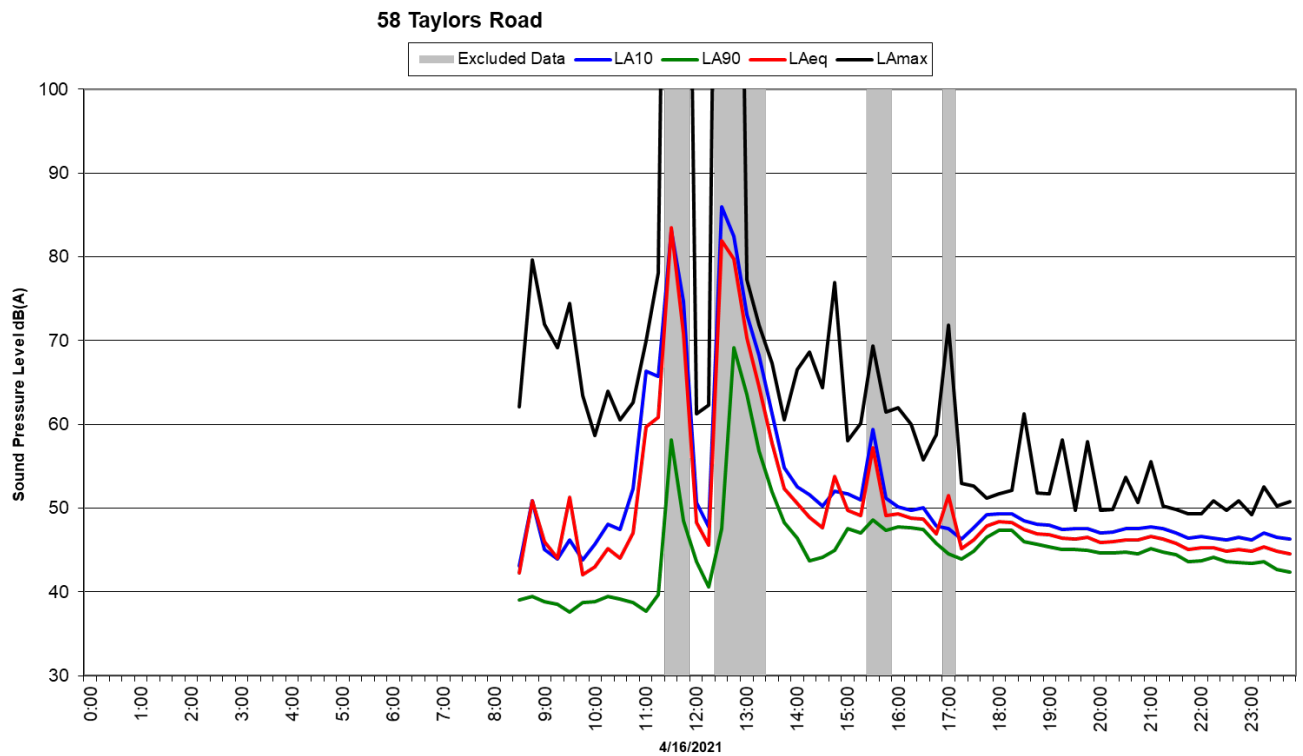
The predicted internal noise levels indicate internal noise goals may be achieved using standard façade glazing with windows open and shut.

5. Conclusion

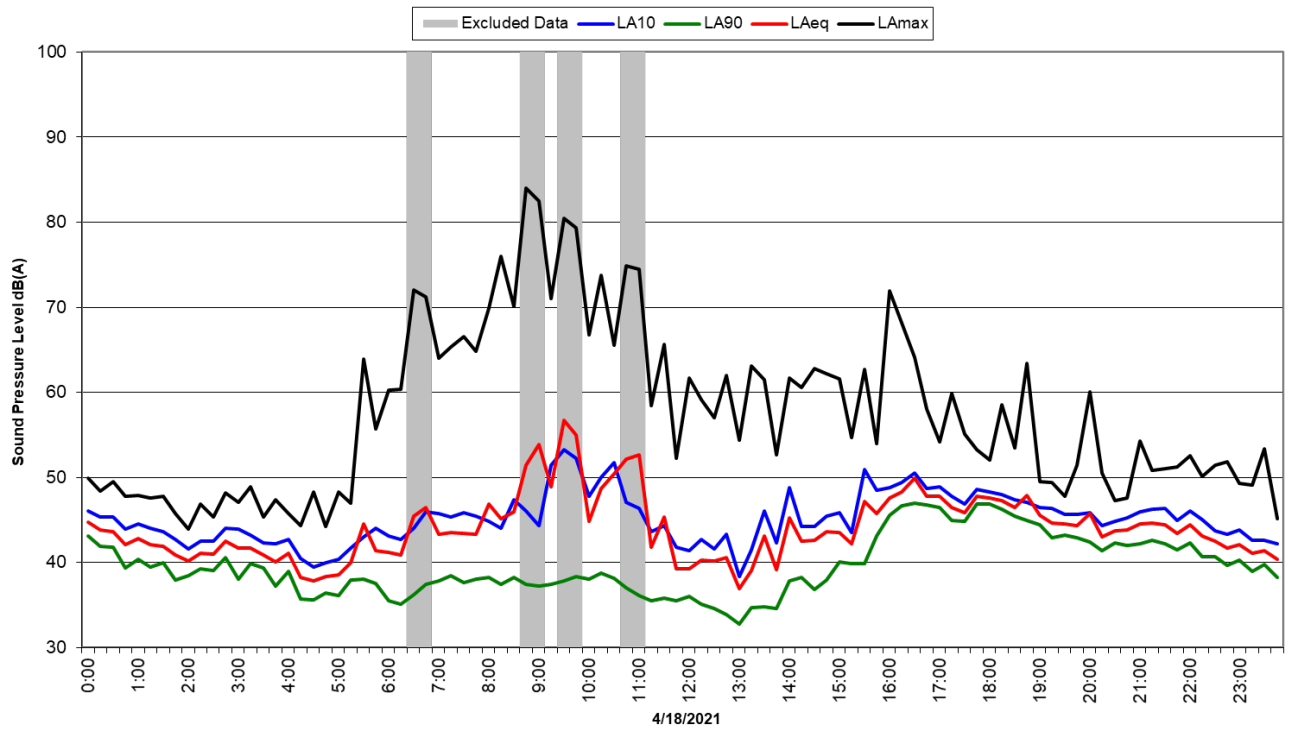
This noise assessment has been undertaken for Jade Maddison C/O Perception Planning at 58 Taylors Road Blackhill as the property is seeking an amendment to the LEP 'Dwelling Entitlement Map' to permit a dwelling on the land.

Based on the monitoring results, site observations and the information provided regarding the development, there is no acoustic related constraint that should prevent the amendment to the LEP 'Dwelling Entitlement Map' to permit a dwelling on the land

Appendix A Noise Monitoring Charts



58 Taylors Road



58 Taylors Road

