



RAPT
CONSULTING

Noise Assessment – Max McMahon Oval Rutherford, NSW

Prepared for
Maitland City Council C/O EJE Architecture

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Noise Assessment – Max McMahon Oval Rutherford, NSW.

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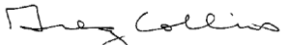
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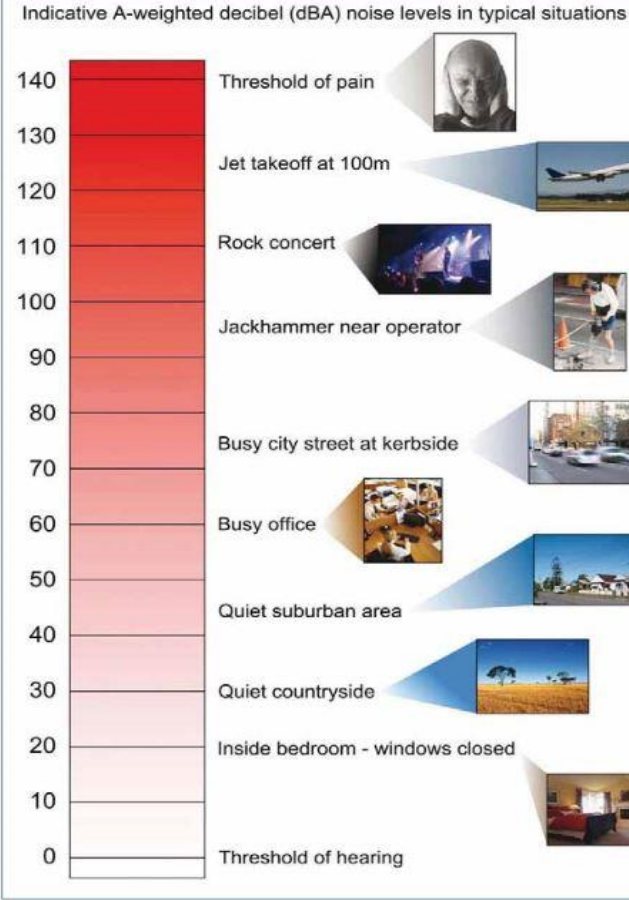
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Glossary of Acoustic Terms

| Term | Definition |
|--------------------------|---|
| dB | 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>The chart shows a vertical scale from 0 to 140 dBA. Key points include: 0 dBA (Threshold of hearing), 10 dBA (Inside bedroom - windows closed), 20 dBA (Quiet countryside), 30 dBA (Quiet suburban area), 40 dBA (Busy office), 50 dBA (Busy city street at kerbside), 60 dBA (Jackhammer near operator), 70 dBA (Rock concert), 80 dBA (Jet takeoff at 100m), and 140 dBA (Threshold of pain). Each point is accompanied by a representative image.</p> |
| dB(A) | 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. |
| $L_{Aeq}(\text{period})$ | 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. |
| $L_{A10}(\text{period})$ | The sound pressure level that is exceeded for 10% of the measurement period. |

| | |
|--|--|
| LA90(period) | The sound pressure level that is exceeded for 90% of the measurement period. |
| L _{Amax} | The maximum sound level recorded during the measurement period. |
| 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 Maitland City Council C/O EJE Architecture to inform a Development Application (DA) for alterations and additions to the amenities building at Max McMahon Oval Rutherford, NSW. Based on information provided, it is understood that at the pre DA meeting Council advised that they would like an acoustic report to accompany the submission. Council has requested an acoustic assessment as follows:

1. Acoustic Report –for DA due to the extended hours of the facility. These have taken into account the future use of the multipurpose room (As per our environmental team officers advice about the noise, it is agreed that it is warranted to cover future uses). Hours of operation have been reported as:

- *Sunday – Monday – Till 10pm.*
- *Friday & Saturday – Till 12am.*

The site and surrounding area is shown in Figure 1-1 and a 3 dimensional render is shown in Figure 1-2 below.



Figure 1-1 Site and Surrounding Area



Figure 1-2 3-Dimensional Render Facing East (Source: EJE Architecture)

1.2 Assessment Objectives

This acoustic assessment considers the potential impacts of the operation of the proposal. The purpose is to assess potential noise from the proposal and to recommend mitigation measures where required.

The outcomes of this assessment include recommendations where necessary for potential noise mitigation and management measures designed to achieve an acceptable noise amenity for residential (dwelling) occupants and other sensitive receivers surrounding the study area.

1.3 Scope

The acoustic assessment scope of work included:

- Initial desk top review to identify noise sensitive receptors from aerial photography
- Undertake noise measurements to determine ambient and background noise levels
- Noise data was assessed and filtered to remove invalid data due to extraneous noise or adverse weather conditions
- Project noise trigger levels were established for the development with consideration NSW publications Noise Policy for Industry (NPfI) and Noise Guide for Local Government (NGLG)
- Calculations were undertaken to ascertain the noise contribution to the overall ambient noise environment and assess against established project noise trigger levels.
- assessment of potential noise impacts associated with operation aspects of the project
- provide recommendations for feasible and reasonable noise mitigation and management measures, where noise objectives may be exceeded.

1.4 Relevant Guidelines

The relevant policies and guidelines for noise and vibration assessments in NSW that have been considered during the preparation of this assessment include:

- Noise Policy for Industry (NPfI), Environment Protection Authority (EPA), 2017
- Noise Guide for Local Government (NGfLG) Environment Protection Authority (EPA), 2013
- AS 1055.1 Acoustics – Description and measurement of environmental noise.

1.5 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

2.1 Existing Landuse

The area surrounding the proposal is zoned RE1 Public Recreation. A map showing the land use zonings in the vicinity of the proposal are shown in Figure 2-1.

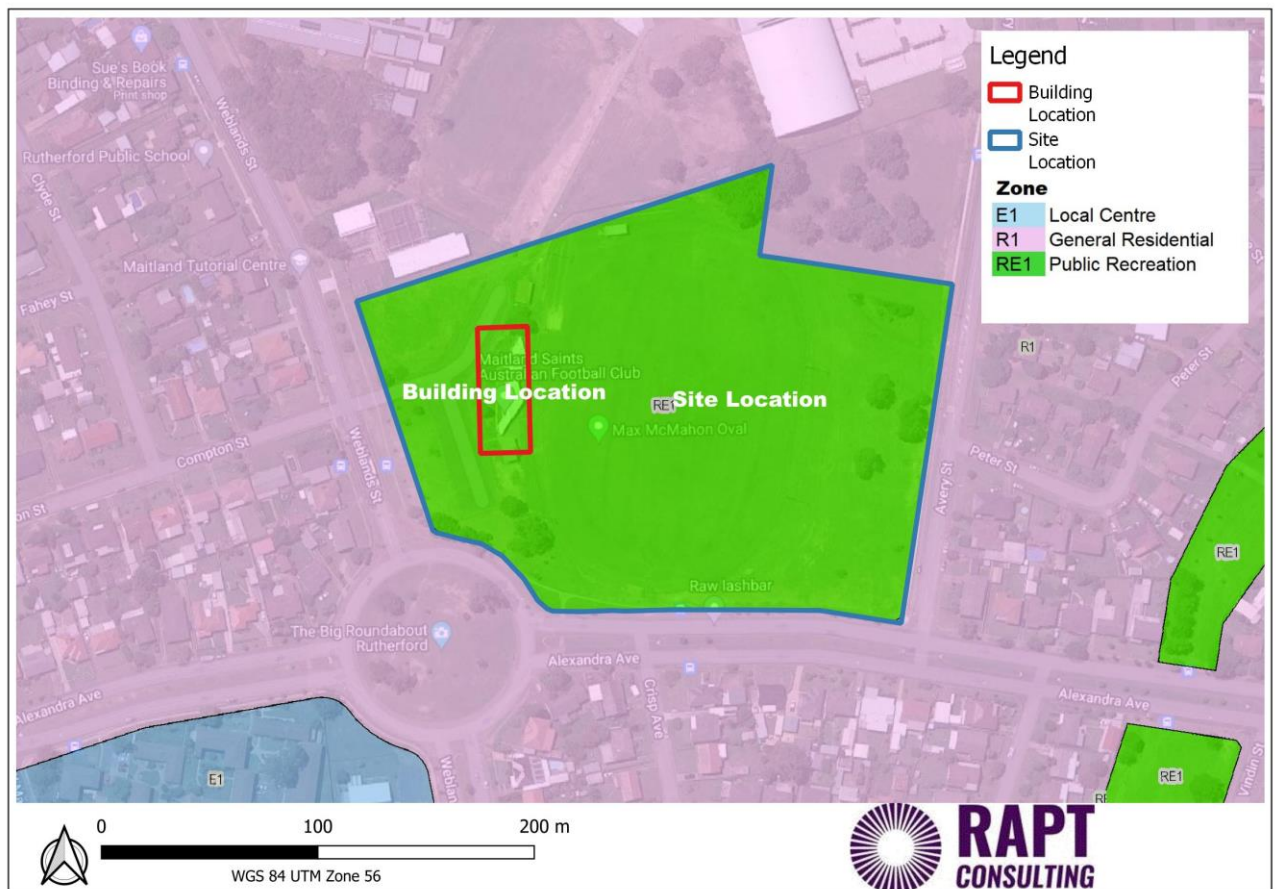


Figure 2-1 Land Use Zonings

2.2 Background and Ambient Noise

To establish background and ambient noise levels, noise monitoring was undertaken by RAPT Consulting from 4 September to 11 September 2023. The monitoring was undertaken at 50 Weblands Street Rutherford to capture representative noise levels for nearest properties to the west of the site.

Site observations noted the location was considered indicative of the local ambient noise environment and the 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 traffic 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 2-3 and 2-4.



Figure 2-2 Noise Monitoring Location



Figure 2-3 Noise Monitoring Location Existing Amenities Building in Background

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 L_{Amin} , L_{A90} , L_{A10} , L_{Amax} and L_{Aeq} noise descriptors. The instrument was programmed to accumulate environmental noise data continuously over sampling periods of 15 minutes for the entire monitoring period.

The 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.

The L_{A90} descriptor is used to measure the background noise level. This descriptor represents the noise level that is exceeded for 90 percent of the time over a relevant period of measurement. In line with the procedures described in the EPA's NPfI, the assessment background level (ABL) is established by determining the lowest tenth-percentile level of the L_{A90} noise data acquired over each period of interest. The background noise level or rating background level (RBL) representing the day, evening and night-time assessment periods is based on the median of individual ABL's determined over the entire monitoring duration. The RBL is representative of the average minimum background sound level, or simply the background level.

The L_{Aeq} 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.

Weather information for the unattended noise logging was obtained from the Bureau of Meteorology Maitland AWS for the monitoring period and any data adversely affected by rain, wind (more than 5 m/s as per NPfI) or extraneous noise were discarded.

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

Table 2-1 Background and Ambient Noise Monitoring Results

| Rating background level, L_{A90} , dB(A) | | | | Ambient noise levels, L_{Aeq} dB(A) | | | |
|--|----------------------|--------------------|--------------------|---------------------------------------|----------------------|--------------------|--------------------|
| Day ¹ | Evening ¹ | Night ¹ | Night ² | Day ¹ | Evening ¹ | Night ¹ | Night ² |
| 45 | 37 | 29 | 31 | 61 | 58 | 53 | 52 |

*Note 1 Day: 7:00 to 18:00 Monday to Saturday and 8:00 to 18:00 Sundays & Public Holidays
Evening: 18:00 to 22:00 Monday to Sunday & Public Holidays
Night: 22:00 to 7:00 Monday to Saturday and 22:00 to 8:00 Sundays & Public Holidays*

Note 2 Night Time 10:00pm to 12:00am in line with proposed Friday and Saturday operating hours

3. Noise Objectives

3.1 Noise Guide for Local Government

The NGLG provides guidance for Outdoor Entertainment Activities. However there is no specific guidance for a internal room use in an amenities building located at an outdoor facility.

In the absence of specific noise 'goals' for this circumstance, the NPfl will be referred to as a 'yardstick'.

3.2 Operational Noise – NSW Noise Policy for Industry

The NPfl doesn't contain specific procedures for the assessment of noise emissions from training facility internal room uses. However, it is provided as a guide for ascertaining potential noise impacts and applicable criteria.

The New South Wales *Noise Policy for Industry* (NPfl) provides guidance on the assessment of operational noise impacts. 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 NPfl 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.

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 are the recommended amenity noise level (Table 2.1 of the NPfl) 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 NPfl 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.

Based on site observations and guidance in the NPfl, Nearest residential receptors are considered sub-urban. It is understood the proposal is for daytime, evening and up to 12:00am on Friday and Saturdays operations however target noise levels for day, evening and night time are provided for residences, commercial premises and school class rooms for completeness in Table 3-1.

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

| | Day 7am to 6pm | Evening 6pm to 10pm | Night 10pm to 12am |
|---|----------------|---------------------|--------------------|
| Rating Background Level L _{A90} (Period) | 45 | 37 | 31 |
| Project Intrusive Noise Level, L _{Aeq} (15min) | 50 | 42 | 36 |
| Project Amenity Noise Level (Urban), L _{Aeq} (Period) | 50 | 40 | 35 |
| Project Amenity Noise Level L _{Aeq} (15min) | 53 | 43 | 38 |
| Project Trigger Level Residential L_{Aeq}(15min) | 50 | 42 | 36 |
| Commercial Premises (When in use) L_{Aeq}(15min) | 63 | 63 | 63 |
| School Classroom (When in Use) External² | 43 | 43 | 43 |

Note 3 External noise levels 10 dB(A) above the internal noise levels apply per Section 2.6 of NPfl

4. Assessment of Potential Impacts

4.1 Operational Noise

Assessment approach

Acoustic modelling was undertaken using Bruel and Kjaer's "Predictor" to predict the effects of site noise. Predictor is a computer program for the calculation, assessment and prognosis of noise propagation. Predictor calculates environmental noise propagation according to ISO 9613-2, "Acoustics – Attenuation of sound during propagation outdoors". The method predicts the sound pressure level under meteorological conditions favourable to propagation from sources of known sound emission. These conditions are for downwind propagation or equivalently under a well-developed moderate ground based temperature inversion. Terrain topography, ground absorption, atmospheric absorption and relevant shielding objects are taken into account in the calculations.

Other Key assumptions in the model include:

- topographical information was obtained from NSW Government Spatial Services
- all cleared areas were modelled considering a conservative ground factor of 0.8
- all residential receivers were modelled at 1.5 metres above the ground surface.

Site layout and building structures were based on information provided at the time of the assessment.

Primary onsite environmental noise sources will be in the form of patrons conversing and background music which could be in the form of a stereo speaker. It is understood live amplified music at the premises such as band performances will not be taking place.

Guest Noise

Guest noise in the form of human normal to raised voice has been sourced from RAPT Consulting's database and has been assessed with a sound power level of 70 dB(A). Based on 1 metres² per person the multipurpose area has an approximate capacity of 240 guests. Guest noise has been assumed to be operating from the multipurpose area in the form of 120 persons conversing as it has been assumed that 50% of persons are conversing at any one time as not all persons will be speaking simultaneously.

Background Music and Occupants

Different noise sources can be perceived in dining and social areas. First, sound ambience is generally dependent of the service proposal for each particular place. Managers and owners will select background music or televisions to fit with target customers Typically, background music or televisions in restaurants and social areas is set at a level for patrons to be able to

converse comfortably. Previous experience suggests generally, cumulative noise levels in restaurants and social areas can range from 67 – 83 dB(A) and mainly depends on occupant density. A noise level of 83 dB(A) has been assumed for the purposes of this assessment operating in the multipurpose room.

Mechanical Noise

Selection of mechanical plant has not been finalised at this stage of the development. However, we have assumed air conditioning will be required, Therefore a roof top condenser with a sound power level of 75 SWL dB(A) has been conservatively assumed with data sourced from RAPT Consulting's database.

Vehicle Noise

Onsite vehicles entering and exiting noise modelling assumptions include 10 cars in 15 minutes with a 10km/hr sound power level of 85dB(A) and a sound power level of a car door opening and closing of 78dB(A) which has been sourced from RAPT consultings' internal sound level database. It has been assumed the western carpark will be utilised during opening hours.

4.2 Building Components

Based on a review of the provided drawings from EJE Architecture, it is understood the multipurpose building external components will primarily be constructed of blockwork, glazing and corrugated steel roofing. The sound reduction applied in the assessment for these building elements is provided in Table 4-1.

Table 4-1 Sound Reduction of Materials

| | Octave Band Centre Frequency, Hz | | | | | | | | |
|--|----------------------------------|----|-----|-----|-----|----|----|----|----|
| | 31.5 | 63 | 125 | 250 | 500 | 1K | 2K | 4K | 8K |
| 1mm corrugated Steel reduction | 4 | 9 | 14 | 16 | 20 | 25 | 29 | 29 | 29 |
| 1mm Corrugated Steel, 90mm Rock Wool, 10mm Plasterboard | 6 | 11 | 16 | 31 | 40 | 46 | 48 | 48 | 48 |
| 6mm Single Pane Glass | 11 | 16 | 21 | 25 | 28 | 31 | 27 | 27 | 27 |
| 100mm Lightweight Brick Work | 23 | 28 | 33 | 35 | 36 | 41 | 47 | 47 | 47 |

To simulate a reasonable worst-case scenario, received noise produced by anticipated activities outlined above have been simulated. Table 4-2 and Figures 4-1 - 4-3 shows the cumulative results of the modelling assessment.

Table 4-2 Alfresco Operational Modelled Results dB(A) Leq(15min)

| Receiver ID | Cumulative Operational Result | Onsite Traffic Result | Multipurpose Building Result | Receptor Type | Project Noise Trigger Level Day/Evening/Night | Comply Yes/ No |
|-------------|-------------------------------|-----------------------|------------------------------|---------------|---|----------------|
| R1 | 35 | 35 | 23 | Residential | 50 / 42 / 36 | Yes |
| R2 | 34 | 33 | 25 | Residential | 50 / 42 / 36 | Yes |
| R3 | 26 | 24 | 23 | Residential | 50 / 42 / 36 | Yes |
| R4 | 19 | 16 | 16 | Residential | 50 / 42 / 36 | Yes |



Figure 4-1 Cumulative Noise Modelling Results Leq(15min) dB(A)



Figure 4-2 Onsite Traffic Noise Modelling Results Leq(15min) dB(A)



Figure 4-3 Multipurpose Building Results dB(A) Leq(15min)

The results of the modelling indicate compliance is expected at all assessed residential receptors. As can be seen from the assessment results, the multipurpose building is expected to safely comply with operational noise trigger levels. Onsite traffic entering or exiting the carpark is also expected to comply. Cumulative operational noise results additionally are expected to comply with project noise trigger levels.

While compliance with operational project noise trigger levels is expected, it is recommended the site as part of its plan of management have measures in place to particularly to deal with any unexpected excessive noise from patrons or traffic noise. This could include but not be limited to:

- Ensure all employees are trained to assist patrons to minimise noise, particularly patrons leaving the site
- Place signage in appropriate areas requesting patrons to respect the neighbours in terms of noise and to leave quietly
- Request patrons leave the site if they are being excessively noisy
- Management and staff shall immediately address complaints relating to noise and where possible act immediately to satisfy the complaint. Any complaint made should be recorded in the Complaints Register and dealt with. If required, Maitland City Council shall meet with neighbours to address ongoing matters as they arise and to ensure contingency plans are in place
- Strict adherence to the approved hours of operation.

5. Conclusion

This noise assessment has been undertaken to inform a Development Application (DA) for alterations and additions to the amenities building at Max McMahon Oval Rutherford, NSW.

Based on the results and the information provided regarding the development, compliance with all noise goals is expected for the development on neighbouring residences and commercial operators. Recommendations have been made for management to have measures in place to particularly to deal with any unexpected excessive noise from patrons. Therefore, from an acoustics perspective the findings suggest the proposal is acceptable.