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Dated: 6th September 2022

ACOUSTIC REPORT

ENVIRONMENTAL NOISE ASSESSMENT

PROPOSED ASIAN STYLE RESTAURANT

'JAGGA DAKU'

*UNIT 123, LOT 100 No. 119 – 133A OXFORD STREET
LEEDERVILLE WA 6007*

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INTRODUCTION

Acoustics & Audio Production was engaged to provide an acoustic report for the proposed Restaurant located at Unit 123 Lot 100, No. 119-133A Oxford Street, LEEDERVILLE WA 6007. The following acoustic assessment was compiled to determine the potential noise impact the proposed Restaurant will have on the surrounding receivers and to ensure compliance to the Environmental Protection (Noise) Regulations 1997 is achieved at all times during its operation.

This assessment was requested to form part of, and in support of, a planning application to the City of Vincent, in order to ensure that the site complies with both Environmental Protection (Noise) Regulations 1997 allowable assigned outdoor noise level and also fulfils the Australian Standard AS/NZS 2107:2016: 'Acoustics – Recommended sound design levels and reverberation times for building interiors'.

OBJECTIVES

The objectives of this acoustical report are as follows:

- To ensure compliance to the Environmental Protection (Noise) Regulations 1997 is achieved at all times during its operation;
- To ensure compliance to the City of Vincent's Sound Attenuation Policy 7.5.21;
- To protect the reasonable acoustic privacy of both adjacent business and nearby residents in their dwellings and open private spaces;
- To provide noise goals and noise control recommendations to ensure the Restaurant does not generate unacceptable noise levels which will adversely impact upon the amenity of the surrounding businesses; and
- Provide recommendations in order to achieve the Australian / New Zealand Standard AS/NZS 2107:2016: 'Acoustics – Recommended sound design levels and reverberation times for building interiors – (AS/NZS 2107:2016) requirements.

SUMMARY

Based on our assessment the calculated noise level emission associated with the proposed Restaurant has been found to be able to comply with the Environmental Protection (Noise) Regulations 1997, with the following recommendations implemented:

- A total maximum of 200 patrons are allowed in the premises at any one time;
- External glazing to achieve a minimum certified $R_w + C_{tr}$ 34 for example 10.38mm toughened safety glass or laminated glass;
- External doors to achieve a a minimum certified $R_w + C_{tr}$ 34 for example 10.38mm toughened safety unit including frames, with compressible silicon-based rubber seals to the full perimeter of the door and a drop-down seal to provide an airtight seal when closed;
- Implement the recommendations put forth in the Noise Management Plan outlined on page 13 in this report.

PROJECT DESCRIPTION

The site in question is identified by the City of Vincent as Zoned within the 'Regional Centre' business district with the nearest residential property situated approximately 165m to the east of the proposed site. The restaurant is intending to provide a fine dine experience for the local residents by offering a wide range of Asian cuisines as well as provide both live and pre-recorded music at the site for both ambiance and entertainment.

During the standard dining hours of the restaurant music (both live and/or pre-recorded) is intended to be at a level that promotes a standard conversational while dining, after the hours of 9pm when the adjacent businesses are closed for trade live music is intended to be utilised on occasion within the site as to not adversely affect the amenity of the business directly adjacent and the surrounding receivers within the vicinity.

Parking bays for both patrons are provided at 'The Avenue Car Park' located at the rear of the proposed site, 4 parking bays for staff are provided at the rear of the property on the Northern facing side. The planned operating hours of the Restaurant is shown in Table 1 below.

Table 1: Intended operating hours of proposed Restaurant

Days	Time Period
Monday to Sunday	11am to 12am Midnight

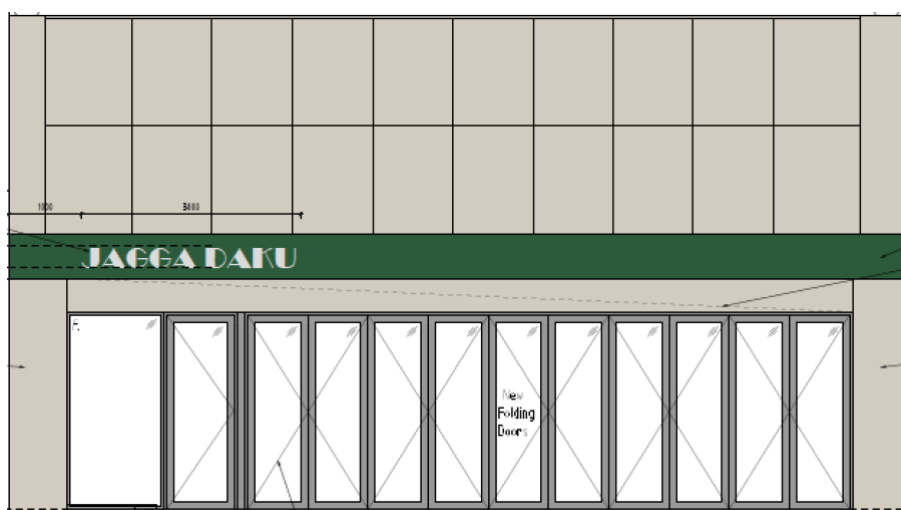


Figure 1.1: Front View of the Proposed Restaurant

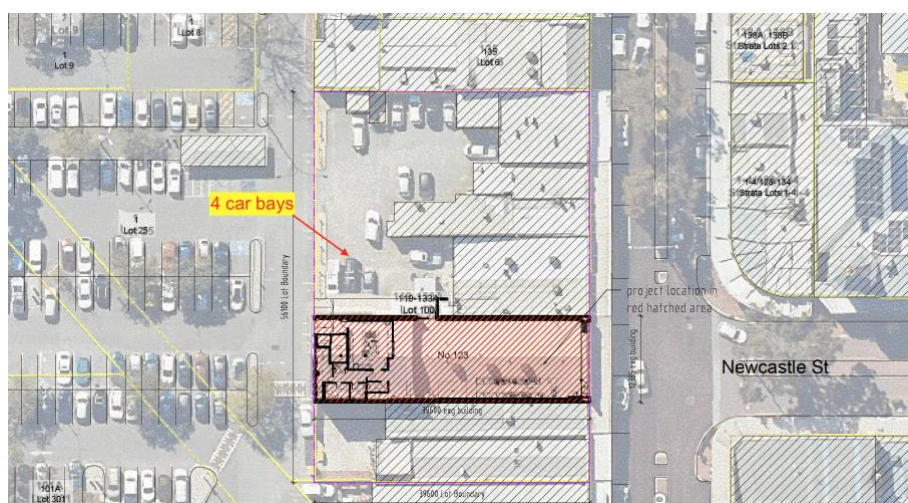


Figure 1.2: Aerial View of the Proposed Site and Staff Parking Bays

ACOUSTIC ENVIRONMENT

The proposed site and surrounding noise sensitive receivers are identified by the City of Vincent as being situated in the 'Regional Centre' zoning, with the proposed restaurant located at Unit 123 Lot 100, No. 119-133A Oxford Street, LEEDERVILLE WA 6007. The nearest major roads are identified as Vincent Street, located approximately 100 meters to the North and Mitchell Freeway 130m to the West of the proposed site. It is noted that as the site is situated in the town centre all of the surrounding properties are commercial properties. The nearest residential properties have been identified as both 218 Carr Place and 287 Vincent Street which are located to the East and East North East of the proposed site.

RECEIVERS & NOISE MONITORING PROCEDURES

The nearest receiver locations were identified as the following:

1. (C1) 140 Oxford Street, LEEDERVILLE WA 6007
2. (C2) 125 Oxford Street, LEEDERVILLE WA 6007
3. (C3) 128 Oxford Street, LEEDERVILLE WA 6007;
4. (C4) 749 Newcastle Street, LEEDERVILLE WA 6007;
5. (R1) 214 Carr Place, LEEDERVILLE WA 6007;
6. (R2) 212 Carr Place, LEEDERVILLE WA 6007; and
7. (R3) 287 Vincent Street, LEEDERVILLE WA 6007.

These locations have been chosen as representative of the nearest noise sensitive receivers. Refer to Figure 2 below for the proposed site, noise sensitive receivers and the ambient noise measurement locations.



Figure 2: Proposed restaurant, nearest receivers and the ambient noise measurement locations
(Source: City of Vincent – Intramaps)

EQUIPMENT

The following equipment was used to record existing ambient noise levels:

- Cirrus CR171 Type 1 Sound Level Meter
- Cirrus CR515 Acoustic Calibrator

Both the Cirrus Sound Level Meter and Acoustical Calibrator hold current NATA Laboratory Certification and had been field calibrated before and after the noise-monitoring period. No significant drift from the reference signal was recorded. Laboratory certificates may be provided upon request.

NOISE MONITORING

A Cirrus CR171 Type 1 Sound Level Meter was used at to measure ambient noise levels. The monitor was located in a free field position with the microphone approximately 1.4m above the ground surface level.

The sound level meter was set to record in “A” Weighting, fast response using 15-minute statistical intervals in the following measurement types; L_{Aeq} , L_{A10} , L_{A1} , L_{A90} and L_{Amax} . Ambient noise monitoring was conducted generally in accordance with Australian Standard AS1055:1997 Acoustics- Description and measurement of environmental noise.

EXISTING AMBIENT SOUND LEVELS

Sound Level measurements were conducted on Wednesday 31st August 2022 between the hours of 6pm to 7pm and 10pm to 11pm on Friday 2nd September in the locations identified in Figure 1 above. The purpose of this is to determine the existing ambient noise environment experienced at the surrounding premises and residual breakout noise from lifestyle uses and entertainment venues such as the surrounding cafes and entertainment venues during their peak trading hours in accordance with the City of Vincent’s Sound Attenuation Planning Policy 7.5.21 at times considered typical to the standard operating hours of the proposed restaurant.

Table 2.1 – Measured Existing Ambient Sound Levels, $L_{A_{slow}}$ dB(A) – Wednesday 31st August 2022

Location	Measured Sound Levels			
	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}
M1	57.4	59.3	63.4	69.1
M2	54.3	57.1	60.9	68.2

Table 2.2 – Measured Existing Ambient Sound Levels, $L_{A_{slow}}$ dB(A) – Friday 2nd August 2022

Location	Measured Sound Levels			
	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}
M1	55.2	60.3	62.4	70.8
M2	56.6	61.2	64.1	67.3

METEOROLOGICAL DATA

The following meteorological conditions were present during the onsite monitoring conducted on Wednesday 31st August 2022.

Table 3.1 – Meteorological Conditions

Parameter	Result
Temperature (°C)	21°C
Wind Speed (m/s)	4.16m/s
Wind Direction	East South East
Humidity (%)	40%

The following meteorological conditions were present during the onsite monitoring conducted on Friday 2nd September 2022.

Table 3.2 – Meteorological Conditions

Parameter	Result
Temperature (°C)	18°C
Wind Speed (m/s)	7.5m/s
Wind Direction	East
Humidity (%)	49%

NOISE CRITERIA

The allowable noise levels at the surrounding noise sensitive areas are determined by the Environmental Protection (Noise) Regulations 1997. Regulations 7 & 8 stipulate the allowable external noise levels determined by the calculation of an influencing factor, which is then added to the base levels shown below. As the site is intending to operate until 12am midnight, our assessment will be based on the assigned outdoor noise levels for both the evening and night-time, which are considered the most stringent noise criteria for the site.

Table 4.1 – Baseline Assigned Outdoor Noise Level

Description	Time of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{A(max)}
Noise Sensitive Premises	0700 – 1900 hours Monday to Saturday	45 + IF	55 + IF	65 + IF
	0900 – 1900 hours Sunday and Public Holidays	40 + IF	50 + IF	65 + IF
	1900 – 2200 hours all days	40 + IF	50 + IF	55 + IF
	2200 – 0700 hours Monday to Saturday and 2200 to 0900 hours Sunday and Public Holidays	35 + IF	45 + IF	55 + IF
Commercial Premises	All hours	60	75	80

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.
IF is the influencing factor.

Table 4.2 – Influencing Factor Calculation

Description	450m Radius	100m Radius	Influencing Factors
Commercial	36%	58%	4.5dB
Industrial	0%	0%	0dB
Major Roads	Yes – Mitchell Freeway	Yes – Vincent Street	8dB
Secondary Roads	Nil	Nil	
Sports Venues	Nil	Yes – Leederville Oval	2dB
Total Influencing Factor = 14.5dB			

Based on the information in Table 4.2, an influencing factor of 14.5 is applied to the base line assigned noise levels for all of the nearest noise sensitive receivers identified, with the applicable assigned outdoor noise levels identified in Table 4.3 below.

Table 4.3 – Applicable Assigned Outdoor Noise Level

Description	Time of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{A(max)}
Noise Sensitive Premises	0700 – 1900 hours Monday to Saturday	59.5	69.5	79.5
	0900 – 1900 hours Sunday and Public Holidays	54.5	64.5	79.5
	1900 – 2200 hours all days	54.5	64.5	69.5
	2200 – 0700 hours Monday to Saturday and 2200 to 0900 hours Sunday and Public Holidays	49.5	59.5	69.5
Commercial Premises	All hours	60	75	80

CALCULATED NOISE LEVELS

Calculations have been made to determine the sound levels expected to be received by the nearest noise sensitive premises, associated with the proposed Restaurants' operations. These calculations are based on both the sound power levels provided in Table 5 below, post the recommendations within this report implemented.

The noise types being used within the assessment include: conversational noise, dining noise, live and/or pre-recorded music, and mechanical plant within the proposed restaurant; all occurring simultaneously.

Mechanical Plant (exhaust fans, air conditioning, kitchen fans etc.) associated noise calculations have been based on both the site plans of the proposed restaurant and the typical range of sound power levels for the mechanical plants.

Traffic noise from cars and vans arriving and departing the site have been based on the typical Sound Power Levels of traffic (30 seconds L_{Aeq}).

The data used for the calculation of the noise levels expected to be received by the nearest noise sensitive premises from the site under a 'worst case scenario' of a maximum capacity of 200 patrons, have been based on researched Sound Power Levels (L_w) of each potential noise source. All noise sources, receivers, boundaries and structures have been plotted with acoustical modelling software to provide reliable data, by which this assessment is based.

SOUND POWER LEVELS

The effective sound power level (L_w) of the various noise sources expected to occur at the site and used in our modelling of a 'worst case scenario' of noise emission are identified in Table 5 below.

Table 5 – Source Sound Power Levels, dB

Description	Sound Power levels (dB) at Octave Band Centre Frequencies (Hz)								
	dB(A)	63	125	250	500	1k	2k	4k	8k
Speech – Relaxed Voice	92	75	86	90	92	85	82	79	68
Speech - Raised voice	98	81	92	96	98	91	88	85	74
Dining	89	72	83	86	89	82	79	76	65
A/C Condenser	80	77	75	65	66	75	75	73	70
Cool room condenser 'day-time' mode	81	79	83	82	79	76	71	66	63
Cool room condenser 'night-time' mode	76	74	78	77	74	71	66	61	58
Kitchen Exhaust Fan	85	76	80	75	84	82	77	71	62
Toilet Exhaust Fan, each	70	63	64	70	64	67	63	55	60
Refrigerated Deliveries	102	65	68	88	92	97	97	91	80
Waste Collection	112	115	117	112	107	105	104	103	--
$L_{Aeq, 30 \text{ second}}$ one car passing at approximately 10km/h	84	90	81	81	85	78	73	69	63
$L_{Aeq, 30 \text{ second}}$ car door slam, ignition and drive away	77	89	81	74	72	71	68	66	60
Pre-recorded Music	99	94	93	92	92	87	86	85	85
Live Music									
2-piece acoustic duo	99	93	97	101	98	93	85	74	70
4 to 5-piece band	99	90	97	96	97	96	88	87	77

METHODOLOGY

Computer modelling SoundPlan 8 was used with the algorithms CONCAWE selected to predict the noise emissions. Input data used within the model are:

- Meteorological Information; and
- Topographical Data; and
- Ground Absorption Data; and
- Source Sound Levels.

METEOROLOGICAL INFORMATION

Meteorological information used in the table below is considered to represent the 'worst case' conditions for sound propagation. With wind speeds greater than those shown, noise levels may be further enhanced; however, it is likely that wind, vegetation and traffic noise will become the dominant noise source at those levels.

Table 6 – Meteorological Conditions

Parameter	Day (0700 -1900)	Night (1900 – 0700)
Temperature (°C)	20	15
Wind Speed (m/s)	4	3
Wind Direction	All	All
Humidity (%)	50	50
Pasquill Stability Factor	E	F

Note: The acoustical modelling software allows for simultaneous modelling of wind in all directions.

TOPOGRAPHICAL DATA

Topographical data was adapted from Google Earth, site photographs and proposed plans. Existing buildings have also been included as these can provide barrier attenuation when located between a source and receiver.

GROUND ABSORPTION

Ground absorption varies from a value of 0 to 1, 0 representing an acoustically reflective ground (e.g. water and bitumen) and 1 representing acoustically absorbing surface such as grass. In this case, a ground absorption value of 0.1 is used.

ASSESSMENT

Table 7 below shows the predicted sound levels expected to be received by the nearest noise sensitive premises, attributable to the standard operations of the proposed restaurant under a ‘worst case scenario’ of 200 patrons and all potential noise sources occurring simultaneously, including the recommendations provided within this report being implemented.

The predicted levels are based on both the information provided by the applicant and researched acoustical technical information relating to the application. This data has been compiled and used to calculate the level of noise expected to be receiver at the surrounding noise sensitive premises under a ‘worst case scenario’ of all potential noise sources occurring simultaneously, with which includes the following:

Scenario 1

- a) Maximum number of 200 patrons with 50% conversing simultaneously with ‘raised voices’;
- b) Mechanical plant equipment;
- c) Dining noise; and
- d) Pre-Recorded / live music within the site at background level, for ambiance.

and

Scenario 2

- a) Maximum number of 200 patrons with 50% conversing simultaneously with ‘raised voices’;
- b) Mechanical plant equipment;
- c) Pre-Recorded / live music at the site routed through the noise limiter (as stipulated in the ‘Noise Management Plan’ – see page 12 below)

Predicted sound levels once refurbishment and recommendations within this report are implemented have been assessed against the relevant assigned outdoor noise levels; in accordance with the Environmental Protection (Noise) Regulations 1997, with the results shown in Table 7 below.

The assessment reviews the buildings layout drawings, existing ambient noise levels currently experienced at the receivers identified, with the predicted noise emissions from the restaurant's standard operations under the 'worst-case scenario' for noise emissions at the site. Our modelling of a 'worst-case scenario' has been modelled with the site under maximum capacity of 200 patrons with 50% talking, mechanical plant, dining noise and live or pre-recorded music all occurring simultaneously on the assumption that the acoustic recommendations put forth within this acoustic report implemented during its operations. We have used the evening and night-time allowable outdoor level criterion, as these are considered to be the most stringent criteria for the anticipated manner of trade for each scenario; which falls under the 'worst-case scenarios' of noise emissions expected at the proposed site during these time periods.

**Table 7.1 – Assessment of Sound Levels Received at the Nearest Receivers Identified $L_{A_{slow10}}$ dB(A)
Evening Time Period 1900hrs to 2200hrs**

Scenario 1	Location	Time of Day	Predicted Noise Level, L_{A10} dB(A)	Adjustment for tonality (when music is present)	Assessable Noise Level, L_{A10} dB(A)	Assigned Level, L_{A10} dB(A)	Compliance to Assigned Noise Level dB(A)
'Worst case scenario' i.e. Maximum number of patrons, vehicle access (drop of / pick up / door closure / ignition), mechanical plant and pre-recorded / live background music all occurring simultaneously	C1	All hours	44	N/A	44	60	Yes
	C2		44		44		Yes
	C3		39		39		Yes
	C4		38		38		Yes
	R1	1900 to 2200 hours All days	28		28	54.5	Yes
	R2		27	27	Yes		
	R3		25	25	Yes		

**Table 7.2 – Assessment of Sound Levels Received at the Nearest Receivers Identified $L_{A_{slow10}}$ dB(A)
Night Time Period 2200hrs to 0700hrs Mon to Sat / 0900hrs Sun and Public Holidays**

Scenario 1	Location	Time of Day	Predicted Noise Level, L_{A10} dB(A)	Adjustment for tonality (when music is present)	Assessable Noise Level, L_{A10} dB(A)	Assigned Level, L_{A10} dB(A)	Compliance to Assigned Noise Level dB(A)
'Worst case scenario' i.e. Maximum number of patrons, vehicle access (drop of / pick up / door closure / ignition), mechanical plant and pre-recorded / live music at elevated level (Noise limiter to level stipulated) - all occurring simultaneously	C1	All hours	55	+5	60	60	Yes
	C2		55		60		Yes
	C3		50		55		Yes
	C4		49		54		Yes
	R1	2200 to 0700 hours Monday to Saturday and 2200 to 0900 hours Sunday and Public Holidays	39		44	49.5	Yes
	R2		38	43	Yes		
	R3		36	41	Yes		

As shown in table 7 above, received sound level emissions attributable to the proposed Restaurants' standard operations during the most stringent assessment periods of 1900hrs to 2200hrs and 2200hrs to 0700hrs were found that compliance to the Environmental Protection (Noise) Regulations 1997 assigned outdoor levels is achievable at all of the surrounding noise sensitive receivers provided the recommendations within this report are implemented. As compliance to the EPR is expected to be achieved at the receivers closest to the proposed site, we also expect compliance to be achieved at the receivers further away. It is also noted the commercial properties identified in this report are commonly closed during night time trading hours.

AS/NZS 2107:2016 'ACOUSTICS - RECOMMENDED DESIGN SOUND LEVELS AND REVERBERATION TIMES FOR BUILDING INTERIORS

Recommended ambient noise levels and reverberation times for internal spaces are given in a number of publications including Table 1 of Australian / New Zealand Standard 2107:2016 '*Acoustics - Recommended design sound levels and reverberation times for building interiors*'. Unlike the previous version of this Standard, this latest edition recommends a range with lower and upper levels (rather than '*satisfactory*' and '*maximum*' internal noise levels) for building interiors based on room designation and location of the development relative to external noise sources.

This change has occurred due to the fact that sound levels below 'satisfactory' could be interpreted as desirable, but the opposite may in fact be the case. Levels below those which were listed as 'satisfactory' can lead to inadequate acoustic masking resulting in loss of acoustic isolation and speech privacy. Internal noise levels due to the combined contributions of external noise intrusion and mechanical ventilation plant should not exceed the maximum levels recommended in this Standard. The levels for areas relevant to this development are given in Table 8 below.

Table 8 – Recommended design sound levels and reverberation times for the proposed site

Type of occupancy / activity	Design Sound Level Range	Project Design Noise Level
Restaurant	40 to 50	45
Function Area	40 to 45	40
Toilets	45 to 55	45

NOISE CONTROL RECOMMENDATIONS

To ensure compliance to the Environmental Protection (Noise) Regulations 1997, the following noise control recommendations are given.

EXTERNAL DOORS

As per Clause F5.5(b) of the BCA, the entry doors shall achieve a minimum sound reduction of a minimum R_w 34. This can be achieved via 10.38mm toughened safety glass unit including frames, ensuring all external doors must have compressible silicon-based rubber seals to the full perimeter and a drop-down seal and provide an airtight seal when closed as to not compromise the acoustic performance of the system.

GLAZING

The minimum required sound reduction performance (R_w) of the external glazing for the site is shown in Table 9 below. The stated minimum R_w rating is for the entire glazing suite inclusive of glass and framing. 'Glass only' acoustic ratings must not be used when selecting glazing systems. It is common for the sound reduction of a glazing suite to be 2 to 3 points lower than the glass only values due to the framing, quality of seals, etc. It is critical that the contractor only uses glazing suites that have acoustic laboratory test reports to verify the sound reduction (R_w) performance.

Table 9 – Example glazing systems that will achieve the stated R_w ratings:

Glazing	Weighted sound reduction index	Example of external glazing system
Fixed Glazing	$R_w + C_{tr}$ of 34	10.38mm laminated or toughened safety glass

NOISE MANAGEMENT PLAN

One of the most effective measures that should be implemented in conjunction with the physical noise control measures recommended within this report is the Noise Management Plan (NMP). The NMP should be incorporated within the restaurant's overall management plan.

- Pre-recorded and or live background music during dining hours is recommended to be of low level as to not encourage the raising of voices. It has been found that when background noise is above normal speech levels, it is common that people will speak louder in order to counter the background noise, therefore background music for 'ambience' is to be kept low and at a relaxed level during these times;
- Not permitting more than the acceptable maximum number of 200 patrons to be present on the premises at any given time;
- Adhere to RSA principles with the aim of reducing the likelihood of patrons causing noise and participating in other antisocial activities;

RSA PRINCIPLES

**Recognize and refuse liquor services to intoxicated patrons.
Drunk or disorderly patrons are not allowed on the premises.
Do not supply alcohol to anyone under 18.**

Discourage patrons to take part in activities that may cause harm to themselves or others.

- Do not allow violent, quarrelsome or disruptive conduct on or near the premises;
- Loud or 'boisterous' patrons are to be attended to and asked to be mindful of the surrounding residential premises;
- Music will be appropriate for the venue and manner of trade and to be utilised as low-level background music within the main restaurant;
- Both pre-recorded and live music, intended to be played during either the late evening and/or night-time operations, is to be routed through a noise limiter and set to a sound pressure level of 90dB(A) at 1m from the source, to ensure full compliance to the night time assigned outdoor noise criterion is achieved;
- Ensure loudspeakers are installed with appropriate resilient mounts to stop vibration or resonances being transmitted to the building structure;
- The applicant is to ensure that all reasonable and practical measures are taken in order to minimize the overall sound level and low frequency noise received at the noise effective premises;
- Maintain a compliant register and train staff in the use of handling complaints;
- Staff closing procedures are to be designed in order to minimize the risk of noise disturbance being caused to the surrounding noise sensitive receivers;
- To prevent disturbance of amenity in the area, deliveries are to occur between 7am and 7pm Monday to Saturday only;
- Appropriate signage requesting patrons be mindful of the neighbourhood in leaving the premises and area quietly;
- Adequate lighting in external areas to discourage loitering when patrons leave the premises;
- Incorporate a zero-tolerance policy for rowdy and aggressive behaviour;
- A complaints file is to be available to all staff to record any complaints received in person or by any other means. This insures complaints can be addressed at the time and ensures the applicant can review any complaints over time to identify problems and address issues;
- Glass should only be emptied into the outside bins during the hours of 7am to 7pm (9am to 7pm Sunday and Public Holidays);
- All doors and windows should be closed during operation.

STAFF TRAINING

In addition to the 'Provide Responsible Service of Alcohol' requirements, all staff members are to be trained using an in-house Policy and Procedure manual that sources units of competency from relevant training packages. For example:

- Manage conflict;
- Interact with customers;
- Manage incidents;
- Managing unacceptable behaviour; and
- Monitor individual and/or crowd behaviour.

Staff members are also to be trained in the areas of:

- Risk identification;
- Risk control procedures;
- Warning signs;
- Appropriate responses;
- Interpersonal/diffusing aggression skills;
- Recognizing signs of potential trouble; and
- How to deal with bad behaviour.

PATRONS

In order to minimise antisocial behaviour including excessive noise, the following is proposed:

- Create and maintain a high-quality premise in all respects, both physically and operationally as studies conducted have indicated that poorly lit, badly maintained premises have a greater likelihood of violence, trouble and antisocial behaviour;
- Provide more than ample seating for patrons;
- Background music is to be at low levels for ambience and to not promote the raising of voices;
- Provide a very clear training program for staff on all appropriate matters including responsible service of liquor; and
- Create a warm, relaxed and inviting atmosphere to minimise the risk of antisocial behaviour.

DELIVERY AND SERVICE VEHICLES

Given the nature of the development and the surrounding receivers, it will be necessary to restrict deliveries to between the hours of 7 am to 7 pm, Monday to Saturday. Furthermore, signage shall be installed to instruct drivers to switch off their vehicles whilst unloading to mitigate engine idling noise. If deliveries are limited to the aforementioned hours, then the following 'Assigned Levels' apply under the Environmental Protection (Noise) Regulations 1997. The L_{A1} Assigned Levels are applicable given that the noise associated with delivery vehicles will be present for less than 10% of the time:

Noise modelling of delivery vehicles was undertaken using the SoundPLAN software. The results of our modelling indicate that the noise transmission to the nearest noise sensitive receivers falls below the assigned outdoor noise level of 54.6 dB(A), complying with the Environmental Protection (Noise) Regulations 1997 during the day period of 7am to 7pm Monday to Saturday.

WASTE COLLECTION VEHICLES

Regulation 14A of the Environmental Protection (Noise) Regulations 1997 addresses the noise emissions associated with waste collection. Fundamentally, waste collection activities are exempt from complying with the 'Assigned Levels', provided the collection only occurs between the hours of 7 am and 7 pm Monday to Saturday.

CONCLUSION

With the recommendations described in this report implemented, and under a 'worst-case scenario' of potential noise emissions expected from the site, we believe that compliance to the Environmental Protection (Noise) Regulations 1997 is achievable during all hours of operation.

I trust the above meets your requirements on the matter. Should you have any queries do not hesitate to contact our office.

Regards,



Ian Burman
A.A.A.S

ACOUSTICS & AUDIO PRODUCTION