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ACOUSTICS & AUDIO PRODUCTION

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ACOUSTIC REPORT

SHESH BESH SISHA BAR & RESTAURANT

209 OXFORD STREET, LEEDERVILLE WA 6007

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INTRODUCTION

Acoustics & Audio Production has been engaged to undertake an acoustic assessment of the *Shesh Besh Shisha Bar & Restaurant* currently in operation at 209 Oxford Street, LEEDERVILLE WA 6007.

It is understood approval is being sought from the City of Vincent to operate the outdoor smoking area under a maximum capacity of 50 patrons at any one time, therefore this assessment has been compiled to determine if the site can achieve compliance with the Assigned Outdoor Noise Level. Also, if determined to be required, provide recommendations with the aim of achieving compliance with the assigned outdoor noise during the entirety of the site's operations.

This assessment considers the following:

- Noise associated with:
 - o Patron noise within the proposed site under maximum occupancy; and
 - o Mechanical Services.
- Existing ambient noise levels received at the nearest noise sensitive receivers identified.
- The City of Vincent's Sound Attenuation Policy 7.5.21.
- Environmental Protection (Noise) Regulations 1997 assessment criterion.

This report contains the results of onsite noise levels measured at the boundary of the noise sensitive receivers closest to site under a 'worst-case' scenario of 50 patrons conversing within the outdoor shisha smoking area during the night-time period of after 10pm, including noise associated with mechanical services, all occurring simultaneously. Noise monitoring was carried out during the hours of 10:15pm to 10:45pm, Friday 18th February 2022 which was considered by the owners as the busiest time for the establishment when it is under full capacity in the outdoor smoking area.

SUMMARY

The objective of this assessment was to establish noise levels attributable to *Shesh Besh Shisha Bar & Restaurant*, particularly patron conversational noise and assess the results against the applicable regulatory criteria. For this assessment L_{A10} criteria has been used for the purpose of this study as it represents the most practical criterion for this business.

Based on our onsite noise survey, noise levels under a 'worst case scenario' have been found to exceed the most stringent assigned outdoor level (night-time) by up to +10dB(A). This can be compared to the regulatory criteria where noise emissions are not to exceed L_{A10} 44 dB(A) at the nearest residential premises located approximately 4m to the West of the business and L_{A10} 60 dB(A) at the surrounding commercially zoned premises.

Therefore, in order achieve compliance to the most stringent night-time assigned outdoor level it is recommended to extend the barrier wall to the West and North of the business to a minimum height of 2.4m or, if feasible, to the ceiling height of the establishment.

SITE DESCRIPTION

Shesh Besh Shisha Bar & Restaurant (see figure 1 below) is a restaurant and shisha bar which also has an outdoor shisha smoking area recently in operation for its patrons. The owner has noted a maximum of 50 patrons is allowed within the shisha bar smoking area at any given time, and hookah smoking devices are utilised together with the sale of beverages for patrons within the establishment. Live/Pre-Recorded music does not occur within this area. A 1x flat screen TV is situated on the Eastern facing wall of the outdoor area; however, it is noted that the sound level at which the TV is set is inaudible at any point outside of the establishment.

The busiest time for the outdoor smoking area has been found to be between 9pm and 12am on Friday and Saturday night whereas at other times of the day/evening throughout the establishment's operation patron numbers in this area is significantly lower. The operating hours of the establishment is as follows:

| Operating Hours | | | | | |
|---------------------|-------------|--|--|--|--|
| Day | Time Period | | | | |
| Monday | 4pm – 12am | | | | |
| Tuesday to Friday | 2pm – 12am | | | | |
| Saturday and Sunday | 12pm – 12am | | | | |



Figure 1: Shesh Besh Shisha Bar & Restaurant (Source: Google StreetView)

The layout of outdoor smoking area is shown in Figures 2.1 and 2.2 below.



Figure 2.1: Outdoor smoking area of Shesh Besh Shisha Bar & Restaurant



Figure 2.2: Outdoor smoking area of Shesh Besh Shisha Bar & Restaurant

During our onsite testing we noted that the barrier wall screening the outdoor smoking area at the rear of the property (as shown in Figures 3.1 and 3.2 below) is of comparable height to the thin wooden boundary fencing of the nearest noise sensitive receiver approximately 4m West of the site. Wooden slats which are spaced with an approximate gap of 1inch between slats are situated on top of the brick boundary wall at a height of up to approximately 1 to 1.5 feet above the brickwork; however, they are considered to have little effect on screening sound emitting from the premises. We note that conversational noise was the primary noise source from the establishment was passing over the screening boundary wall and through the wooden slats at the rear Western and Northern side of the establishment.



Figure 3.1: Rear boundary of Shesh Besh Shisha Bar & Restaurant (Source: Google StreetView)



Figure 3.2: Rear boundary of Shesh Besh Shisha Bar & Restaurant (Source: Google StreetView)

ACOUSTIC ENVIRONMENT

The *Shesh Besh Shisha Bar & Restaurant* is located at 209 Oxford Street, LEEDERVILLE WA 6007, with commercial properties directly adjacent to the site, residential properties to the rear of the establishment at a boundary distance of approximately 4 meters from the site with North Metropolitan TAFE situated across the road to the East. The site is identified as being located within the LPS2 Zone of 'Regional Centre' with the noise sensitive residential properties to the West identified as being situated in the LPS2 Zone of Re60 'Residential'. Zoning was confirmed through the City of Vincent Intramaps, Public Planning Scheme.

The secondary road within the 100m radius is identified as Oxford Street, with 5 major roads situated within 450m from the noise sensitive receivers. The major roads are identified as the following:

- Mitchell Freeway;
- Vincent Street;
- Loftus Street; and
- Newcastle Street

RECEIVERS & NOISE MONITORING PROCEDURES

The locations below have been chosen as representative of the surrounding nearest noise receivers. Refer to Figure 4 below for site location.



Figure 4: Noise Sensitive Receiver Locations & Proposed Site Location. (Source: City of Vincent - Intramaps)

FIGURE 1: LEGEND

- 1. (R1) 105 Richmond Street, LEEDERVILLE;
- 2. (R2) 8 Melrose Street, LEEDERVILLE;
- 3. (C1) 213 215 Oxford Street, LEEDERVILLE;
- 4. (C2) 205 207 Oxford Street, LEEDERVILLE; and
- 5. (M1) Onsite Noise Measurement Location

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.

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NOISE MONITORING

A Cirrus CR171 Type 1 Sound Level Meter was used at the boundary of the noise sensitive premises identified in figure 1. The purpose of this was to measure the noise levels associated with the *Shesh Besh Shisha Bar & Restaurant* outdoor smoking area under a worst-case scenario of maximum capacity and mechanical plant in full operation being received at the nearest noise sensitive locations identified within this report.

The monitor was located in a free field position, with the microphone approximately 1.4m above the ground surface level. Noise monitoring was conducted generally in accordance with Australian Standard AS1055:1997 Acoustics - Description and measurement of environmental noise.

MEASURED NOISE LEVELS

Table 1 below, shows the measured noise levels from our onsite attended noise survey conducted at the closest boundary of the nearest noise sensitive receiver. Noise monitoring was conducted after 10pm on Friday night indicative of the common operating hours with which the site will be under full capacity within the outdoor smoking area and is considered as a 'worst-case' scenario for noise emissions expected from the site.

| Tabla 1 - | Maggurad | Ambiant Naica | Lovals | D/A) | the nearest | noico | concitivo | racaivar | location |
|------------|-------------|------------------|----------|------|-------------|-------|-----------|----------|----------|
| i ubie 1 - | - wieusureu | AIIIDIEIIL NOISE | Levels u | D(A) | the neurest | noise | Sensitive | receiver | ιοςατισπ |

| Data /Time | Location | Measured Level (dB) | | | | | |
|----------------------------------|----------|---------------------|------------------|-----------------|---------------------|------------------|--|
| Date/ Inne | | L _{Aeq} | L _{A10} | L _{A1} | L _{A(max)} | L _{A90} | |
| Friday 18 th Feb 2022 | M1 | 52.3 | 53.9 | 57.2 | 66.4 | 49.6 | |
| 10:15pm to 10:45pm | M2 | 50.7 | 52.1 | 54.9 | 66.2 | 48.7 | |

METEOROLOGICAL DATA

The following meteorological conditions were present during the onsite monitoring conducted on the night of Friday, 18th February 2022.

| Parameter | Result |
|------------------|-------------------|
| Temperature (°C) | 21 ⁰ C |
| Wind Speed (m/s) | 5m/s |
| Wind Direction | South South West |
| Humidity (%) | 31% |

Table 2 – Meteorological Conditions 18th February 2022

NOISE CRITERIA

This assessment is based on the requirements stipulated in the Environmental Protection (Noise) Regulations 1997 in order to ensure that the nearest noise sensitive receivers are protected from unreasonable noise associated with proposed development.

ENVIRONMENTAL PROTECTION (NOISE) REGULATIONS 1997

The allowable noise levels at the surrounding noise sensitive areas are determined by the Environmental Protection (Noise) Regulations 1997. Regulations 7 & 8 stipulate that the allowable external noise levels determined by the calculation of an influencing factor (Table 3.2), which is then added to the base levels (see Table 3.3 below).

Table 3.1 - Baseline Assigned Outdoor Noise Level

| | Time of Day | Assigned Level (dB) | | | |
|-------------------|---|---------------------|-----------------|-------------------|--|
| Receiving Noise | Time of Day | L _{A10} | L _{A1} | L _{Amax} | |
| | 0700 – 1900 hours Monday to Saturday | 45 + IF | 55 + IF | 65 + IF | |
| Noise Sensitive | 0900 – 1900 hours Sunday and Public Holidays | 40 + IF | 50 + IF | 65 + IF | |
| Premises | 1900 – 2200 hours all days | 40 + IF | 50 + IF | 55 + IF | |
| 116111363 | 2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays | 35 + IF | 45 + IF | 55 + IF | |
| Commercial | All Hours | 60 | | 80 | |
| Note: Lato is the | noise level exceeded for 10% of the time. | | | | |

La1 is the noise level exceeded for 10% of the time. La1 is the noise level exceeded for 1% of the time. Lamax is the maximum noise level.

IF is the influencing factor.

Table 3.2 – Influencing Factor Calculation (Residential)

| Description | 100m Radius | 450m Radius | Influencing Factors | | | |
|---|---------------------|----------------------------|------------------------|--|--|--|
| Commercial | 42% | 16% | 2.9dB | | | |
| Industrial | 0% | 0% | dB | | | |
| | | Yes = Mitchell Freeway | | | | |
| Major Poads | NIL | Yes = Vincent Street | | | | |
| IVIAJUI RUAUS | | Yes = Loftus Street | 6dB | | | |
| | | Yes = Newcastle Street | | | | |
| Secondary Roads | Yes = Oxford Street | N/A | | | | |
| Sports Venues | NIL | NIL Yes = Leederville Oval | | | | |
| Total Influencing Factor = 8.9 dB, i.e. <i>9dB</i> | | | | | | |

Based on the information in Table 3.2, an influencing factor is applied to the base line assigned noise levels for the noise sensitive receivers identified and the adjusted assigned outdoor noise levels have been compiled in Table 3.3 below, Table 3.4 below indicates the assigned outdoor noise level for the surrounding commercial premises.

Table 3.3 – Assigned Outdoor Noise Level (Residential)

| Time of Day | Assigned Level (dB) | | | |
|---|---|--|---|--|
| Time of Day | L _{A10} | L _{A1} | L _{Amax} | |
| 0700 – 1900 hours Monday to Saturday | 54 | 64 | 74 | |
| 0900 – 1900 hours Sunday and Public Holidays | 49 | 59 | 74 | |
| 1900 – 2200 hours all days | 49 | 59 | 64 | |
| 2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays | 44 | 54 | 64 | |
| All hours | 60 | 75 | 80 | |
| | Time of Day 0700 – 1900 hours Monday to Saturday 0900 – 1900 hours Sunday and Public Holidays 1900 – 2200 hours all days 2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays All hours | Time of DayAssLA100700 – 1900 hours Monday to Saturday540900 – 1900 hours Sunday and Public Holidays491900 – 2200 hours all days492200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays44All hours60 | Assigned Level (aLime of DayLa10La10700 – 1900 hours Monday to Saturday54640900 – 1900 hours Sunday and Public Holidays49591900 – 2200 hours all days49592200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays4454All hours6075 | |

Table 3.4 – Assigned Outdoor Noise Level (Commercial)

| Dromises Desciving Noise | Time of Day | | Assigned Level (dB) | | | |
|--------------------------|-------------|------------------|---------------------|-------------------|--|--|
| Premises Receiving Noise | Time of Day | L _{A10} | L _{A1} | L _{Amax} | | |
| Commercial | All hours | 60 | 75 | 80 | | |

ASSESSMENT

The measured results from our onsite noise survey have been summarised below for ease of reporting, and are shown in Table 4.1. The L_{A10} parameter has been used in this assessment as it represents the noise level exceeded for 10% of the overall time and believe this parameter to be the most suitable for this assessment.

| Location | Description | Scenario | Measured Noise Level, L _{A10} dB(A) |
|----------|------------------------------------|-----------|---|
| R1 | 'Worst-case' Scenario | All | 54 |
| R2 | Outdoor smoking area under full | windows | 54 |
| C1 | capacity, with mechanical plant in | and doors | 52 |
| C2 | full operation | open | 54 |

Table 4.1 – Measured Noise Level Results at Receiver Locations

The applicable adjustments to the calculated noise levels, in accordance with the Environmental Protection (Noise) Regulations 1997, are listed above. Based on calculated noise levels relative to the measured background noise levels, at the nearest premises, noise levels are likely to contain tonal characteristics and therefore adjustments to the predicted noise levels for tonality have been applied in Table 4.2.

| | Tuble 4.2 Applicable Adjustments to the Measured Noise Emissions EATO ab(A) | | | | | | |
|----------|---|--|-------------------|---------------|-------------------------|--|--|
| Receiver | Measured | Applicable Adjustments to the Measured | | | Assessable Noise Level, | | |
| | NOISE LEVEL, | | noise Levels, ub | D(A) | LA10 UD(A) | | |
| | dB(A) | Where N | loise Emission is | | | | |
| | | Tonality | Modulation | Impulsiveness | | | |
| R1 | 54 | - | - | - | 54 | | |
| R2 | 54 | - | - | - | 54 | | |
| C1 | 52 | - | - | - | 52 | | |
| C2 | 54 | - | - | - | 54 | | |

Table 4.2 – Applicable Adjustments to the Measured Noise Emissions L_{A10} dB(A)

RESULTS

Table 5 assess the adjusted levels for compliance against Environmental Protection (Noise) Regulations 1997 outdoor noise criterion, with the results shown in the table below.

| LOCATION | SCENARIO | 'Worst Outdoo under fi mechai opera sim | t-case' Scenario or smoking area ull capacity, with nical plant in full ation occurring nultaneously | Assigned outdoor noise level target L _{A10} SPL dB(A) | Compliance to the applicable assigned outdoor noise criterion |
|----------|------------|--|---|--|--|
| | | Time | L _{A10} | L _{A10} | |
| R1 | Windows | | 54 | 5/ | Yes |
| R2 | and doors | Dav | 54 | 54 | Yes |
| C1 | open | Jis Day | 52 | 60 | Yes |
| C2 | 0000 | | 54 | 00 | Yes |
| R1 | | | 54 | 40 | +5 |
| R2 | Windows | Evoning | 54 | 49 | +5 |
| C1 | open | Evening | 52 | 60 | Yes |
| C2 | open | | 54 | 00 | Yes |
| R1 | A Constant | | 54 | 11 | +10 |
| R2 | Windows | Night | 54 | 44 | +10 |
| C1 | | INIGHT | 52 | 60 | Yes |
| C2 | open | | 54 | UO | Yes |

TABLE 5 – Assessment of Noise Levels Against the Assigned Outdoor Noise Criterion

As shown in Tale 5 above, compliance to the Environmental Protection (Noise) Regulations 1997 can be achieved during the day assessment period however exceedances to the regulations were found during both the evening and night periods therefore we provide the following recommendations in order to reduce the receivers noise exposure as far as practicable, and achieve compliance to the Environmental Protection (Noise) Regulations 1997 assigned outdoor noise criterion throughout the entirety of the site's operation, provided the following recommendations are adhered too.

Acoustic modelling has been compiled to determine the predicted reduction in noise associated with the standard operations of the establishment post recommendations and are shown below.

ACOUSTIC MODELLING

Our mathematical predictions of the sound levels reaching both residential and the surrounding commercially zoned locations post implementation of the recommendations put forth within this report is based on our onsite field measurements and technical data compiled. The predictions have included the following parameters.

- a) The structure and layout of the building.
- b) Sound transmission through the building walls and roof.
- c) Attenuation provided over distance to the nearest residential receivers and surrounding commercially zoned premises identified within this report.
- d) Acoustic screening provided via the surrounding structures i.e. boundary fences.
- e) Ground reflections.

f) Reflection from the façades of the surrounding receivers identified.

Weather conditions for the modelling were as stipulated in the Environmental Protection Authority's "Draft Guidance for Assessment of Environmental Factors No.8 – Environmental Noise" and for the day periods are as listed in Table 6 below.

| Condition | Day |
|-------------------------|-------------------|
| Temperature | 20 ⁰ C |
| Relative Humidity | 50% |
| Pasquil Stability Class | E |
| Wind Speed | 4m/s* |

Table 6 – Acoustic Modellina: Weather Conditions

* From sources, towards receivers.

METHODOLOGY

As part of the study, onsite noise level measurements were conducted at the boundary of the nearest noise sensitive receiver closest to the Shesh Besh Shisha Bar & Restaurant during the busiest trading period of the venue under a full capacity on Friday night after 10pm. The results of our onsite noise monitoring are shown on page 6 of this report.

Noise imissions¹ expected at the nearest neighbouring premises after the implementations of the recommendations put forth within this report, have been modelled with the computer program SoundPLAN 8.0. Sound Power levels used in our assessment are shown in Tables 7.1 to 7.2, we have assumed that all sound sources occur simultaneously, in order to model a 'worst-case-scenario' for noise emissions expected from the site when in full operation.

CONVERSATION NOISE EMISSIONS

Table 7.1 below identifies the Sound Power Level expected from standard conversational noise. Modelling has been conducted based on 50% of patrons conversing at the same time.

| Table 7.1: People Talking Outdoors, Sound Power Levels, L _{Aeq, 15-minute} dB(A) | | | | | | | | | | |
|---|--|----|-----|-----|-----|----|----|----|----|--|
| | Sound Power levels (dB) at Octave Band Centre Frequencies (Hz) | | | | | | | | | |
| Description | Sum dB(A) | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | |
| 1 person talking with normal voice | 66 | 57 | 57 | 63 | 66 | 59 | 55 | 51 | 46 | |

Fable 7.1, People Talking Outdoors, Sound Power Louds, L

MECHANICAL PLANT

Table 7.2 identifies the Sound Power Level from the mechanical plant (air conditioner condenser unit) located at the rear of the establishment.

| Tuble 7.2. Wechanical Flam, Souria Fower Levels, LAeq, 15-minute ab(A) | | | | | | | | | |
|--|--|----|-----|-----|-----|----|----|----|----|
| Description | Sound Power levels (dB) at Octave Band Centre Frequencies (Hz) | | | | | | | | |
| Description | dB(A) | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| A/C condenser unit | 70 | 74 | 76 | 76 | 66 | 61 | 54 | 43 | 40 |

Table 7.2. Mechanical Plant Sound Power Levels 1. $dR(\Delta)$

CAR PARK NOISE EMISSIONS

The site does not provide parking for patrons therefore has been omitted in this assessment.

RECOMMENDATIONS

• Extend the barrier walls across the Western and Northern sides of the property to a minimum height of 2.4m or (if feasible) to the ceiling height of the establishment, the walls extension can be comprised of a variety of construction materials (as shown below) and is to achieve a minimum surface density of 15kg/m². In all instances the barrier wall extension must be continuous and without airgaps as to not degrade the acoustic performance of the structure.

The barrier wall may be comprised of the following construction elements.

- Brickwork;
- Precast Concrete Panels;
- Limestone blocks;
- Concrete Blockwork;
- Timber;
- Transparent Acrylic
- Fibre Cement; or
- Recycled Plastic.



Figure 5: Recommended Barrier Wall Extension Locations

ASSESSMENT POST IMPLEMENTATION OF RECOMMENDATIONS

Table 8 below shows the calculated noise levels expected at the receivers identified within this report post the implementation of the barrier wall extensions.

| TABLE 8 – Assessment of Expected Noise Levels Post-Implementation of Recommendations | | | | | | | | |
|--|-------------------|---|--|--|--|--|--|--|
| LOCATION | SCENARIO | Wors Outdo under 1 mecha oper sin Post in Recc | t-case' Scenario or smoking area full capacity, with nical plant in full ation occurring nultaneously pplementation of pmmendations | Assigned outdoor noise level target L _{A10} SPL dB(A) | Compliance to the applicable assigned outdoor noise criterion | | | |
| | | Time | L _{A10} | L _{A10} | | | | |
| R1 |) A / in al avvia | | 44 | 54 | Yes | | | |
| R2 | | ws Dav | 44 | J4 | Yes | | | |
| C1 | | Day | 42 | (0 | Yes | | | |
| C2 | open | | 44 | 00 | Yes | | | |
| R1 | | | 44 | 40 | Yes | | | |
| R2 | Windows | F | 44 | 49 | Yes | | | |
| C1 | and doors | Evening | 42 | 60 | Yes | | | |
| C2 | open | | 44 | 60 | Yes | | | |
| R1 | | NIC LA | 44 | | Yes | | | |
| R2 | Windows | | 44 | 44 | Yes | | | |
| C1 | and doors | ivight | 42 | 60 | Yes | | | |
| C2 | орен | open | 44 | 60 | Yes | | | |

As shown in table 8 above full compliance to the Environmental Protection (Noise) Regulation 1997 assigned outdoor noise criterion is expected to be achieved once the recommendations put forth within this report are implemented.

CONCLUSION

The objective of this assessment was to establish noise levels attributable to the *Shesh Besh Shisha Bar* & *Restaurant*, particularly conversational noise, assess the associated noise emissions against the Environmental Protection (Noise) Regulation 1997 assigned outdoor noise criterion and if exceedances are found, provide mitigation measures in order to reduce associated noise to a compliant level.

Noise levels calculated under a 'worst case scenario' have been found to exceed the evening and nighttime assigned outdoor noise criterion by up to +10dB(A). However, with the implementation of the recommendations put forth within this report we believe that associated noise being received by the nearest noise sensitive receivers can be reduced to level compliant to the Environmental Protection (Noise) Regulation 1997 during the entirety of the business's 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) Noise Officer: 14009 ACOUSTICS & AUDIO PRODUCTION