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Appendix A - Location Map, Aerial Photo & Drawing............................3 Pages
GLOSSARY

NOISE
Noise is produced through rapid variations in air pressure at audible frequencies (20 Hz – 20 kHz). Most noise sources vary with time. The measurement of a variable noise source requires the ability to describe the sound over a particular duration of time. A series of industry standard statistical descriptors have been developed to describe variable noise, as outlined in Section 2 below.

NOISE DESCRIPTORS

\[ \text{dB} \] – Decibels. The fundamental unit of sound, a Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell. Probably the most common usage of the Decibel in reference to sound loudness is dB sound pressure level (SPL), referenced to the nominal threshold of human hearing. For sound in air and other gases, dB(SPL) is relative to 20 micropascals (μPa) = \(2 \times 10^{-5}\) Pa, the quietest sound a human can hear.

\[ L_{\text{Aeq}} \] – The A-weighted sound pressure level averaged over the measurement period. It can be considered as the equivalent continuous steady-state sound pressure level, which would have the same total acoustic energy as the real fluctuating noise over the same time period. Measured in dB.

\[ L_{\text{Amax}} \] – The maximum or peak A-weighted noise level that occurs over the measurement period. Measured in dB.

Indoor Design Level – The recommended maximum level in dB(A) inside a building from external noise sources.

A-WEIGHTING
"A-weighting" refers to a prescribed amplitude versus frequency curve used to "weight" noise measurements in order to represent the frequency response of the human ear. Simply, the human ear is less sensitive to noise at some frequencies and more sensitive to noise at other frequencies. The A-weighting is a method to present a measurement or calculation result with a number representing how humans subjectively hear different frequencies at different levels.

NOISE CHARACTER, NOISE LEVEL AND ANNOYANCE
The perception of a given sound to be deemed annoying or acceptable is greatly influenced by the character of the sound and how it contrasts with the character of the background noise. A noise source may be measured to have only a marginal difference to the background noise level, but may be perceived as annoying due to the character of the noise.

Acoustic Dynamics’ analysis of noise considers both the noise level and sound character in the assessment of annoyance and impact on amenity.
1 INTRODUCTION

1.1 SUMMARY

Acoustic Dynamics is engaged by Rizer Ltd to assess the likely noise emission associated with the proposed Louis Vuitton Maison Event as part of a new Development Application for the event, to be held at Campbells Store, Campbells Cove, NSW, on Wednesday 27 November 2019, in accordance with the requirements of the City of Sydney Council.

This document provides an assessment of contributed noise emission levels from the noise sources associated with the proposed event, at the nearest external receiver residential locations, and is prepared in accordance with the various acoustic assessment requirements of the City of Sydney Council, the NSW Environment Protection Authority (EPA), and relevant Australian Standards.

1.2 DESCRIPTION OF LOCATION

The proposed event will be held within the restaurants located in Campbells Store on Wednesday 27 November 2019. The proposed one-off event will include the provision of live entertainment being performed on a stage set up outside the venue, facing in, and will incorporate the use of a sound amplification system. Guests attending the proposed event will be located within the restaurant area.

The subject site of the event has one road frontage to Hickson Road to the west. Guests attending the event will enter via George Street. The nearest affected receivers are located to the north, east and north-west. Residential receivers at 8 Hickson Road are located to the north-west. Commercial receivers are located at the Park Hyatt Sydney hotel, along the wharf to the north of the subject site, as well as receivers within the Overseas Passenger Terminal on Circular Quay West (The Squire’s Landing and Quay restaurant), east of the subject site.

The subject site, proposed event map, and adjacent receiver locations, are shown in the Location Map, Aerial Photograph and Drawings presented within Appendix A.

1.3 SCOPE

The scope of this assessment is to include the following:

- Review all existing available documentation relevant to noise emission associated with the event;
- Perform relevant modelling and calculations to determine likely received noise levels at the boundaries of adjacent receivers, resulting from the operation of the proposed event; and
- Where applicable, determine relevant noise mitigation and/or management recommendations to ensure the proposed event achieves compliance with the relevant noise emission criteria and objectives.
2 BACKGROUND INFORMATION

2.1 DESCRIPTION OF PROPOSAL

Acoustic Dynamics understands that the proposed hours of the one-off event are as follows:

**Tuesday 26 November 2019**
- Bump-In (Including Sound Check): 6:00pm
- Bump-In End: 10:00pm

**Wednesday 27 November 2019**
- Rehearsal / Sound Check: 4:00pm
- Event Commences: 6:00pm
- Headline Act (30 minutes): 10:00pm
- Event moves indoors: 11:00pm
- Entertainment and Event Concludes: 2:00am (following day)

Acoustic Dynamics advises that the main noise sources associated with the event will be the live entertainment and the sound amplification system used throughout the event. A DJ is proposed to perform the majority of the event, with an International Headline act proposed to perform for 30 minutes at approximately 10:00pm. Accordingly, we advise that this assessment of the noise emission associated with the event focuses on the noise emission from these main noise sources.

The set-up for the event will include a stage to the east of the restaurants facing in, and a main PA system hung above the edge of the stage. Additional speakers are proposed to be installed within the indoor areas of the building. The live entertainment provided will a DJ for the majority of the evening, with a headline act performing to a backing track at approximately 10:00pm.

Acoustic Dynamics is advised that the set-up of the subject outdoor sound amplification system will be as follows:
- 6 x L-Acoustics 12XT speakers hung above stage;
- 4 x L-Acoustics SB218 subwoofer speakers, beneath the stage; and
- 2 x d&b M2 stage monitors for performers on the stage.

Acoustic Dynamics is advised that the set-up of the subject indoor sound amplification system will be as follows:

**DJ Rooms**
- 2 x L-Acoustics 12XT speakers; and
- 2 x L-Acoustics SB218 subwoofer speakers.

**Non-DJ Rooms**
- 12 x Meyer UPM-1P powered loudspeakers; and
- 6 x USW-1P powered loudspeakers.
3 ASSESSMENT CRITERIA

Acoustic Dynamics has conducted a review of the relevant Local Council planning controls and State Government Legislation and Guidelines that are applicable to noise emission from the subject event.

Responsibility for the control of commercial noise emission at the subject development site is vested in the Local Council. Guidelines for the assessment of environmental noise are contained within the EPA’s Noise Policy for Industry (NPfI). In addition to these guidelines, some Councils have specific noise criteria, against which, certain noise sources must be assessed.

The following section presents the noise emission criteria used in this assessment.

3.1 CITY OF SYDNEY COUNCIL REQUIREMENTS

3.1.1 LOCAL ENVIRONMENT PLANS

Acoustic Dynamics has conducted a review of the Sydney Local Environment Plan (LEP) 2012 and 2005. The review of this document did not yield specific relating to noise emission from a special event, such as the proposed event.

3.1.2 DEVELOPMENT CONTROL PLANS

Acoustic Dynamics has conducted a review of the Sydney Development Control Plan (DCP) 2012 and Central Sydney Development Control Plan (DCP) 1996. The review of this document did not yield specific relating to noise emission from a special event, such as the proposed event.

3.1.3 STANDARD CONDITIONS OF DEVELOPMENT CONSENT

Acoustic Dynamics has conducted a review of the City of Sydney’s Standard Conditions of Development Consent, revised 2 April 2012, to establish relevant noise emission conditions that are likely to be applied to the proposed event. Relevant references to special event noise emission are reproduced below.

SCHEDULE 1A

APPROVED DEVELOPMENT/DESIGN MODIFICATIONS / COVENANTS
AND CONTRIBUTIONS / USE AND OPERATION

ENTERTAINMENT VENUES

(83) NOISE – CONCERTS AND SPECIAL EVENTS
(a) The temporary event must not result in the transmission of “offensive noise” as defined in the Protection of the Environment Operations Act 1997 at the nearest affected receiver.

(b) All recommendations contained in the acoustic report prepared by [insert], dated [insert], must be implemented prior to and during the event including the following: insert relevant particulars from Acoustic Report Recommendations. and use recommendations (under paragraph(b) - e.g. Prior to the event.)

(c) Appropriate attended noise monitoring shall be undertaken by an appropriately qualified acoustical consultant who possesses the qualifications to render them eligible for membership of the Australian Acoustic Society, Institution of Engineers Australia or the Australian Association of Acoustic Consultants throughout the event. The acoustic consultant shall verify noise emanating from the event, at the nearest residential boundary, does not exceed the noise criteria detailed in the “Noise Control” condition. An acoustic report detailing the results of monitoring undertaken should be submitted to the Council’s Health Compliance within 7 days after the event.

(d) A readily contactable complaint hotline shall be set up and event coordinator of the [insert name of the organisation/event] shall be dedicated to managing and responding to any complaints received. The details of customer mobile hotline telephone number shall be submitted to Council’s Customer Service Centre prior to the commencement of the event.

3.2 NSW LEGISLATION

3.2.1 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

Noise emission from the subject event must comply with the requirements of the Protection of the Environment Operations (POEO) Act 1997. The POEO Act 1997 requires that the subject development must not generate “offensive noise”.

Offensive noise is defined as follows:

"offensive noise" means noise:

(a) that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:
   (i) is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or
   (ii) interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or

(b) that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances, prescribed by the regulations.
3.3 NSW ENVIRONMENT PROTECTION AUTHORITY (EPA)

3.3.1 NOISE GUIDE FOR LOCAL GOVERNMENT

The NSW EPA provides guidelines for the assessment of outdoor concerts and special events, such as the proposed event, within its Noise Guide for Local Government (NGLG) document published in October 2010.

Within the NGLG, the EPA provides a case study on assessment of noise emission from an outdoor concert event, and also provides a summary of the noise emission assessment criteria used by the EPA for assessment of various outdoor entertainment activities, where the EPA is the relevant regulatory authority.

The EPA presents the following noise emission criteria for outdoor concerts held by the Centennial Park and Moore Park Trust:

<table>
<thead>
<tr>
<th>Event using sound amplification equipment with crowd capacity greater than 1500 other than:</th>
<th>A-weighted sound pressure level ($L_{A10,T}$) must not exceed:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Musical concerts with a crowd capacity greater than 5000, or</td>
<td>• 5 dB(A) above ambient background level ($L_{A90,T}$) between 10 am and 11 pm, and</td>
</tr>
<tr>
<td>• Cinematic screenings and theatrical performances</td>
<td>• Ambient background level ($L_{A90,T}$) at other times.</td>
</tr>
</tbody>
</table>

Acoustic Dynamics has conducted a review of Acoustic Logic’s report for Campbells Stores restaurants (ref: 20190164.2.1/0221A/R1/TT, Council ref: 2019/097131). This report was accessed via the City of Sydney Council website as a publicly available document, which states that unattended background noise monitoring was conducted, and was shown that the background noise level ($L_{A90,15min}$) for the area surrounding Campbells Stores was 50 dB(A).

Based on the information presented within the EPA’s NGLG, Acoustic Dynamics recommends the following noise emission criteria be used for the assessment of the proposed one-time only Louis Vuitton event, when measured at the façade of the nearest residential receivers:

- $L_{A10,15min}$ not exceeding 55 dB.

With additional criteria for noise emission after 10pm to reduce sleep disturbance as follows:

- $L_{A\text{Max}}$ not exceeding $RBL + 15$ dB;

Acoustic Dynamics advises that achieving compliance with the above noise emission criteria for the proposed event, is likely to ensure compliance with the various relevant acoustic requirements of the POEO Act 1997 and the intent of City of Sydney Council’s Consent Conditions.
4 ASSESSMENT RESULTS

The following subsection provides an assessment of the proposed event against the various noise emission criteria and objectives outlined above.

Acoustic Dynamics has undertaken noise emission modelling and calculations of the likely maximum external noise emission associated with the provision of live entertainment and use of the subject sound amplification system during the subject event.

Table 4.1 presents the source noise levels used by Acoustic Dynamics to determine the likely maximum noise emission levels associated with the subject event. We advise that these source noise levels used are conservatively high, and that the actual source noise levels associated with the subject event are likely to be lower than those presented in Table 4.1 below.

Table 4.1 – Maximum Source Noise Levels

<table>
<thead>
<tr>
<th>Noise Source</th>
<th>L_{Amax} Source Noise Emission Spectrum [dB]</th>
<th>Overall C-weighted L_{Amax} noise level</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOH Speakers (L-Acoustics 12XT speakers and L-Acoustics SB218) (assessed at 3m)</td>
<td>64 82 85 90 92 89 85 79 96 101 dB(C)</td>
<td></td>
</tr>
</tbody>
</table>

The results of Acoustic Dynamics’ noise emission calculations are presented within Table 4.2 below, along with the previous and recommended noise emission criteria:

Table 4.2 – Calculated Maximum Event Noise Emission Levels and Criteria

<table>
<thead>
<tr>
<th>Receiver Location</th>
<th>Noise Source</th>
<th>Council Criteria [dB]</th>
<th>Calculated Maximum Noise Emission Level(^1) [dB]</th>
<th>Complies With Criteria?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residences at 8 Hickson Rd (to the northwest)</td>
<td>FOH Speakers</td>
<td>≤ 55</td>
<td>48</td>
<td>Yes</td>
</tr>
<tr>
<td>Receivers at Park Hyatt Sydney (to the north)</td>
<td>FOH Speakers</td>
<td>≤ 55</td>
<td>43</td>
<td>Yes</td>
</tr>
<tr>
<td>Receivers at Overseas Passenger Terminal (to the East)</td>
<td>FOH Speakers</td>
<td>≤ 55</td>
<td>57</td>
<td>Yes(^2)</td>
</tr>
</tbody>
</table>

Note: 1) External noise emission levels calculated at the nearest receiver facade to the relevant source 2) Marginal compliance is achieved as sound level differences of 1 – 2 dB are generally considered acoustically insignificant.
The predicted noise emission levels presented above in Table 4.2 includes allowances for relevant distance, direction and shielding losses, along with the incorporation of the acoustic benefits provided by the recommendations presented in Section 5 of this report.

Acoustic Dynamics advises that the above calculated noise emission levels are conservatively based on the maximum source noise levels and maximum capacity operations (i.e. worst-case scenario) for the proposed event. Noise exceedances resulting from performer sound checks and performance during the event are predicted to occur for a maximum duration of 30 minutes during the evening, with noise levels during the majority of the evening to be lower than those during the headline act, with the patrons and music being confined to indoors after 11:00pm. Acoustic Dynamics considers the implementation of real-time event noise monitoring to be an appropriate methodology to manage noise emission.

Acoustic Dynamics advises that the likely maximum noise emission associated with the event will generally comply with the relevant noise emission criteria, and is unlikely to adversely affect nearby residential receivers.

5 RECOMMENDATIONS

Acoustic Dynamics’ calculations and analysis indicate that incorporate of the following recommendations will ensure the event achieves compliance with the various relevant acoustic assessment criteria.

5.1.1 RECOMMENDATIONS FOR MONITORING DURING THE EVENT

Acoustic Dynamics advises that operator-attended noise monitoring will be carried out during the subject event, to ensure noise emission from the event complies with the relevant noise emission criteria and requirements.

Based on operator-attended noise monitoring conducted during similar events, we advise that noise monitoring is unlikely to be required to be carried out by more than one acoustic engineer, to adequately monitor noise emission from the event.

Accordingly, we recommend that noise monitoring be carried out during the event by one acoustic engineer monitoring noise levels at the boundary of the Park Hyatt Sydney (likely being the most sensitive external receivers), for the majority of the event. In addition, the acoustic engineer should also carry out intermittent (roving) noise monitoring at the other sensitive receiver locations, including 8 Hickson Road and near the boundary of The Squire’s Landing, to ensure noise emission is adequately controlled at all sensitive receiver locations.

5.1.2 RECOMMENDATIONS FOR SPEAKERS

Acoustic Dynamics provides the following recommendations relating to the proposed speaker system and layout, to minimise noise emission to nearby sensitive receivers:
1) Speaker location and orientation to be optimised to ensure no speakers are facing directly to the north or south and therefore to minimise noise emission to the receivers along Circular Quay;

2) Minimisation of the number of sub-woofer speakers included for the event. We advise that sub-woofer speakers have the highest potential to cause disturbance at the surrounding receivers, and we recommend that no more than four (4) sub-woofer speakers be used during the event, and they be arranged to produce a cardioid pattern to minimise projection of low-frequency noise to adjacent receivers; and

3) In addition to the above, we advise that all speakers associated with the event are to be located such that they are oriented away from the direction of the nearest sensitive receivers and directed towards the guests/audience.

5.1.3 RECOMMENDATIONS FOR ACOUSTIC BARRIERS

Acoustic Dynamics recommends inclusion of an acoustic barrier along the northern edge of the site, to minimise noise emission to the north. The acoustic barrier should be designed and installed in accordance with the following recommendations:

1) We recommend installation of an acoustic barrier along the northern boundary of the site, as close to the marquee structure as possible, continuing the full width of the marquee;

2) The subject acoustic barrier should be installed to the height of the glass roof;

3) The acoustic barrier must be installed to provide a minimum surface density of 15kg/m², and any and all gaps along the surface of the barrier must be adequately treated and sealed using a flexible mastic sealant. Acoustic Dynamics advises that the barrier could be constructed to be:
   - A minimum 9mm thick compressed fibros-cement sheeting barrier; or
   - A minimum 18mm thick plywood barrier.

5.1.4 RECOMMENDATIONS FOR NOISE EMISSION CONTROL MEASURES

Acoustic Dynamics advises that the set-up and installation of the sound amplification system used for the proposed event must include equipment and measures that will enable appropriate control of the overall noise output level from the system. We recommend inclusion of the following:

1) Installation on an overall output limiter (or several output limiters assigned to the various groups of speakers) to enable maximum overall output levels to be limited for the duration of the event. We advise that the control of the output limiter must be restricted such that the level set for the limiter would not able to be adjusted during the event;
2) As recommended previously, installation of a 1/3 octave band graphic equaliser (EQ), to enable the control of output levels of particular frequencies during the event;

3) Installation of a “high pass” shelf equaliser (EQ), set such that the output levels of all frequencies below 63Hz are heavily reduced, and effectively removed from the overall output noise emission spectrum of the event; and

4) Direct, real-time, communication between the acoustic engineers undertaking noise monitoring during the event and an event representative who has overall control of the noise output levels for the event, for the duration of the event. This direct communication will allow noise emission levels to be adequately controlled, and reduced when required, throughout the event.

Acoustic Dynamics advises that incorporation of the above recommendations is likely ensure that noise emission associated with the proposed event will generally comply with the intent of the applicable noise emission criteria and, when coupled with real-time event noise monitoring, is unlikely to adversely impact nearby receivers.

6 CONCLUSION

Acoustic Dynamics has conducted an acoustic assessment of the likely noise emission associated with the proposed Louis Vuitton event, to be held at Campbells Stores, Campbells Cove, NSW, on Wednesday 27 November 2019.

A review of applicable noise standards and local authority noise requirements has been conducted. Noise levels were assessed in accordance with the requirements of:

- The City of Sydney Council; and
- The NSW POEO Act 1997; and
- The NSW EPA.

Acoustic Opinion

Further to our review of the relevant acoustic criteria and requirements and our calculations, Acoustic Dynamics advises that the proposed event, incorporating the recommendations detailed in Section 5 above, is likely to comply with the NSW EPA, the POEO Act 1997 and the intent of the applicable noise emission criteria of The City of Sydney Council.

We trust that the above information meets with your requirements and expectations. Please do not hesitate to contact us on 02 9908 1270 should you require more information.
APPENDIX A – LOCATION MAP, AERIAL PHOTO & DRAWING

A.1 REGIONAL LOCATION MAP

A.2 AERIAL PHOTO
A.3 EVENT SPEAKER LAYOUT DRAWINGS