47.5164.L15:MCC

The Acoustic Group
CONSULTING ACOUSTICAL & VIBRATION ENGINEERING

13th December, 2017

Barangaroo House
c/- Solotel Pty Ltd
Level 2, Golden Sheaf Hotel
429 New South Head Road
DOUBLE BAY NSW 2028

Attention: Mr B. Solomon

Dear Sirs,

OCCUPATION CERTIFICATE
RESTAURANT & BAR OVER GROUND LEVEL, LEVEL 1 & LEVEL 2
BUILDING R1
BARANGAROO PROJECT

Under Condition F7 of the Conditions of Consent for the subject restaurant and bars, prior to the issue of an occupation certificate, a report is required that verifies that the noise limiters have been installed, tested and calibrated such that music will comply with Condition F6 which provides noise limits for the use of the licensed premises.

Preliminary testing of the internal and external speakers of Building R1 was conducted on the evening of Tuesday 5th December, 2017 to calibrate the noise limiters to satisfy Condition F6(b)(i).

A site visit was conducted on the evening of Tuesday 12th December, 2017 for further testing of the internal and external speakers in response to Mr Hartcher's email (dated Friday 8th December, 2017) which requested the following to be addressed:

- To confirm the noise limiters have been installed, tested and calibrated to comply with the noise limits for each of the three receivers in Condition F6(a); and
- To confirm the noise limiters have been installed, tested and calibrated to comply with the noise limits and restrictions prescribed in Condition F6(b)(ii).

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To test the music levels with respect to the noise limits in Condition F6(a) for residential receivers in the Barangaroo Precinct, a crane was utilised to position the microphone one metre from the southern façade of the residential apartments in Building R9 (see Appendix A). The testing involved measurements at the two most affected heights of Building R9 with the measurement positions being adjacent to Levels 1 and 2 of Building R1. These locations were chosen as a representation of the worst case scenario.

The prevailing ambient background level at the upper measurement location was 64 dB(A). Adjacent to Level 1 of Building R9, a higher ambient background level of 70 dB(A) was recorded as a result of the proximity of this measurement location to the patrons in the outdoor dining area of the Belles Hot Chicken restaurant (ground floor level of Building R9). The ambient background level in the 63 Hz octave band adjacent to the southern façade of Building R9 was found to be 68 dB.

As a result of the prevailing ambient background level at the time of the testing, the noise contribution of music from Building R1 could not be directly measured and was derived by subtracting the ambient background level from the measured overall noise level.

The test was conducted with all external doors on the ground floor, Level 1 and Level 2 open as a worst case scenario.

To control the music levels, additional noise limiter presets (Presets 14 and 15) were created which affects the internal and external speakers on all levels of Building R1. For the before 10:00 PM period, Building R1 is to operate with Preset 14 in addition to the noise limiter presets determined from the preliminary testing (Presets 1 – 9). After 10:00 PM, Building R1 is to operate with Presets 1 – 9 and Preset 15.

The noise limiter settings for Presets 14 and 15 (provided by DJW projects) is presented in Appendix B.

The noise emission of the internal and external speakers on all levels of Building R1 operating simultaneously (with Presets 2, 3, 4, 5, 7, 9 and 14) was found to give rise to no increase above the A-weighted ambient background level and a 1 dB increase above the ambient background level in the 63 Hz octave band. Therefore, the contribution of music from Building R1 is less than the 58 dB(A) and 65 dB at 63 Hz limits specified in Condition F6(a) for the before 10:00 PM period at residential receivers within the Barangaroo Precinct.

Condition F6(a) imposes a more stringent A-weighted noise limit of 56 dB(A) at residential receivers within the Barangaroo Precinct for the after 10:00 PM period (noise limit at 63 Hz unchanged). To maintain compliance with the noise limits, Preset 15 reduces the music levels of all internal and external speakers of Building R1 an additional 3 dB in comparison to Preset 14.

Attendance to the eastern façade of Sydney Wharf Apartments on the other side of the bay found music from Building R1 to be inaudible and therefore easily satisfy the noise limits specified in Condition F6(a) for residential receivers outside the Barangaroo Precinct.

A measurement one metre from the southern façade of the Belles Hot Chicken Restaurant (nearest commercial receiver) found music from Building R1 to be audible but did not give rise to any measurable increase above the background level. As such, the noise contribution of music from Barangaroo R1 would be below the noise limits in Condition F6(a) for commercial receivers.

Condition F6(b)(ii) specifies a noise criterion of background +3 dB in the 63 Hz octave band inside an office area (with windows closed and mechanical ventilation operating) that is not part of the Barangaroo Precinct. Attendance to the office area above Bungalow 8 and The Loft found music from Building R1 to be audible as a bass beat and gave rise to a 2 dB increase above the background level in the 63 Hz octave band. Therefore, the noise contribution of the music is less than the background level and satisfies Condition F6(b) of the Consent.

I hearby certify that for the purpose of an occupation certificate, Condition F7 has been satisfied.

Yours faithfully,

THE ACOUSTIC GROUP PTY LTD

CHRISTOPHER Y. H. CHAN

APPENDIX A: Photo of Microphone Setup

APPENDIX B: Noise Limiter Settings

Preset #14 - 'all floors evening cuts before 10pm'

Radius 12x8 EX Basement-1
- Gain (1600)
  - Master Controls
    - Master Mute Button : Off
    - Master Fader : -6.0 dB
  - Channel 2 Controls
    - Input 2 Solo Button : Off
    - Input 2 Mute Button : Off
    - Input 2 Gain Fader : +0.0 dB
    - Input 2 Invert Button : Off
- Gain (1603)
  - Master Controls
    - Master Mute Button : Off
    - Master Fader : -6.0 dB
  - Channel 2 Controls
    - Input 2 Solo Button : Off
    - Input 2 Mute Button : Off
    - Input 2 Gain Fader : +0.0 dB
    - Input 2 Invert Button : Off
- Gain (1608)
  - Channel 1 Controls
    - Input 1 Solo Button : Off
    - Input 1 Mute Button : Off
    - Input 1 Gain Fader : -10.0 dB
    - Input 1 Invert Button : Off
- Gain (1610)
  - Channel 1 Controls
    - Input 1 Solo Button : Off
    - Input 1 Mute Button : Off
    - Input 1 Gain Fader : -10.0 dB
    - Input 1 Invert Button : Off
- Gain (1900)
  - Channel 1 Controls
    - Input 1 Solo Button : Off
    - Input 1 Mute Button : Off
    - Input 1 Gain Fader : -10.0 dB
    - Input 1 Invert Button : Off
- Gain (1907)
  - Master Controls
    - Master Mute Button : Off
    - Master Fader : -3.0 dB
- Gain (1909)
  - Master Controls
    - Master Mute Button : Off
    - Master Fader : -3.0 dB
- Gain (1914)
  - Master Controls
    - Master Mute Button : Off
    - Master Fader : -3.0 dB
- Gain (1927)
  - Channel 1 Controls
    - Input 1 Solo Button : Off
    - Input 1 Mute Button : Off
    - Input 1 Gain Fader : -3.0 dB

Input 1 Invert Button : Off
Gain (1929)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -3.0 dB
Input 1 Invert Button : Off
Gain (1933)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -3.0 dB
Input 1 Invert Button : Off
Gain (1934)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -3.0 dB
Input 1 Invert Button : Off
Gain (1949)
Master Controls
Master Mute Button : Off
Master Fader : -6.0 dB
Gain (1957)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -3.0 dB
Input 1 Invert Button : Off
Gain (1960)
Master Controls
Master Mute Button : Off
Master Fader : -6.0 dB
Gain (1964)
Master Controls
Master Mute Button : Off
Master Fader : -6.0 dB
Radius 12x8 EX Ground-2
Gain (2632)
Master Controls
Master Mute Button : Off
Master Fader : -4.0 dB
Gain (2635)
Master Controls
Master Mute Button : Off
Master Fader : -3.0 dB
Gain (2638)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -3.0 dB
Input 1 Invert Button : Off
Gain (2640)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -3.0 dB
Input 1 Invert Button : Off

Gain (2643)
Master Controls
Master Mute Button : Off
Master Fader : -3.0 dB
Gain (2877)
Master Controls
Master Mute Button : Off
Master Fader : -3.0 dB
Gain (2879)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -3.0 dB
Input 1 Invert Button : Off
Gain (2917)
Master Controls
Master Mute Button : Off
Master Fader : -3.0 dB
Gain (2919)
Master Controls
Master Mute Button : Off
Master Fader : -3.0 dB
Gain (2924)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -9.0 dB
Input 1 Invert Button : Off
Gain (2925)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -9.0 dB
Input 1 Invert Button : Off

Preset #15 - 'all floors after 10pm cut'

Radius 12x8 EX Basement-1
Gain (1600)
Master Controls
Master Mute Button : Off
Master Fader : +9.0 dB
Gain (1603)
Master Controls
Master Mute Button : Off
Master Fader : -9.0 dB
Gain (1608)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -13.0 dB
Input 1 Invert Button : Off
Gain (1610)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -13.0 dB
Input 1 Invert Button : Off
Gain (1900)

Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -13.0 dB
Input 1 Invert Button : Off
Gain (1907)
Master Controls
Master Mute Button : Off
Master Fader : -6.0 dB
Gain (1909)
Master Controls
Master Mute Button : Off
Master Fader : -6.0 dB
Gain (1914)
Master Controls
Master Mute Button : Off
Master Fader : -6.0 dB
Gain (1927)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -6.0 dB
Input 1 Invert Button : Off
Gain (1929)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -6.0 dB
Input 1 Invert Button : Off
Gain (1933)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -6.0 dB
Input 1 Invert Button : Off
Gain (1934)
Channel 1 Controls
Input 1 Solo Button : Off
Input 1 Mute Button : Off
Input 1 Gain Fader : -6.0 dB
Input 1 Invert Button : Off
Gain (1960)
Master Controls
Master Mute Button : Off
Master Fader : -9.0 dB
Gain (1964)
Master Controls
Master Mute Button : Off
Master Fader : -9.0 dB
Radius 12x8 EX Ground-2
Gain (2632)
Master Controls
Master Mute Button : Off
Master Fader : -7.0 dB
Gain (2635)
Master Controls
Master Mute Button : Off
Master Fader : -6.0 dB

Gain (2638)
- Channel 1 Controls
  - Input 1 Solo Button : Off
  - Input 1 Mute Button : Off
  - Input 1 Gain Fader : -6.0 dB
  - Input 1 Invert Button : Off

Gain (2640)
- Channel 1 Controls
  - Input 1 Solo Button : Off
  - Input 1 Mute Button : Off
  - Input 1 Gain Fader : -6.0 dB
  - Input 1 Invert Button : Off

Gain (2643)
- Master Controls
  - Master Mute Button : Off
  - Master Fader : -6.0 dB

Gain (2877)
- Master Controls
  - Master Mute Button : Off
  - Master Fader : -6.0 dB

Gain (2879)
- Channel 1 Controls
  - Input 1 Solo Button : Off
  - Input 1 Mute Button : Off
  - Input 1 Gain Fader : -6.0 dB
  - Input 1 Invert Button : Off

Gain (2917)
- Master Controls
  - Master Mute Button : Off
  - Master Fader : -6.0 dB

Gain (2919)
- Master Controls
  - Master Mute Button : Off
  - Master Fader : -6.0 dB

Gain (2924)
- Channel 1 Controls
  - Input 1 Solo Button : Off
  - Input 1 Mute Button : Off
  - Input 1 Gain Fader : -12.0 dB
  - Input 1 Invert Button : Off

Gain (2925)
- Channel 1 Controls
  - Input 1 Solo Button : Off
  - Input 1 Mute Button : Off
  - Input 1 Gain Fader : -12.0 dB
  - Input 1 Invert Button : Off