Sent:	6/06/2022 10:40:08 AM
Subject:	FW: DA2022/0662 63-67 The Corso Manly
Attachments:	63 - 67 The Corso Acoustic Dynamics 30.5.22.pdf;

Dear Lashta,

RE: DA2022/0662 Lot 1 63-67 The Corso Manly
I refer to our letter of objection dated 2 May 2022 and our advice that an acoustic report would follow.
We engaged Acoustic Dynamics to undertake a peer review & advice on the acoustic report prepared by Acoustic Logic Consultancy (ALC) submitted with the application. In summary the review found:

- The methodology used by ALC was not per industry standard and likely to be highly inaccurate

- ALC has used the wrong criteria to assess receivers within the backpacker hostel

- The recommendations provided by ALC to mitigate noise are inadequate to protect the amenity of the lot above.

The review concluded *We are highly concerned with the accuracy of, and lack of detail contained within, the noise surveys conducted and calculations of the noise emission to the most sensitive receivers, as well as the criteria and assessment periods selected*

Latasha, the findings of the peer review further increase our concerns for the permanent and significant amenity and economic impacts of the proposal on our property, surrounding properties and the general public.

Kind regards
Peter and Liz Skerrett

Sydney Head Office
Suite 2
174 Willoughby Rd
St Leonards NSW 2065
T: 02 9908 1270

Melbourne Office
Suite 11
70 Racecourse Rd
Nth Melbourne VIC 3051
T: 03 7015 5112

ABN: 36 105 797 715
PO Box 270
Neutral Bay NSW 2089
E: info@acousticdynamics.com.au
W: www.acousticdynamics.com.au

Project 5553
30 May 2022

Invergowrie Properties Pty Ltd
Attention: Mr Peter Skerrett & Mrs Liz Skerrett
63 The Corso
MANLY NSW 2095

Email: invergowrie@tpg.com.au
Ph: 02 9247 3450

Dear Mr & Mrs Skerrett

LOT 1, 63 THE CORSO MANLY – HARD ROCK CAFÉ – PEER REVIEW & ADVICE
LETTER OF ACOUSTIC OPINION

1 EXECUTIVE SUMMARY

1. Acoustic Dynamics has been engaged by Invergowrie Properties Pty Ltd to conduct a review of the acoustic report prepared by Acoustic Logic Consultancy (ALC) in support of the proposed 'Hard Rock Café' bar and restaurant on the ground floor of 63 The Corso, Manly.

2. Acoustic Dynamics' review of the acoustic report found:

    1. The methodology used by ALC to determine the relevant criteria was not per industry best-practice, and is likely to be highly inaccurate, particularly during the late evening and night-time hours;

    2. ALC has used the wrong criteria to assess receivers within the backpacker's hostel immediately above the proposed venue;

    3. The recommendations provided by ALC to mitigate noise emission to external and internal receivers are inadequate to protect the amenity of the receivers within the hostel immediately above; and

    4. It is Acoustic Dynamics' opinion that the application should be rejected by Northern Beaches Council.

2 BACKGROUND AND PROJECT CONCERNS

3. The proposal is for a restaurant, bar and live entertainment venue with a capacity of 534 patrons to operate within the ground floor tenancy known as Lot 1, 63 The Corso, Manly. The venue is proposed to operate from 7:00am to 3:00am, 7 days a week.

4. Above the proposed venue is Boardrider Backpacker & Budget Motel, a hostel which occupies the first and second floor of the same building.

5. Invergowrie Properties Pty Ltd are the owners and operators of the hostel. They are concerned the acoustic impacts of the operation of the proposed venue have not been appropriately assessed, and have engaged Acoustic Dynamics to perform a review of the acoustic report submitted with the application for the proposed venue, prepared by Mr Ruben Ghannoum of ALC titled "Lot 1, 63-67 The Corso, Manly, Noise Impact Assessment" dated 8 December 2021 (ref: *20211445.1/0812A/R0/RG*).

6. Within this report, ALC state that compliance with the relevant noise emission criteria can be achieved following the implementation of their recommendations

7. The review has been undertaken with reference to the following:

   - ALC's report "Lot 1, 63-67 The Corso, Manly, Noise Impact Assessment" dated 8 December 2021 (ref: *20211445.1/0812A/R0/RG*) prepared by Mr Ruben Ghannoum;
   - Manly Development Control Plan (DCP) 2013;
   - Manly Local Environment Plan (LEP) 2013;
   - NSW Liquor & Gaming Authority's standard noise emission criteria;
   - Standards Australia's publication AS 2107:2016 "Acoustics—Recommended sound design levels and reverberation times for building interiors, dated 24 October 2016; and
   - NSW Environmental Protection Authority's "Noise Policy for Industry" (2017).

8. Acoustic Dynamics has reviewed the ALC report, and provides the following comments.

9. In Table 1 – Sensitive Receivers, ALC identify the most affected receivers to be:

   - Boardrider Backpacker & Budget Motel directly above the proposed venue;
   - New Brighton Hotel immediately to the east of the proposed venue;
   - The commercial building immediately west of the proposed venue; and
   - The nearest residential receiver located at 72 The Corso, Manly.

10. Within Section 3.2 Unattended Long Term Noise Monitoring, ALC detail the equipment used and location of noise logging performed to determine the ambient background noise level in the immediate vicinity of the proposed venue.

11. A review of the logging data presented within Appendix A of the report shows that from 8:00am to 9:00pm Monday to Wednesday, and 8:00am to 10:00pm Thursday to Sunday, the background noise level is controlled by a steady noise source.

12. Based on our experience conducting noise assessments within The Corso, Manly, Acoustic Dynamics understands the controlling source is the public water fountains located along The Corso. We also note that these water fountains are present immediately in front of where ALC state they placed their noise logger.

13. The sound of these fountains would have been producing noise more towards the higher end of the frequency spectrum (i.e. over 1 kHz). As such, the background noise levels presented are likely not an appropriate representation of the background noise level in the lower end of the frequency spectrum, and the overall sound level may be marginally exaggerated.

14. Within Table 2 – NPfI Rating Background Noise Levels, ALC provide the background noise levels measured by their unattended noise logger from 2 November 2021 to 11 November 2021.

15. ALC then state:

> "*An attended measurement was conducted on Thursday 11th November 2021 in front of the residential building located at 72 The Corso, Manly. The following noise spectrum was recorded:*

Table 2 – Measured Background Noise Spectrum

Frequency (Hz)	***31.5***	***63***	***125***	***250***	***500***	***1k***	***2k***	***4k***	***8k***	***A-wt***
Noise level	*66*	*65*	*59*	*56*	*54*	*54*	*49*	*43*	*34*	***58***

16. ALC does not provide the time of the measurement undertaken, nor any descriptors to show if the noise measured is the L_{90}, L_{eq}, or L_{10} for the measurement period.

17. Acoustic Dynamics assumes the levels presented are the L_{Z90} measurements in octave bands, with the A-weighted broadband level. As the broadband sum of the octave band levels presented within Table 2 of ALC's report equals 70 dB.

18. Based on the date the measurement is stated to have been taken, Acoustic Dynamics assumes the measurement was taken around 10:00am when the logger was collected from the awning in front of the venue, as the presented A-weighted broadband level matches the L_{A90} of the noise logging around this time and date, presented within Appendix A of the report.

19. Acoustic Dynamics provides the A-weighted octave band levels of ALC's measurement in **Table 2.1** below.

Table 2.1 ALC Operator Attended Measurement – 11 November 2021

Location	**Measured L_{A90} Noise Level [dB] Octave Band Centre Frequency [Hz]**									
	31.5	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**O/A**
In front of 72 The Corso, Manly	27	39	43	47	51	54	50	44	33	**58**

20. As stated in paragraphs 11, 12 and 13, water fountains operate between 8:00am and 9:00pm within The Corso, which would significantly affect the measured background noise spectrum at the time it is assumed ALC conducted their operator-attended measurement, and would be a very different background noise spectrum than between 9:00pm and 8:00am. Further, less foot traffic through The Corso will also affect the spectrum.

21. Within Section 4 Noise Emission Assessment, ALC present the relevant project criteria and their assessment of noise emission to the nearest receivers.

22. Within Section 4.1 Operational Noise Emission Criteria (Mechanical Plant), ALC present the Intrusiveness Criteria and Amenity Criteria as determined under the EPA's NPfI. This criteria is normally used for the assessment of noise emission from mechanical plant within a development.

23. Acoustic Dynamics advises that the Intrusiveness Criteria and Amenity Criteria presented within *Table 4 – NPfI Intrusiveness Criteria* and *Table 5 – NPfI Amenity Criteria* have been correctly calculated for residential and commercial receivers, using the "Urban" category for the residential receivers.

24. However, criteria was not calculated for the hostel under the criteria for "Hotels, motels, caretakers' quarters, holiday accommodation, permanent resident caravan parks" in Table 2.2 of the NPfI. Acoustic Dynamics advises that this category of receiver would include the hostel immediately above the venue.

25. Table 2.2 of the NPfI states the recommended amenity noise level for the hostel be:

> *"5 dB(A) above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day"*

26. Accordingly, mechanical noise emission from the proposed venue to the hostel immediately above should have the following criteria apply:

Table 2.2 Summary of Measured Rating Background Noise Levels

Location	Time of Day	Project Amenity Noise Level[2] L_{Aeq} [dB]
Hostel immediately above the proposed venue	Daytime[1] (7am to 6pm)	63
	Evening (6pm to 10pm)	53
	Night-time (10pm to 3am)	48

Note: 1) 8am to 6pm on Sundays and public holidays.

2) Project Amenity adjustment based on "Urban" receiver type. The noise emission objective has been modified in accordance with the recommendations detailed within the NPfI Section 2.2, for time period standardising of the intrusiveness and amenity noise levels ($L_{Aeq,15min}$ will be taken to be equal to the $L_{Aeq,period}$ **+ 3 decibels (dB)**).

27. Within Table 6 – Summary of Noise Emission Criteria, ALC present their summary of the NPfI criteria relating to mechanical noise emission.

28. This table does not identify the category of receiver that each criterion applies to, while also being incomplete.

29. Acoustic Dynamics notes that despite detailing the relevant noise emission criteria for mechanical plant, no assessment of noise emission from mechanical plant associated with the proposed venue is provided within the ALC report.

30. Within Section 4.2 Patron and Music Noise, ALC present the criteria for the assessment of noise from amplified and live music, as well as patrons within the venue.

31. ALC details criteria from the Manly DCP 2013 relating to noise emission from licensed venues which includes noise from patrons exiting the venue, amplified music, noise from patrons within the venue, and mechanical plant and equipment servicing the venue.

32. ALC correctly states that the criteria within the Manly DCP is the same criteria required by NSW Liquor and Gaming for the assessment of noise emission from the operation of a licensed venue.

33. The criteria presented by ALC in Table 7 – Noise Emission Criteria at Nearby Residences is replicated below:

Table 7 – Noise Emission Criteria at Nearby Residences

Time	***Noise Emission Criteria dB(A)$L_{10(15\text{-}minute)}$***									
	31.5Hz	***63Hz***	***125Hz***	***250Hz***	***500Hz***	***1kHz***	***2kHz***	***4kHz***	***8kHz***	***A-Wt***
Day (7am-6pm) BG + 5	*73*	*72*	*66*	*63*	*61*	*61*	*56*	*50*	*41*	***65***
Evening (6pm-10pm) BG + 5	*70*	*69*	*63*	*60*	*58*	*58*	*53*	*47*	*38*	***62***
Early Night (10pm to 12am) BG + 5	*66*	*65*	*59*	*56*	*54*	*54*	*49*	*43*	*34*	***58***
Night (12am-3am) BG + 0, Inaudible	*58*	*57*	*51*	*48*	*46*	*46*	*41*	*35*	*26*	***50***

34. Acoustic Dynamics notes that the $L_{A10(15\text{-}minute)}$ noise spectrum presented in Table 7 by ALC for the Early Night period of 10:00pm to 12:00am, is exactly the same frequency spectrum as the Z-weighted spectrum presented previously in Table 3. Acoustic Dynamics advises that the sum of the octave bands for this time period does not equate to 58 dB(A), as is presented in Table 7.

35. However, it appears as though this spectrum has then been adjusted according to the broadband criteria for all other assessment periods (i.e. the octave-band background noise spectrum is assumed to consist of the same frequency spectrum distribution at all hours).

36. Acoustic Dynamics advises that the correct way to measure the background noise level for the assessment of noise in octave bands, is to deploy a noise logger capable of measuring the background noise level in octave bands. As opposed to taking one measured frequency spectrum and moving it up and down depending on the broadband criteria.

37. As previously stated in paragraphs 11, 12 and 13, the operation of the water fountains in The Corso between 8:00am and 9:00pm greatly control the background noise level of the area, and would contain a vastly different noise spectrum than when they are not operating. Furthermore, it is Acoustic Dynamics experience that the background noise spectrum changes dramatically during the evening and night-time periods, compared to the daytime spectrum, particularly in busy locals such as The Corso, Manly.

38. As such, the use of the background noise spectrum measured during the middle of the day period is highly inappropriate for use in the evening and night-time assessment periods, and the criteria presented by ALC is not correct or relevant to the assessment of noise emission from the venue during the evening and night-time periods.

39. As noted by ALC, the Manly DCP requires that:

> "*The noise level from the licensed premises must not be audible within any habitable room in any residential premises between the hours of 12 midnight and 7am or as otherwise required under conditions of development consent.*"

40. ALC then list their criteria from 12:00am to 3:00am to be equivalent to the background noise level, seemingly as an external background noise level.

41. Acoustic Dynamics also advises that were the proposed venue to emit noise at the same level as background noise, the noise level of the area would increase by 3 dB, in the same way that if one loudspeaker is producing a particular level of noise, and a second loudspeaker is introduced playing the same level of noise, the overall noise level from the two sources of noise would increase.

42. Acoustic Dynamics advises that for a noise to be inaudible, the noise level must be at least 10 dB below the background noise level, and the use of "Background + 0" by ALC to represent the inaudibility criteria is an egregious error.

43. In addition to the above, Acoustic Dynamics notes that Acoustic Logic have provided no assessment for noise internally of 72 The Corso, Manly. Nor have they made any suggestion as to what is the internal background noise spectrum of the habitable rooms of 72 The Corso, Manly.

44. Within Section 4.2.2 Australian standard AS2107:2016, ALC state:

> "*The above Manly DCP criteria outlines noise emission criteria for residential receivers only. We note that there is a hostel/backpackers accommodation located above the proposed premises. As part of the measuremetns, it was requested that access be provided to the accommodation rooms located directly above the proposed premises so that background noise measurements could be undertake, and the transmission loss/noise separation of the existing construction could be measured.*
>
> *Unfortunately, it was not possible to gain access to the adjoining backpackers accommodation to take background noise measurements or complete sample testing.*"

45. Acoustic Dynamics has been advised by Invergowrie Properties that no formal attempt to access the bedrooms of the hostel to undertake background noise measurements was ever made by ALC or their client.

46. ALC then provide their assumed criteria for the hostel in Table 8, stating:

> "*As such, Australian Standard AS2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors can provide guidance as to noise levels within the accommodation directly above the premises. AS2107 provides a range for recommended noise levels in various spaces. Table 1, in Section 5 of AS2107-2016, gives the following recommended range of internal noise levels for hostels.*

Table 8 – Recommended Design Sound Levels

Space / Activity Type	***Recommended Design Sound Level, L_{Aeq} dB (A)***
Common Rooms	*40-45dB(A)$L_{Aeq(when\ in\ use)}$*
Sleeping Areas (Night Time)- *In inner city areas or entertainment districts*	*35-40dB(A)$L_{Aeq(when\ in\ use)}$*
Kitchen Services Areas	*45-55dB(A)$L_{Aeq(when\ in\ use)}$*

47. Acoustic Dynamics advises that because the Manly DCP does not explicitly say that hostels should be assessed to the residential criteria, does not mean that all other accommodations are exempt from assessment against the same criteria.

48. Acoustic Dynamics advises that any habitable room within temporary or permanent accommodation (including any hotel, motel, hostel, barracks or caretaker's quarters, holiday accommodation etc.) in which a person would sleep, should be assessed against the internal inaudibility criteria.

49. Note is also made that *Figure 53A* of the Manly LEP 2013 lists "Hostel" in the "Residential Land Use Group", as opposed to "Business & industrial".

50. Acoustic Dynamics understands the subject site is zoned B2 – Local Centre, and shop-top housing is permitted with consent per the Manly LEP 2013. Should the floors above the proposed venue ever be redeveloped into private residences/apartments, noise intrusion from the venue into these residences would be non-compliant per ALC's predictions, and would pose a significant issue for Council.

51. Acoustic Dynamics also notes that the criteria presented by ALC in Table 8 of their report is misrepresenting how the recommendations of AS/NZS 2107:2016 are presented. ALC has neglected to include within Table 8, what Acoustic Dynamics would consider particularly relevant detail. Acoustic Dynamics presents in **Table 2.3** below, the relevant recommendations and detail of AS/NZS 2107:2016 in relation to hostels:

Table 2.3 – Recommended Design Sound Levels for Different Areas of Occupancy in Buildings (Extract from Australian Standard 2107 Table 1)

Item	Type of Occupancy / Activity	Design Sound Level, ($L_{Aeq,t}$) range
7	RESIDENTIAL BUILDINGS	
	Hostels, residential halls and barracks—	
	Common rooms	40 to 45
	Kitchens and service areas	45 to 55
	Sleeping areas (night time)—	
	Hostels, residential halls and barracks in inner city areas or entertainment districts or near major roads	35 to 40

52. Acoustic Dynamics notes that the criteria selected by ALC is listed under the heading "Residential Buildings" in AS/NZS 2107:2016. As such, we question their choice to not assess the rooms of the hostel immediately above the venue against the residential criteria of the Manly DCP 2013.

53. Further, Acoustic Dynamics advises that noise emission from licensed venues is required to be assessed in octave bands, as it appropriately assesses the impact of low-frequency noise from amplified music. By assessing noise from amplified music in broadband, single-number decibel levels, the level increase of the low frequencies may not be represented as the overall level is controlled by noise in higher frequencies, and is not appropriate for the proposed venue.

54. Within Section 5 – Noise Emission Assessment, ALC present their assessment of noise emission to their chosen receivers. ALC state:

> "*The main potential sources will be patron noise within internal area and live music. Noise from the various activities associated with the proposal has been predicted at the potentially affected receivers as identified in Section 2.1. Noise emissions have been assessed to the nearest residential and boarding house receivers.*"

55. ALC then provide the assumptions used in their calculations within Section 5.1:

> "*Predicted noise levels within the venue are made based on the following assumptions:*
>
> - *The venue is filled to capacity with 534 patrons.*
> - *Live music is played up until 12am at an assumed 99dB(A) L_{10} sound pressure level in the space (based on measurements conducted by this office).*
> - *Amplified music is played between 12am and 3am at 92dB(A) L_{10} sound pressure level in the space*
> - *That typical patron vocal sound power levels are: Up to 77dB(A)L_{10}, 1 in 2 speaking (loud voice)*
> - *The tenancy will operate between 7am-3am*
> - *The recommendations in Section 5.4 are implemented*
> - *A typical live music sound spectrum as follows:*

Noise Source	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	A-wt
Amplified music	*112*	*110*	*100*	*93*	*90*	*88*	*87*	*83*	***99***

- *A typical amplified music sound spectrum as follows:*

Noise Source	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	A-wt
Amplified music	*88*	*94*	*90*	*89*	*88*	*83*	*74*	*76*	***92***

- *A typical sound spectrum of a person as follows:*

Noise Source	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	A-wt
Raised Voice	*62*	*70*	*70*	*76*	*73*	*68*	*59*	*47*	***77***

56. Acoustic Dynamics notes that the Manly DCP 2013 also requires the assessment of noise emission patrons exiting the venue and mechanical plant and equipment in octave-band centre frequency (31.5 Hz to 8 kHz inclusive). No such assessment has been completed by ALC, and of the noise sources presented, no level has been presented for the 31.5 Hz octave band.

57. Table 9 within Section 5.2 Noise Emissions to Residential Receivers presents the results of ALC's calculations to the "Closest Residential Receiver" determined to be 72 The Corso, Manly, following the implementation of the recommendations within Section 5.4 of their report. ALC indicate that compliance is achieved with their determined criteria at their selected receiver.

58. Further to paragraphs 47-52 above, Acoustic Dynamics advises that the hostel immediately above the proposed venue is the closest residential receiver, and is required to be assessed to the residential criteria of the Manly DCP.

59. Further to paragraphs 34-4338 above, Acoustic Dynamics advises that the criteria used by ALC during the evening, early night and night-time assessment periods is inappropriate, and not based on realistic background noise levels during these periods. Additionally, no explanation is provided by ALC as to why no criteria was presented and used for the habitable rooms of the assessed residential receiver between 12:00am and 3:00pm.

60. Within Table 10 of Section 5.3 Noise Emission to Internal Receivers – Backpackers Accommodation (63 The Corso), ALC present the results of their calculations to internal areas of the hostel immediately above the proposed venue, following the implementation of the recommendations within Section 5.4 of their report. ALC assess noise intrusion into the rooms of the hostel immediately above the venue in single-number broadband noise levels.

61. Within Table 10, ALC indicate that noise intrusion into the hostel rooms above the mezzanine area of the venue are expected to receive L_{Aeq} 39 dB(A) during Live Music performances within the proposed venue, which they deem to achieve compliance with their selected criteria of

35-40 dB(A). Acoustic Dynamics advises that should noise emission be assessed against the recommendations of AS/NZS 2107:2016, a compliant noise level should be less than the lower of the range provided, to ensure a conservative assessment, and protect the amenity of the receivers being assessed.

62. Further to paragraphs 34-4338, 47-52 and 53 above, Acoustic Dynamics advises that the sleeping areas of the hostel above the proposed venue should be assessed in octave-bands, to the criteria of the Manly DCP, and based on a background noise level measured during the appropriate assessment period.

63. Regardless, Acoustic Dynamics advises that ALC's assertion that noise emission to 1 dB less than the recommended maximum for the hostel rooms, as assessed for the rooms above the mezzanine area of the venue, shows a lack of conservatism and consideration for the sensitive use of the receiver being assessed, which would normally be expected of an independent acoustic consultant.

64. Section 5.4 of the ALC report presents ALC's recommendations to mitigate noise emission to compliant levels at the most sensitive receivers. ALC state:

"*The following is recommended to achieve the noise levels detailed in Section 4.1.2.*

- *All external windows and doors are to remain closed between 10pm and 7am or anytime while live music is played (except when required for egress by patrons or staff).*
- *External windows and doors are to be constructed with minimum 10.38mm aminate glazing (Rw35).*
- *Minimum of 60% ceiling area of the restaurant is to be treated with absorptive lining achieving an NRC of 0.8 (equal to Autex QuietSpace Panel).*
- *Any fixed speakers are to be vibration isolated by NRD mounts or equal. Where subwoofers are installed, they are to be mounted within 25mm static deflection springs. Alternative isolation arrangements will also be acceptable pending review of the finalised speaker layout selections.*
- *Signs are to be displayed at the entry / exit of the venue reminding patrons to minimise noise when departing premises, especially after 10pm.*
- *All internal walls are to be constructed discontinuous to the structural building elements (e.g. 20mm spacing between any stud wall/plasterboard and masonry/concrete wall, or other structural elements which connect to the hostel.*"

65. Acoustic Dynamics notes that the entry/exit for the proposed venue consists of a single glazed door system. Given the capacity of the venue (a proposed 534 patrons), Acoustic Dynamics has significant concerns that the doors will constantly be opened to allow for patron ingress/egress, and has not been considered within the ALC assessment. Acoustic Dynamics advises that an alternative door design is required to ensure noise emission through the entry doors to the venue are adequately controlled.

66. Additionally, ALC present in Section 5.4.1 Indicative Ceiling Constructions, their recommendations for the ceiling construction separating the venue from the rooms of the hostel above. ALC state:

"*It is noted that access to the backpacker's accommodation was not granted and thus the acoustic performance of the existing concrete slab structure was unable to be tested. As a result, construction advice is indicative only and we recommend the below constructions are tested prior to occupation and reviewed by the project acoustic consultant. Noise emission calculations have been based off the predicted transmission loss performance of the below constructions. In-situ performance may vary based on the existing base building structure.*

- *Indicative ceiling constructions are as follows:*
    - *Above the mezzanine:*
        - *Concrete slab, 250mm air gap with 2 x 110mm thick glasswool insulation (11kg/m^3) and 4 layers of 16mm thick fire rated plasterboard suspended on resilient hangers (indicatively spring isolation).*
    - *Everywhere else above the restaurant area:*
        - *Concrete slab, 600mm air gap with 2 x 110mm thick glasswool insulation (11kg/m^3) and 4 layers of 16mm thick fire rated plasterboard suspended on resilient hangers (indicatively spring isolation).*"

67. Per paragraph 45 above, Acoustic Dynamics has been advised by the owners and operators of the hostel that no formal attempt to access the hostel was made by ALC or their client.

68. Within Section 6 Conclusion, ALC state:

    "*Provided the recommendations in Section 5.4 of this report are adopted, noise emission to all nearby development will achieve the requirements of Manly council Development Control plan and NSW Department of Industry Office of Liquor and Gaming Guidelines.*"

69. As discussed above, Acoustic Dynamics advises that the assessment of noise emission from the proposed venue by ALC has:

    1. Inappropriately assessed the most sensitive receivers near the proposed venue;
    2. Inappropriately and incorrectly calculated the assessment criteria for the project;
    3. Neglected to include all required noise sources per Manly DCP 2013 in their assessment of noise emission from the proposed venue; and
    4. Provided recommendations that would not appropriately or realistically mitigate noise emission from the venue during operation.

70. Acoustic Dynamics advises that no part of the report completed by ALC and submitted in support of the development application can be relied upon as an accurate assessment of noise emission from the proposed venue to the nearest sensitive receivers.

4 ACOUSTIC DYNAMICS' INVESTIGATIONS & DISCUSSION

71. Given our concerns with the noise emission assessment completed by ALC, Acoustic Dynamics has attended site to conduct inspections and noise measurements, and completed modelling and calculations for an assessment of noise emission from the proposed venue to the nearest residential receivers within the hostel immediately above.

72. Acoustic Dynamics attended and conducted operator-attended background noise measurements within the rooms of the hostel immediately above the proposed venue on Tuesday 17 May 2022 between 11:00pm and 12:00pm. The following background noise spectrums were measured:

Table 4.1 Octave Band Background Noise Level Within Nearest Residential Receivers

Location	Assessment Period	Relevant $L_{A90,\ 15minute}$ Internal Background Noise Level [dB] Octave Band Centre Frequency [Hz]									
		32	63	125	250	500	1K	2K	4K	8K	OA
Room 113, 63 The Corso (**Internal Windows Closed**)	Late Evening (11pm to 12am)	1	8	13	13	13	11	11	12	10	**21**
Room 113, 63 The Corso (**Internal Windows Open**)	Night-time (11pm to 12am)	5	15	20	25	29	30	28	23	14	**35**

73. Further to the above, Acoustic Dynamics presents the relevant residential noise criteria for the late evening and night-time periods for residential receivers in **Table 4.2** below.

74. It is noted that the internal background noise measurements were measured during the early night period (11:00pm to 12:00am) are being used for the internal criteria in the night-time period (12:00am to 3:00am), and the internal background noise levels may be even lower than measured. However, Acoustic Dynamics is satisfied that the measured internal background is conservative enough for the point of this exercise.

75. Further, external background noise levels are calculated by accounting for 6.38mm laminated glazing reducing the background noise level to the levels measured. The levels have then been adjusted to the broadband A-weighted background noise levels measured and calculated by ALC within Table 7 of their report (replicated in paragraph 33 above). We also note that the ALC background octave-band noise levels are presented without A-weighting, whereas the levels in **Table 4.2** below are presented with A-weighting applied in each octave-band.

76. Acoustic Dynamics notes that for a noise to be inaudible within a habitable room, the subject noise should be 10 dB below the ambient background noise level in each octave-band.

Table 4.2 Octave Band Noise Emission Criteria at Nearby Residential Receivers

Location	Assessment Period	Method for Calculation of Criteria	Relevant $L_{A10,\ 15minute}$ External Noise Emission Criteria [dB] Octave Band Centre Frequency [Hz]									
			32	63	125	250	500	1K	2K	4K	8K	OA
Residential Receivers (**Internal Windows Open**)	Measured Internal Background (L_{A90})[2]		5	15	20	25	29	30	28	23	14	35
	Night-time (12am to 3am)	Octave Band $L_{A10} \leq$ BG (L_{A90}) -10 dB	**20[3]**	**11[3]**	**10**	**15**	**19**	**20**	**18**	**13**	**12[3]**	**26**
Residential Receivers (**Internal Windows Closed**)[1]	Measured Internal Background (L_{A90})[2]		1	8	13	13	13	11	11	12	10	21
	Night-time (12am to 3am)	Octave Band $L_{A10} \leq$ BG (L_{A90}) – 10 dB	**20[3]**	**11[3]**	**6[3]**	**3**	**3**	**2[3]**	**1**	**2**	**12[3]**	**11**
Sound Transmission Performance of 6.38mm lam glazing TL[1]			10	17	20	24	31	35	36	37	40	-
Residential Receivers (**External**)	Night-time (12am to 3am)	Calculated External Background Noise Level[2]	11	25	33	37	44	46	47	49	50	55
		Octave Band $L_{A10} \leq$ BG (L_{A90}) + 0 dB, (adjusted to ALC reported background noise level)	**20[3]**	**20**	**28**	**32**	**39**	**41**	**42**	**44**	**45**	**50**
	Early Night (10pm to 12am)	Octave Band $L_{A10} \leq$ BG (L_{A90}) + 5 dB, (adjusted to ALC measured background noise level)	**20[3]**	**28**	**36**	**40**	**47**	**49**	**50**	**52**	**53**	**58**

Note: 1) Transmission Loss for assumed 6.38mm laminated glazing for rooms of the hostel above the proposed venue.
2) Based on the measured internal octave band night-time background noise level.
3) Level based on threshold of hearing Tf at any Octave Band Centre Frequency as defined in Table 1 of International Standard ISO 226 - Normal Equal-Loudness-Level Contours

77. Acoustic Dynamics has conducted modelling and calculations to determine the predicted noise emission to the residential receivers directly above the proposed venue, within the hostel at 63 The Corso, Manly. Noise levels from music and patron noise within the venue were the same presented by Acoustic Logic within their assessment. Additionally, noise from patron ingress/egress, and mechanical plant was assessed. The following assumptions were made for our assessment:

Table 4.3 Adopted Internal Reverberant $L_{AOCT10,15min}$

Noise Source	Predicted L_{A10} Noise Emission [dB]									
	32	63	125	250	500	1K	2K	4K	8K	OA
Live music & 534 patrons internal of the venue	75	86	94	91	90	90	90	88	82	99
Amplified music & 534 patrons internal of the venue	49	62	78	81	86	88	84	75	75	92

78. Acoustic Dynamics also used the sound power spectrum detailed in **Table 4.4** for the noise of two people entering or exiting the venue, and immediately walking in either direction away from the venue down The Corso. It was assumed 50 patrons enter or exit the venue within a 15-minute period, as moving point sources travelling at 4 km/h:

Table 4.4 Sound Power Levels used for Patron Ingress & Egress

Noise Source	Predicted SWL Noise Emission [dB]									
	32	63	125	250	500	1K	2K	4K	8K	OA
2 patrons ingress/egress	1	19	39	56	66	63	57	51	45	68

79. Additionally, the transmission loss presented in **Table 4.5** was calculated for the ceiling system recommended by Acoustic Logic:

Table 4.5 Transmission Loss of ALC Recommended Ceiling System

Noise Source	Predicted Transmission Loss [dB]									
	32	63	125	250	500	1K	2K	4K	8K	OA
Concrete slab with 2 layers of 110mm (11kg/m^3) insulation, suspended and sprung ceiling grid (minimum 250mm or 600mm cavity, with 4 layers of 16mm fire-rated plasterboard	60	61	64	59	66	73	78	96	99	68

80. Acoustic Dynamics advises there is an industry standard loss of 10 dB of noise from outside an open window to inside an open window.

Table 4.3 Calculated $L_{A10(15min)}$ Octave Band Noise Emission Levels and Criteria

Receiver Location	Assessment Period	Relevant Contributed L_{A90} Noise Emission Criterion Spectrum [dB] & Calculated L_{A10} Noise Emission Octave Band Spectrum At Receiver [dB][2]										Complies?
		32	63	125	250	500	1K	2K	4K	8K	OA	
External Criteria 10:00pm to Midnight[1]		**20[4]**	**28**	**36**	**40**	**47**	**49**	**50**	**52**	**53**	**58**	**-**
63 The Corso Hostel above (External)	All Noise Sources Cumulative[3]	**54**	**56**	**45**	**42**	34	33	29	18	4	56	**No**
Internal Criteria Midnight to 3:00am[1] (Windows Open)		**20[4]**	**11[4]**	**10**	**15**	**19**	**20**	**18**	**13**	**12[4]**	**26**	**-**
63 The Corso Hostel above (Internal)	All Noise Sources Cumulative[3]	**24**	**22**	**19**	**22**	**20**	21	15	-2	-10	30	**No**
Internal Criteria Midnight to 3:00am[1] (Windows Closed)		**20[4]**	**11[4]**	**6[4]**	**3**	**3**	**2[4]**	**1**	**2**	**12[4]**	**11**	**-**
63 The Corso Hostel above (Internal)	All Noise Sources Cumulative - Airborne[3]	4	**15**	**9**	**8**	-1	-4	<0	<0	<0	17	**-**
	Internal reverberant level transmitted through ceiling/floor partition	-11	1	**14**	**22**	**20**	**15**	**6**	<0	<0	25	**-**
	Total	4	**15**	**14**	**22**	**20**	**15**	**6**	<0	<0	25	**No**

Note: 1) Acoustic Dynamics advises that by achieving compliance with the more stringent night time criteria, compliance will also be achieved with the less stringent daytime and evening criteria.
2) External L_{A10} noise emission levels calculated at the nearest receiver location to the relevant source.
3) Calculated noise levels are based on the internal reverberant noise level due to music and patron noise within the venue and patron ingress and egress.
4) Level based on threshold of hearing Tf at any Octave Band Centre Frequency as defined in Table 1 of International Standard ISO 226 - Normal Equal-Loudness-Level Contours.

81. Further to the results above, Acoustic Dynamics advises that the Hard Rock Café, as proposed, will not achieve compliance with the relevant acoustic criteria as determined by Manly DCP 2013.

82. Our results show that significant mitigation measures above those already proposed will need to be implemented to achieve compliance. We note that the exceedances calculated are significant, and may be too large to reduce to complying levels through reasonable and feasible mitigation strategies and construction materials.

83. On this basis, Acoustic Dynamics recommends Council reject the development application.

5 CONCLUSION

84. Acoustic Dynamics has conducted a review of the acoustic report prepared by Acoustic Logic Consultancy (ALC) for the subject development application.

85. Acoustic Dynamics has conducted an extensive review of available reference material, including International and Australian Standards and relevant guidelines in relation to noise emission from licensed venues. We are highly concerned with the accuracy of, and lack of detail contained within, the noise surveys conducted and calculations of the noise emission to the most sensitive receivers, as well as the criteria and assessment periods selected.

86. Acoustic Dynamics recommends Northern Beaches Council reject the subject application.

87. We trust this meets with your immediate requirements. Should you require any further information, please do not hesitate to contact us.

Kind Regards
ACOUSTIC DYNAMICS

JAMES COLLA
Senior Consultant, MDesSci(Audio & Acoustics)

And

RICHARD HAYDON
Principal, BE(Mech), MIEAust, MAAS, MASA, AAAC Chairman

Document	Rev	Date	Prepared	Reviewed	Authorised	Approved
5553L001.JC.220530	0	30 May 2022	JC	RH	RH	