

7 December 2017

WM Project Number: 17038  
Our Ref: MB 071217 bcSCC  
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Dear Marcel

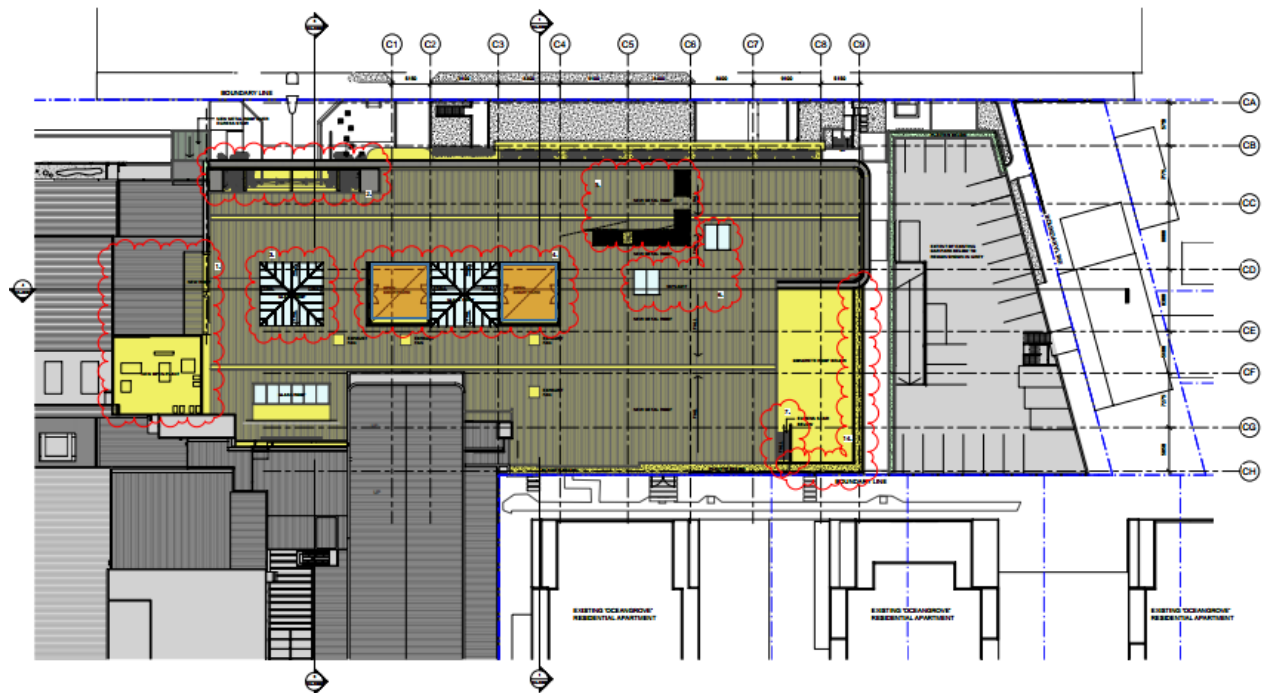
**Re: Dee Why RSL Expansion - Open Roof Acoustic Impacts - Alteration to Southern Courtyard**

We have assessed potential noise emissions from the revised southern courtyard associated with Stage 5 of the Dee Why RSL Expansion. The revision consists of the central area of the club that is proposed to have two sections of open roof because of the removal of glass skylights over courtyards and introduction of internal glass façade. The assessment is based on typical patron noise levels of half the persons speaking in a raised voice.

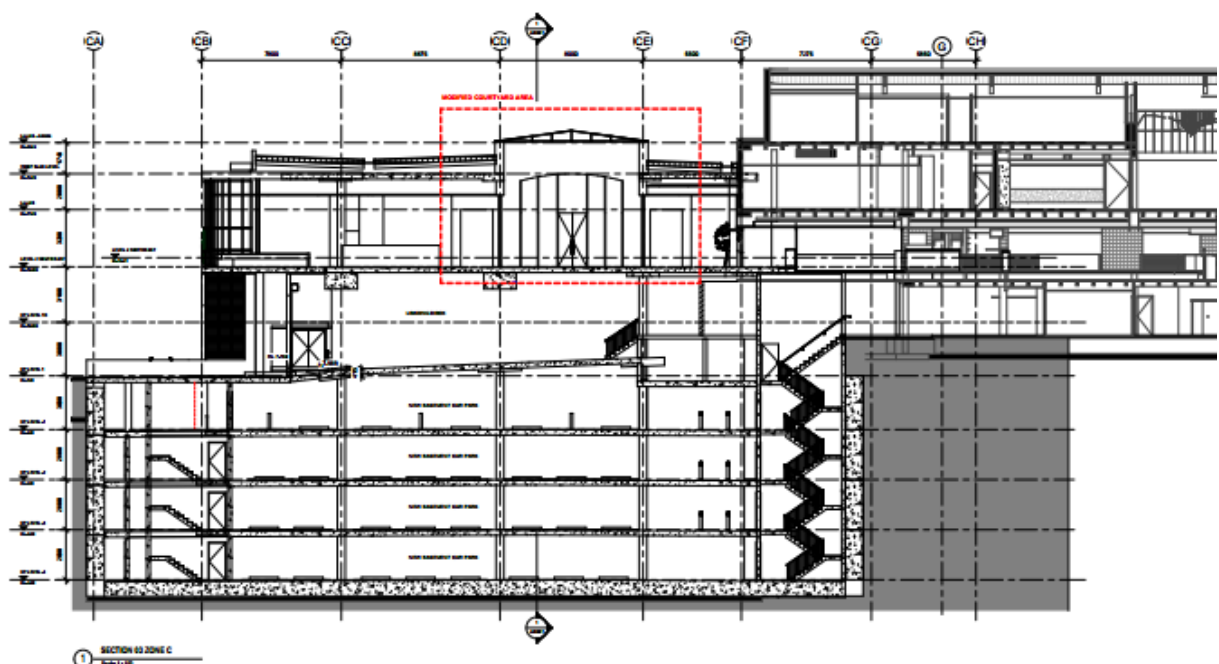
Because of this assessment it has been determined that compliance with established noise criteria will be achieved for proposed operation of the courtyard and increased opening to smoker's terrace when used by club patrons. The following section details these findings.

**Open Central Courtyard**

The proposal for two sections of open roof are shaded as shown in the following figure:



**Figure 2 – East- West Section showing Central Courtyard**



It is proposed that the central section between the two open areas is enclosed by a glass roof. The open areas are separated from the main RSL with doors and windows.

### Noise Criteria.

Recent noise logging that has been conducted for DA 2017/0244 and the northern section of the club has determined that the following noise criteria is applicable at Clarence Avenue Residences and Oceangrove Residences

After midnight, the most stringent noise requirement is inaudibility within residences. This is a function of facade design, area of operable windows and internal noise levels. However, we have found that if external noise levels are 5 - 7 dB below background noise levels then noise is generally inaudible within internal spaces. Therefore, an after midnight external noise screening criterion of background minus 7 dB has been established for the purposes of this assessment.

Based on a review of the above requirements the external noise criteria for the surrounding residences are presented in Table 1. These levels have been based on noise logging that was conducted in the last few years for other project applications associated with the RSL.

**Table 1 External Patron L<sub>10</sub> Octave Band Noise Criteria after Midnight**

Residences	Frequency (Hz)									A
	32	63	125	250	500	1K	2K	4K	8K	
Clarence Avenue*	44	43	41	36	35	33	27	18	7	37
Ocean grove Residences**	50	46	42	40	36	34	29	24	18	39

\* Based on a night background level of 44 dBA

\*\* Based on a night background level of 46 dBA.

### Predicted Noise Level at Residence

Noise levels at surrounding residences have been predicted using computer noise modelling based on advice that the maximum number of patrons in each of the two open areas will be 50 persons. Therefore, modelling has been based on half of these speaking in a raised voice (68 dBA at 1m which is based on current assessment for patrons). The following two tables present resultant noise level at receivers as compared to established noise criteria which has been established based on previous noise logging at residences.

**Table 2 External Patron L<sub>10</sub> Octave Band Noise Level at Clarence Avenue Residences**

Residences	Frequency (Hz)									A
	32	63	125	250	500	1K	2K	4K	8K	
After midnight criteria	44	43	41	36	35	33	27	18	7	37
Predicted Levels	19	29	30	34	36	34	27	16	4	33

**Table 3 External Patron L<sub>10</sub> Octave Band Noise Level at Oceangrove Residences**

Residences	Frequency (Hz)									A
	32	63	125	250	500	1K	2K	4K	8K	
After midnight criteria	50	46	42	40	36	34	29	24	18	39
Predicted Levels	15	29	30	34	37	36	30	22	12	37

A review of results indicates that general compliance with established noise criteria will be achieved for proposed operation of the courtyards and smokers terrace. It is noted that small exceedance of 1-2 dB in a couple of octaves are indicated however these exceedances are within prediction tolerances and acoustically insignificant.

Should amplified music be played in the RSL adjacent to these spaces then the glass doors and windows to the courtyards will need to be closed regardless of time of the day that music occurs.

We trust this information is sufficient

Yours faithfully

**WILKINSON MURRAY PTY LIMITED**



**Brian Clarke**