

14 March 2017

WM Project Number: 10232-R1
Our Ref: LL140317 NG
Email: Peter.Gutmann@lendlease.com

Mr Peter Gutmann
Lendlease
Level 14, Tower Three, International Towers Sydney
300 Barangaroo Avenue
BARANGAROO NSW 2000

Dear Peter

Re: Barangaroo South, Building R1 – S96 Modification

INTRODUCTION

This letter summarises our review of the S96 in relation to the proposed modification of the wording in relation to the provision of acoustic absorption above the occupied external areas of the building.

CONDITIONS OF APPROVAL - F8

F8 COMPLIANCE WITH THE ACOUSTIC REPORT PRIOR TO CONSTRUCTION AND OR OCCUPATION CERTIFICATES

(1) All performance parameters, requirements, engineering assumptions and recommendations contained in the acoustic report Proposed Restaurant and Bar, Building R1, Barangaroo Precinct ref 46.5164.R9C:MSC, prepared by The Acoustic Group and dated 12 May 2016, must be implemented into the design and/or operational management of the premises prior to the commencement of the use of the premises, unless otherwise agreed by the Secretary. Assumptions and recommendations include:

(a) the building facade glazing must be a minimum thickness of 10.38mm;

(b) the underside of the external balconies have acoustic absorption above slotted timbers. Such absorptions shall have a Noise Reduction Coefficient (NRC) not less than 0.85;

(c) no speakers may be placed on the northern balconies and terrace;

(d) any external speakers on the southern and western balconies and terraces must be located in the ceiling and directed downwards;

(e) the glass facades on the northern side of the building must be closed when music greater than 75dB(A) at three (3) metres from any speaker is played inside the building.

(2) No external drop down blinds or shield walls (as suggested by the acoustic report) are approved as part of this consent.

(3) Prior to the issue of an Occupation Certificate, a suitably qualified acoustic consultant is to provide a written Acoustic Verification Report is to be submitted to and approved by the Secretary that confirms that the development complies with the requirements set out in the acoustic report and in (1) above.

The following is an extract from the DA acoustic report (prepared by The Acoustic Group), which is referred to in part 1 of condition F8.

In considering noise emissions, we have assumed the glass facades are 10.38mm glass by reason of the size of the panels and the underside of the external balconies have acoustic absorption above the slotted timbers. Such absorption shall be suitable for the outdoor space and have a NRC (Noise Reduction Coefficient) not less than 0.85 incorporated into the design.

The wording is slightly different to part 1(b).

PROPOSED CONDITION

The Acoustic Group have suggested the following rewording of part 1(b) which they consider will still allow them to satisfy the outcomes expected in their DA report.

The underside of the external balconies shall incorporate acoustic absorption above the horizontal plane of slotted timbers, excluding those areas above which are translucent panels. The extension of the acoustic absorption into the outer curved section of the slotted timbers (with respect to the cross-section elevation) shall be subject to the practicalities of installing such absorption having regard to the egress of rain. Such absorption shall be suitable for the outdoor space and have an NRC (Noise Reduction Coefficient) not less than 0.85 incorporated into the design.

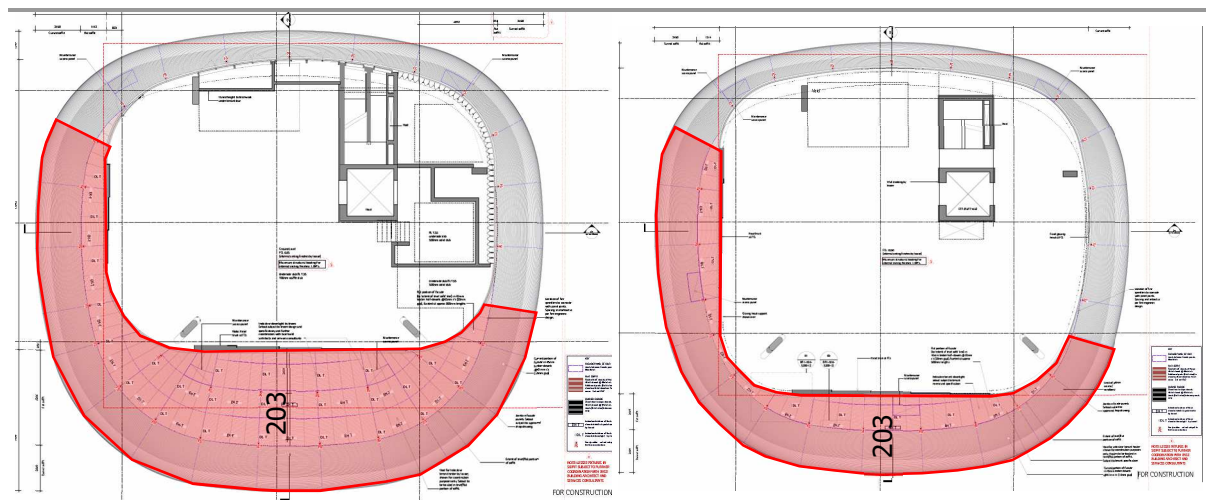
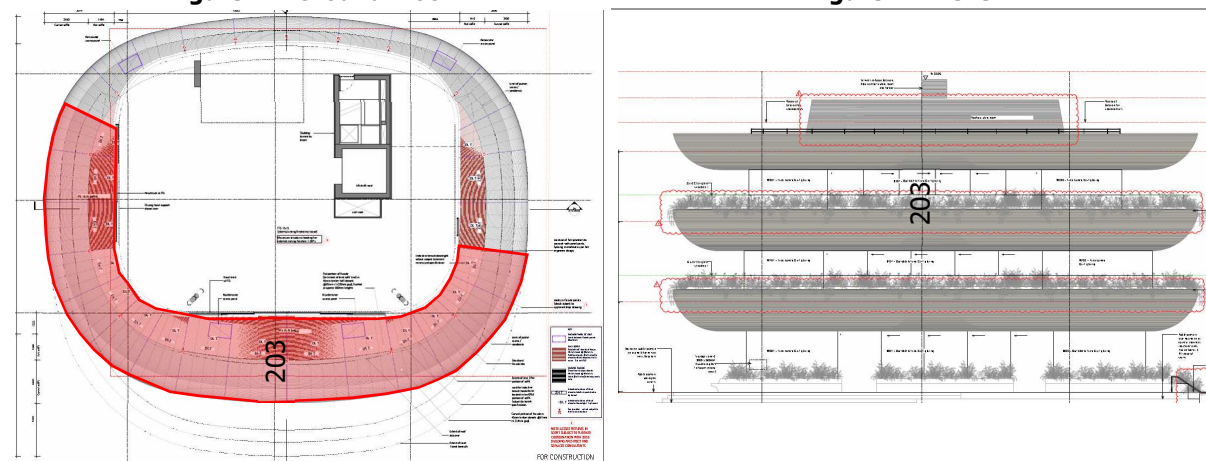
DISCUSSION & SUPPORT FOR REWORDING

There are three levels of the building where patrons will be located outside and under the slotted timber areas mentioned in the conditions. Figures 1-4 show the RCP for the 3 floors and a west elevation. The areas highlighted in red represents the extend of slotted timbers above areas occupied by patrons. The most critical area on each level is the northern elevation (north of grid line 203) as this is closest to the residential building R9.

The overall noise transmitted to the residences from the premises is a combination of the noise from all floors based on the total number of patrons and vocal effort. The noise from each floor is partially influenced by the amount of absorption in the areas directly above patrons in the external areas. The primary source of noise is the direct path from source to receiver. The absorption may reduce the amount of any reflected noise from source to receiver. The absorption may also reduce reflections from the source back towards the source and influence the degree of reverberation in the external areas which causes patrons to increase their vocal effort. The increased vocal effort also results in slightly higher noise transmission by both the direct and any reflected paths.

The external balconies have a curved slotted timber fascia, so the use of the word "underside" requires clarification. However, given noise is a critical issue at this location then we consider the absorptive treatment should be optimised across the whole premises. There are areas where an absorptive material with higher performance than NRC 0.85 can be used to offset "perceived" elimination of absorptive treatment in some areas.

Since the conditions and Noise Masterplan have strict noise limits to be achieved, then it is ultimately a combination of use of absorption and management of the premises which will achieve this criteria. For this reason, the condition can be reworded to allow a more flexible provision of absorption in some areas, with negligible change in acoustic outcomes.

Figures 1-4 Reflected Ceiling Plans Showing Extent of Slotted Timbers Above Occupied Areas and West Elevation**Figure 1 – Ground Floor****Figure 2 – Level 1****Figure 3 – Level 2****Figure 4 – West elevation**

We trust this information is sufficient.

Yours faithfully

WILKINSON MURRAY

Neil Gross
Director