

MANAGING DIRECTORS

MATTHEW PALAVIDIS
VICTOR FATTORETTO

DIRECTORS

MATTHEW SHIELDS
BEN WHITE



20150802.6/0305A/R6/JS

03/05/2018

Tallawoladah Pty Ltd
C/- Altus Group

Email: nick.marston@altusgroup.com

ATTN: NICK MARSTON

The Campbell's Stores, The Rocks - Bay 11 Modification Acoustic Review

1 INTRODUCTION

This letter has been prepared in relation to potential noise impacts associated with the proposed alterations to the approved State Significant Development of Campbell's Stores, The Rocks (SSD 7056).

The proposal includes the alteration of the existing plant room design within Bay 11, specifically the provision of additional ventilation openings within the roof and façade. This assessment addresses noise impacts associated with the mechanical plant within the Bay 11 plant room with consideration to the proposed roof and façade openings to ensure that noise emissions from plant operation comply with the project noise emission criteria.

SYDNEY
A: 9 Sarah St
MASCOT 2020
T: (02) 8339 8000

SYDNEY MELBOURNE BRISBANE CANBERRA
LONDON DUBAI SINGAPORE GREECE

ABN: 11 068 954 343

The information in this document is the property of Acoustic Logic Consultancy Pty Ltd ABN 11 068 954 343 and shall be returned on demand. It is issued on the condition that, except with our written permission, it must not be reproduced, copied or communicated to any other party nor be used for any purpose other than that stated in particular enquiry, order or contract with which it is issued.

I:\Jobs\2015\20150802\20150802.6\20180503JSA_R6_Bay 11 Modification Acoustic Review.docx

2 ACOUSTIC REQUIREMENTS

Acoustic impacts associated with the proposed changes have been assessed against the noise emission criteria established as part of the development application. As is consistent with the approved 'Noise Impact Assessment' dated 21 October 2016, the site is addressed in accordance with the NSW Industrial Noise Policy. The site is located within an urban noise environment and is considered as such in terms of the 'amenity' noise requirement.

Pursuant to the INP, noise emissions are to be addressed in accordance with the 'amenity' and 'intrusiveness' criteria whichever be the more stringent objective.

Table 1 – Mechanical Noise Emission Objectives

Receiver Type	Time of Day	Amenity Noise Emission Objective, L_{eq} period	Intrusiveness Noise Emission Objective, L_{eq} 15min
Residential (urban)	Day	60	58
	Evening	50	58
	Night	45	55
Commercial	When in use	65	-

Noise emissions from mechanical plant have been assessed against the amenity noise emission objectives. Entertainment noise (i.e. patrons) is assessed against the requirements of the NSW Liquor and Gaming standard conditions. Each noise source (mechanical and patron/music noise) is generally addressed separately, however concern has been raised with regard to cumulative noise impacts from the operation of the site.

For the purposes of this assessment, the cumulative noise impact from mechanical plant and patron noise has been addressed in accordance with the INP intrusiveness requirement given that the NSW Liquor and Gaming requirement is also based on the background noise level rather than a predefined amenity noise level.

In this regard we note:

- Noise emissions associated with entertainment noise (i.e. patrons and the like) was predicted to be 55dB(A) L_{eq} 15min and 52dB(A) L_{eq} 15min for operation 'up to 10pm' and 'between 10pm and 12am' respectively.
- Mechanical noise objectives are based on the amenity noise target for the respective periods.
- Cumulative noise impacts will be the combined noise from entertainment and mechanical plant and assessed against the intrusiveness 'background + 5dB(A)' criteria.

Table 2 – Cumulative Noise Emission Assessment

Time of Day	Predicted Entertainment Noise Levels (patrons), dB(A) L_{eq} 15min	Mechanical Noise Emission Target, dB(A) L_{eq} period	Cumulative Noise Level from Patrons and Mechanical Plant	Intrusive Noise Target, dB(A) L_{eq} 15min
Evening (up to 10pm)	55	50	56	58
Night (10pm to 12am)	52	45	53	55

The cumulative noise level in the table above is the combination of the predicted entertainment noise levels previously undertaken and mechanical noise emission targets (or amenity criterion). This is then compared against the intrusive noise target as a measure of compliance from cumulative noise sources.

By ensuring that mechanical plant complies with the project amenity noise targets, the predicted cumulative noise level from the operation of the site will comply with the project intrusive noise targets.

3 ASSESSMENT OF MECHANICAL PLANT

Mechanical plant proposed for the site has been assessed with consideration to the proposed openings in the roof and façade of the development. Acoustic treatments have been nominated to ensure that noise emissions comply with the amenity noise targets such that the cumulative noise levels from the site will comply with the intrusive noise targets as per above.

3.1 MODELLING ASSUMPTIONS

- Proposed ventilation openings are acoustically transparent and are not acoustically treated.
- Mechanical plant within the plant room is treated locally where required to satisfy noise requirements.
- The remainder of the Bay 11 roof is not open for ventilation purposes and is assessed as 0.42mm steel sheeting.

3.2 PLANT EQUIPMENT

The Bay 11 plant room contains the following equipment:

- Kitchen exhaust fans,
- Condenser units x 6,
- Dry cooler.

ALC have been provided with the following noise data and architectural plans for the assessment of the Bay 11 plant room.

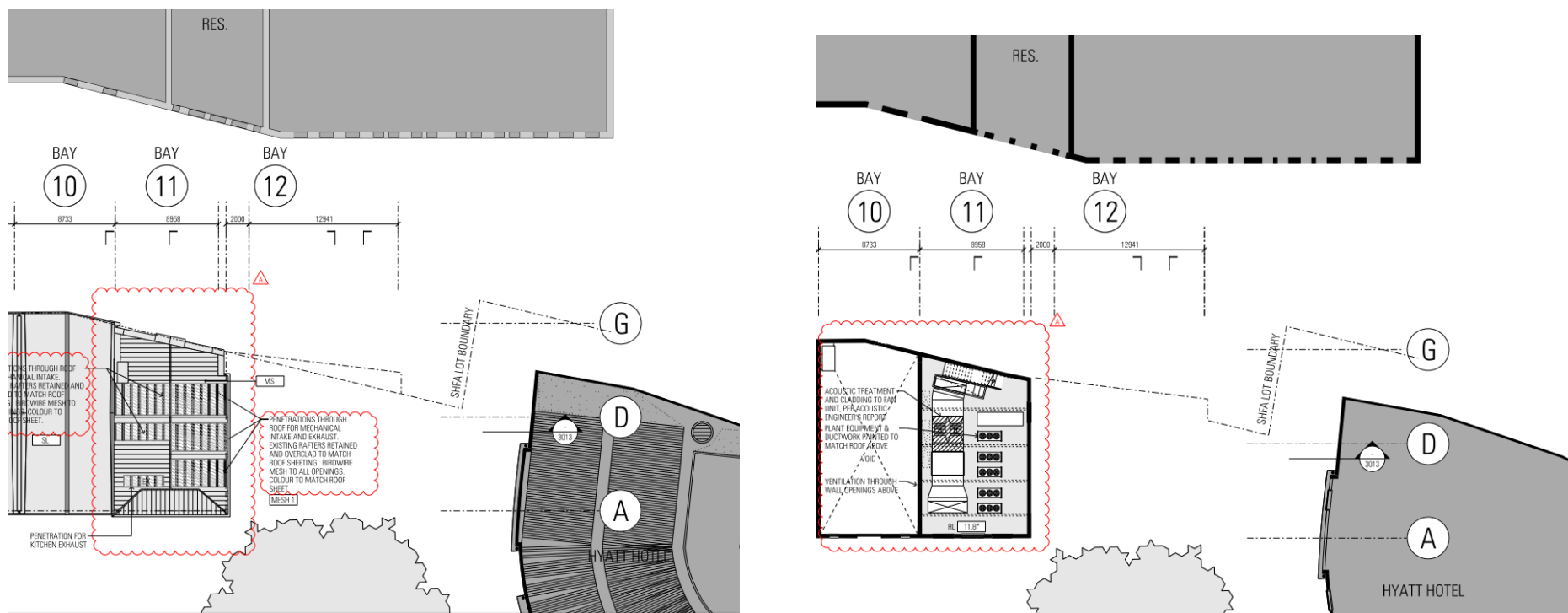


Figure 1: Proposed Bay 11 Plant Room

Table 3 – Mechanical Equipment Schedule

Plant Item	Reference Level	Octave Band Noise Level, dB								Sound Power Level
		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
KEF-1A & 1B	SWL	98	99	103	106	104	100	94	87	108
Dry Cooler	SWL	-	-	-	-	-	-	-	-	77
Condensers – FXMQ	SPL	59	53	52	41	43	38	33	26	-

3.3 PREDICTED NOISE LEVELS

Noise predictions have been conducted to 8 Hickson Road as worst-case receivers given occupants will overlook the entire roof. Noise emissions to the Hyatt will be of similar noise level however the noise criteria to commercial receivers (hotel) is considerably less strict than that associated with residential receivers (8 Hickson Road).

Predicted noise levels take into consideration acoustic treatments nominated in Section 0. As discussed previously, compliance with the amenity noise target will result in compliance with cumulative intrusive noise target in conjunction with entertainment noise (patrons etc).

Predictions are compared against the amenity noise criteria for the night time period (10pm to 7am). It is noted that the majority of plant equipment, particularly kitchen exhaust, would not be in operation at this time (i.e. past 12am). Predictions are provided for operation between 10pm and 12am which will form part of the night period.

Table 4 – Predicted Noise Levels

Receiver	Predicted Mechanical Noise Level, dB(A) L_{eq}	Amenity Noise Criteria, dB(A) L_{eq}	Complies
8 Hickson Road	44	45 (night)	Yes

3.4 DISCUSSION

With regard to the predicted noise levels we provide the following commentary:

- Cumulative operation of patrons and mechanical plant will comply with the intrusiveness noise requirement of 'background + 5dB(A)'.
- Mechanical plant noise, which forms the main purpose of this assessment, will comply with the amenity noise criteria for the night time period (being the more strict assessment period).

Furthermore, it is noted that:

- Noise emissions are typically considered intrusive if they are 5dB(A) above the existing background noise level.
- Predicted noise levels from mechanical plant is up to 6dB(A) below the background noise levels and in context would be considered to have no acoustic impact on surrounding receivers.

On this basis and with consideration to the acoustic treatments recommended for the mechanical plant, noise emissions from the operation of mechanical plant will be acoustically acceptable. Consequently, the proposed changes to the Bay 11 façade and roof for ventilation openings will be acoustically acceptable.

4 RECOMMENDATIONS

The following recommendations are provided based on the current selections of mechanical plant.

4.1 KEF-1A & 1B

- Install an attenuator on the discharge of the fan with a dynamic insertion loss of that provided below.

63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
4	10	21	34	35	28	18	12

- The kitchen exhaust fans are to be enclosed within a 1 x 13mm fire rated plasterboard, 6mm fibre cement sheet or 18mm plywood enclosure. The enclosure is to extend over the duct transitions up to the discharge attenuator.

4.2 DRY COOLER

- No additional acoustic treatment required.

4.3 CONDENSERS

- No additional acoustic treatment required.

4.4 PLANT ROOM ROOF

- No additional acoustic treatment required.

5 CONCLUSION

This letter presents the assessment of noise emissions associated with the proposed changes to Bay 11 of the Campbell Stores redevelopment, The Rocks.

Cumulative noise predictions have been undertaken with consideration to:

- the proposed ventilation openings in the Bay 11 roof and façade;
- equipment selections for the plant room, and
- predicted noise levels associated with patrons and the like.

Acoustic treatments have been nominated in Section 4 to achieve the project noise requirements ensuring no additional acoustic impact on receiver locations.

On the proviso that the recommendations of this report are adopted, the proposed alterations to the development will comply with the project noise emission objectives.

We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'J. Small', is positioned above the printed name.

Acoustic Logic Consultancy Pty Ltd
James Small