

Tuesday 24 September 2013

The Owners – Strata Plan SP 36253
1 Kiara Close
NORTH SYDNEY NSW 2060

Our Reference 120289-05L-DD

For the attention of Mr Bill Thomas

**Acoustic Inspection and Assessment
Proposed Air-Conditioning Equipment Location
1 Kiara Close, North Sydney**

1.0 INTRODUCTION

Acoustic Consulting Engineers Pty Ltd was commissioned by the Owners – Strata Plan SP 36253 to conduct a noise assessment for the proposed air-conditioning equipment for the “*Exempt Development Upgrade*” of the Iora Apartments at 1 Kiara Close, North Sydney (Strata Plan SP 36253).

This report presents an assessment and recommendations so ensure noise from outdoor air condenser units complies with noise assessment objectives.

The findings from the noise assessment and recommendations are site specific and have been prepared for the particular investigation described in this report. The report should not be used in any other context or for any other purposes.

2.0 PROPOSAL

Existing mechanical plant (cooling towers) inside the rooftop plant rooms of the Iora Apartment Buildings have been decommissioned.

Where required, the owner(s) have installed or are proposing to install a split system air-conditioning unit for each residential unit. In most cases, the outdoor condenser units are located at the roof levels of the Iora Buildings. However, due to other considerations, the outdoor air condenser units are required to be located on ground level for the following residential units:

- Iora West: Units 63, 60, 59, 58, 57 and 56;
- Iora North: Units 40, 37, 36, 35 and 34;
- Iora East: Units 21, 18, 17, 15 and 14; and
- Iora South: Unit 6

According to Colin Shears & Associates' (mechanical consultant) specifications, the outdoor air condenser unit consists of Daikin Model No. RZQ160KV4A with a rated sound pressure level of 50dB(A) at 1m (cooling) and 52dB(A) at 1m (heating). These equate to sound power levels of 61dB(A) (cooling) and 63dB(A) (heating).

Acoustic Consulting Engineers Pty Ltd understands that alternative equipment models may be used, provided that the noise emission levels do not exceed the levels specified by the mechanical consultant.

3.0 NOISE ASSESSMENT OBJECTIVES

Clauses 3.2(b)(i) and 3.2(b)(iii) of Strata By-Law No. 74 require that a new condenser unit (external):

- to be mounted on vibration pads in a location so to minimise noise and vibration; and
- does not exceed 45dB(A) during day and 35dB(A) at night or such other acceptable sound rating as may be specified by an Authority or the Owners Corporation from time to time.

Clauses 2.6(f1)(i) and 2.6(f1)(ii) of the State Environment Planning Policy (Exempt and Complying Development Codes) 2008 – REG 2.6 require that domestic air-conditioning equipment shall not emit

- during peak time-at a noise level that exceeds 5dB(A) above the ambient background noise level measured at any property boundary, or
- during off peak time-at a noise level that is audible in habitable rooms of adjoining residences.

For the purpose of assessing inaudibility, noise level from the outdoor condenser unit is taken to be 10dB below the background noise level.

With reference to *Report No. 120289-01L-DD Rev01* dated 6 August 2012, the measured night-time L_{A90} background noise level was 44dB(A). Accordingly, noise from the outdoor condenser unit should not exceed 34dB(A) during night-time outside the nearest units' habitable rooms in order to comply with the above requirement.

4.0 RECOMMENDATIONS

A site inspection was undertaken on Monday 23 September 2013 for the purpose of identifying suitable locations for the outdoor condenser units in order to achieve the noise assessment objectives.

Tables 1 and 2 present a summary of the recommended locations for the outdoor condenser units and predicted noise levels at the most affected receivers.

It can be seen from *Table 2* that, with the recommended locations in *Table 1* and *Appendix 1* and equipment noise levels specified by the mechanical consultant, the predicted noise levels from the outdoor condenser units comply with the assessment objectives outlined in *Section 3.0* of this document.

Table 1 ***Recommended Locations for Outdoor Air Condenser Units***

Building	Unit Number	Recommended Location for Outdoor Condenser Unit	Photograph Number (Ref: <i>Appendix 1</i>)
Iora West	63	Close to wall outside bedroom OR kitchen	1
	60	Close to wall outside kitchen	2
	59	Close to wall near garden water taps	3
	58	Close to dining room glazed wall/door	4
	56	Corner of masonry walls in common garden and as low as possible to the ground level	5
Iora North	40	Corner of glazed wall/door and masonry wall with intake air louvre to car-park fan room OR close to masonry wall near living area	6
	37	Corner of glazed wall/door and masonry wall with intake air louvre to car-park fan room OR close to masonry wall near living area	7
	36	Corner of bedroom glazing and masonry wall OR corner of balcony masonry wall and glazed wall. However, the owner does not require A/C equipment at present.	8a and 8b
	35	Corner of bedroom and dining room glazed wall/door OR corner of bedroom and bedroom glazed wall/door	9a and 9b
	34	Corner of masonry wall and bedroom glazed wall/door OR corner of bedroom and bedroom glazed wall/door	10a and 10b
Iora East	21	Corner of masonry walls in courtyard (above ventilation fan outlet)	11
	18	Corner of glazed wall/door and masonry wall with intake air louvre to car-park fan room OR close to masonry wall near living area	12a and 12b
	17	Rear garden in the gravel area	13
	15	Corner of masonry wall and bedroom glazed wall/door	14
	14	Corner of masonry walls in courtyard	15
Iora South	6	Corner of masonry walls in the courtyard	16

Table 2 ***Predicted Noise Levels with Recommended Outdoor Air Condenser Locations, dB(A)***

Building	Unit Number	Predicted $L_{Aeq,15min}$ Noise Level at Nearest Residential Unit, dB(A)
Iora West	63	31
	60	31
	59	30
	58	34
	56	31
Iora North	40	30
	37	30
	36	33
	35	34
	34	34
Iora East	21	30
	18	30
	17	No nearby residential unit
	15	31
	14	30
Iora South	6	30

5.0 SUMMARY

Acoustic Consulting Engineers Pty Ltd was commissioned by the Owners – Strata Plan SP 36253 to conduct a noise assessment for the proposed air-conditioning equipment for the “*Exempt Development Upgrade*” of the Iora Apartments at 1 Kiara Close, North Sydney (Strata Plan SP 36253).

With the mechanical consultant’s specified equipment noise emission level and implementation of the recommendations in this report, the predicted noise levels from the outdoor air condenser units comply with the environmental noise assessment objectives.

The recommendations in this report relate to acoustic considerations only. If required, other considerations should be addressed by others.

We trust the information in this letter is satisfactory. Please do not hesitate to contact our office should further information or clarification be required.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'D. Dang', with a stylized flourish extending from the end.

Dan Dang
Principal Acoustic Engineer
Acoustic Consulting Engineers Pty Ltd

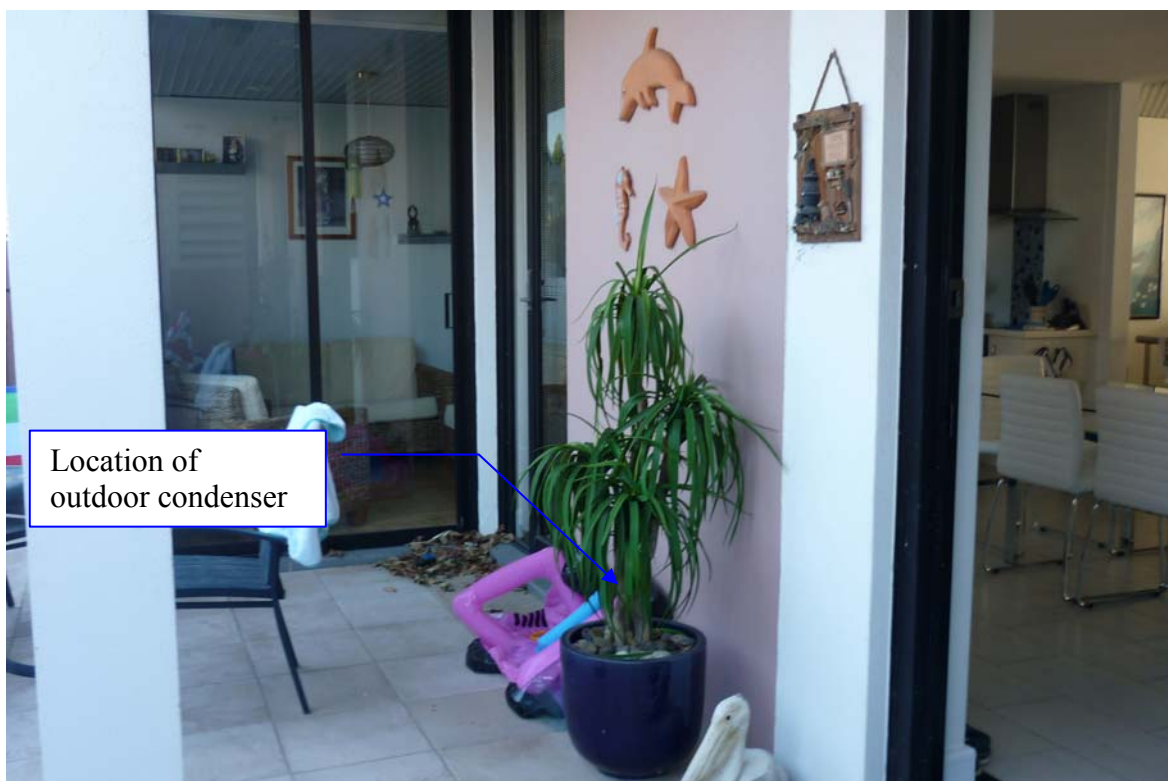
Appendix 1

RECOMMENDED LOCATION FOR OUTDOOR AIR-CONDENSER UNIT

Iora West – Unit 63 – Photograph No. 1



Iora West – Unit 60 – Photograph No. 2



Iora West – Unit 59 – Photograph No. 3



Iora West – Unit 58 – 1 Photograph No. 4

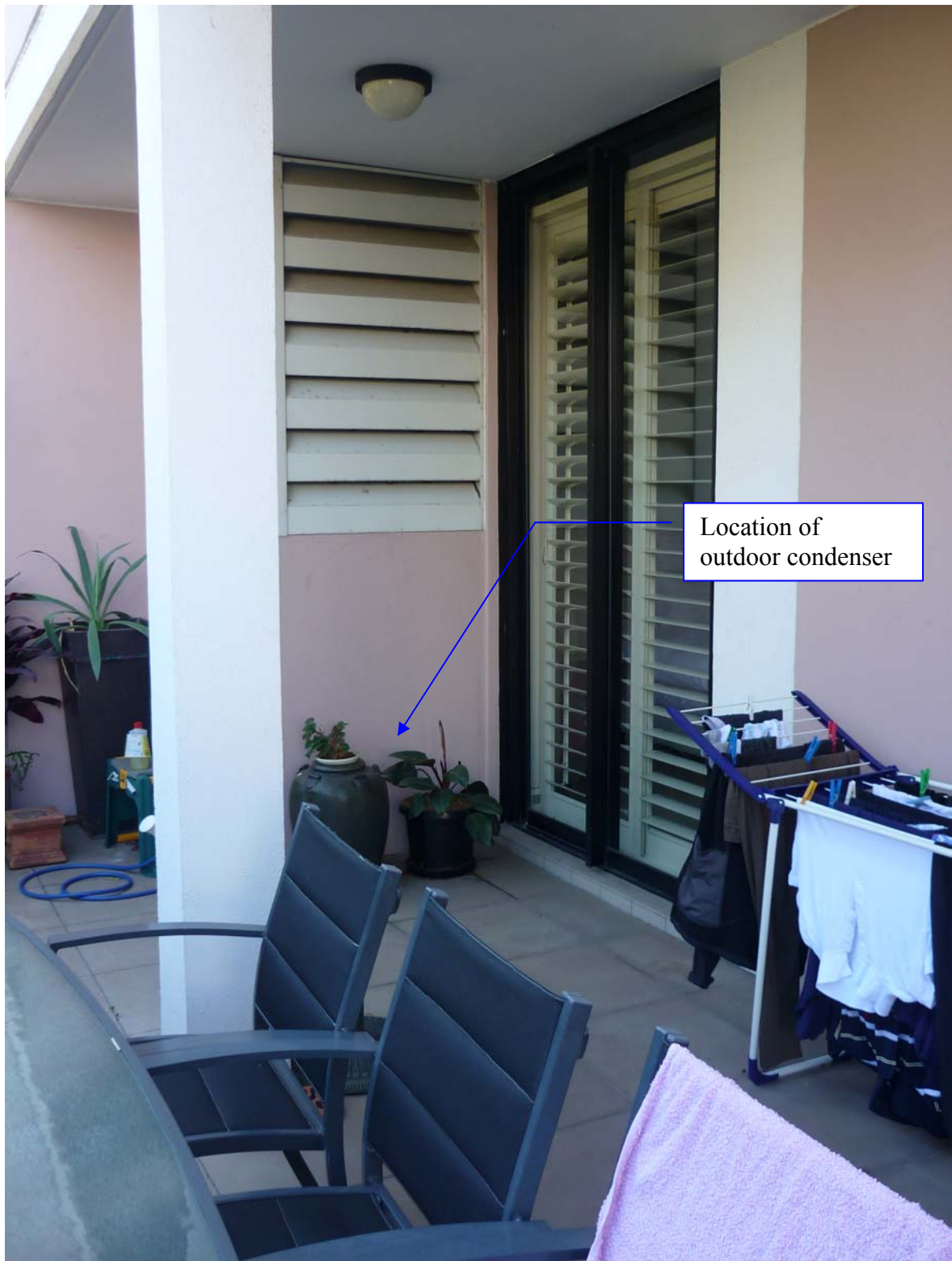


Location of outdoor
condenser (the owner
indicates that the sliding
door is not used)

Iora West – Unit 56 – Photograph No. 5



Iora North – Unit 40 – Photograph No. 6



Iora North – Unit 37 – Photograph No. 7



Iora North – Unit 36 – Photograph No. 8a



Iora North – Unit 36 – Photograph No. 8b



Iora North – Unit 35 – Photograph No. 9a



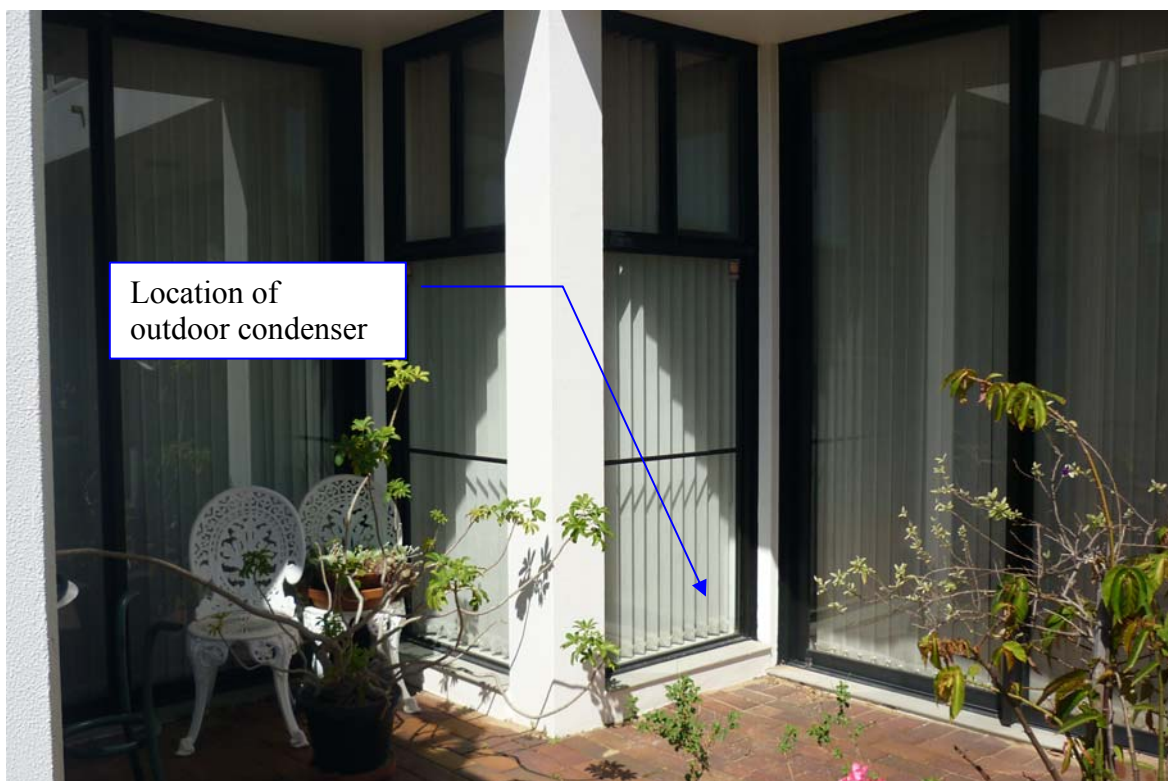
Iora North – Unit 35 – Photograph No. 9b



Iora North – Unit 34 – Photograph No. 10a



Iora North – Unit 34 – Photograph No. 10b



Iora East – Unit 21 – Photograph No. 11



Iora East – Unit 18 – Photograph No. 12a



Location of
outdoor condenser

Iora East – Unit 18 – Photograph No. 12b



Iora East – Unit 17 – Photograph No. 13



Iora East – Unit 15 – Photograph No. 14



Iora East – Unit 14 – Photograph No. 15



Iora South – Unit 6 – Photograph No. 16

