



19 October 2017

Pinnacle Construction Group
Shop 2, 5-11 Meriton Street
Gladesville NSW 2111
Attention: Leon Kmita

Our ref: 2126829
Your ref:

Dear Leon

23-29 Pacific Parade, Dee Why – residential development Rooftop mechanical plant noise emission assessment

1 Introduction

GHD has prepared an acoustic assessment for the residential development located at 23-29 Pacific Parade, Dee Why.

The key objective of this assessment is to conduct noise measurements of the rooftop mechanical plant associated with the development and undertake computer noise modelling to provide recommendations to ensure compliance with the relevant noise emission criteria.

2 Site description and sensitive receivers

The subject residential development is located within a residential area, in the local government area of Warringah Council. The subject site is located adjacent to Pacific Parade.

Approximately 60 Mitsubishi air-conditioning units are located on the rooftop of the subject development in two (2) separate areas, being one section to the west of the roof and another section to the east of the roof. Additionally, the car-park exhaust fan is also ducted to the rooftop and is included within this assessment.

In terms of acoustical assessment, the nearest residential receivers to the rooftop mechanical plant are as follows:

- Residential receivers within the development
- Residential receivers at 834 Pittwater Road (to the west)
- Residential receivers at 18-22 Sturdee Parade (to the south)
- Residential receivers at 26 Sturdee Parade (to the east)
- Residential receivers at 31 Pacific Parade (to the east)
- Residential receivers 16-22 Pacific Parade (to the north)

3 Background information

Noise emission from mechanical plant associated with the development was assessed at the Development Application stage. This assessment was conducted by Acoustic Logic (report ref 20130841.1/1609A/R0/JR dated 16 September 2014). The report provides the noise emission objectives for the development, however did not specifically assess noise emission from air-conditioning units to nearby sensitive receivers.

4 Relevant noise emission criteria

Warringah Council Development Control Plant has the following control for mechanical noise emission.

“Part D Design

D3 Noise

Requirements

1. Noise from combined operation of all mechanical plant and equipment must not generate noise levels that exceed the ambient background noise by more than 5dB(A) when measured in accordance with the NSW Industrial Noise Policy at the receiving boundary of residential and other noise sensitive land uses.”

In addition to the above, Table 1 below (excerpt from Acoustic Logic’s noise report) presents the relevant noise criteria for the assessment of mechanical plant associated with the development.

Table 1 Relevant noise emission criteria

Time Period	Measured BG noise level	Amenity Criteria	Intrusiveness Criteria	POEO Criteria	Sleep Disturbance
Day	45	55	50	N/A	N/A
Evening	42	45	47	N/A	N/A
Night	37	40	42	35 ¹	52

Notes: 1) Note should be made that Acoustic Logic’s report did not provide numerical criteria to assess compliance with POEO’s Noise Control Regulation (residential A/C units are to be inaudible within a habitable room in any other residential premises). As such, we propose the adoption of the criteria of $L_{Aeq(15\text{ minute})} \leq 35\text{ dB}$, derived from $L_{Aeq(night)}$ of 45 dB minus 10 dB for inaudibility when assessed outside of a window of a habitable room. Achieving compliance at the outside of a habitable room will ensure compliance when assessed within the internal areas of the habitable room.

2) Achieving compliance with relevant criteria during the night period ensures compliance at all other periods of the day.

5 Noise measurements

A site visit and inspection was conducted on Tuesday 26 September 2017. The purpose of this site visit was to conduct noise measurements of the rooftop mechanical plant and determine whether acoustic mitigation recommendations were required to achieve compliance with the noise emission criteria in Section 4.

Based on our noise measurements, computer noise modelling using CadnaA 2017 was undertaken to calculate the maximum noise levels at the nearest sensitive receivers with the following mechanical items operating at maximum capacity:

- 50 % of the 60 air-conditioning units on the rooftop operating simultaneously operating, consisting of:
 - Sound power level of 65 dBA for double-fan units
 - Sound power level of 62 dBA for single-fan units
- Car park exhaust fan ducted to the rooftop with a sound power level of 80 dBA

The calculated maximum noise emission levels at the nearest sensitive receivers against the requirements in Section 4 are presented in Table 2 below. The noise levels below are calculated to the worst-affect receiver location at the building.

Table 2 Noise levels at sensitive receivers

Receiver	L _{Aeq} (15 min) calculated noise level	L _{Aeq} (15 min) Night-time Criteria	Compliance
23-29 Pacific Parade	35	Council/INP – 42 dB	Yes
		POEO – 35 dB	Yes
		Sleep Disturbance – 52 dB	Yes
834 Pittwater Road	36	Council/INP – 42 dB	Yes
		POEO – 35 dB	Yes ¹
		Sleep Disturbance – 52 dB	Yes
18-22 Sturdee Parade	34	Council/INP – 42 dB	Yes
		POEO – 35 dB	Yes
		Sleep Disturbance – 52 dB	Yes
26 Sturdee Parade	33	Council/INP – 42 dB	Yes
		POEO – 35 dB	Yes
		Sleep Disturbance – 52 dB	Yes
31 Pacific Parade	24	Council/INP – 42 dB	Yes
		POEO – 35 dB	Yes
		Sleep Disturbance – 52 dB	Yes
16-22 Pacific Parade	29	Council/INP – 42 dB	Yes
		POEO – 35 dB	Yes
		Sleep Disturbance – 52 dB	Yes
Note: 1) Exceedances of 1 dBA would be considered insignificant. In addition to this, the inclusion of a visual screen around the units (although these are perforated) would likely reduce the noise levels to compliant levels			

6 Conclusion

GHD has conducted an assessment of noise emission from the operation of the rooftop mechanical plant located at the residential development at 23-29 Pacific Parade, Dee Why. Based on the assumptions presented in section 5 above, and our noise modelling and assessment, GHD considers the rooftop mechanical plant associated with the development should achieve the relevant noise emission criteria presented in Section 4 of the report and should not adversely affect the existing or future amenity of the surrounding sensitive receivers.

Kind regards
GHD Pty Ltd



Chris Gordon

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