RAPT CONSULTING

Crescent Newcastle Pty Ltd.

Noise Assessment – 11-17 Mosbri Crescent, The Hill, February - 2019.

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1. Introduction

Background

RAPT Consulting has been engaged to undertake a noise assessment for Crescent Newcastle Pty Ltd. as part of a Development Application (DA) for a residential development at 11-17 Mosbri Crescent, The Hill NSW.

The proposed development includes the construction of three apartment buildings above a common car parking area (1 visitor space and 196 resident spaces), being:

- Building A –nine (9) storey east wing and six (6) storey west wing, comprising 68 dwellings;
- Building B - seven (7) storeys comprising 59 dwellings, a roof top communal open space, with (9) town house style dwellings facing the internal courtyard;
- Building C - comprising five (5) levels, comprising 34 dwellings.

Eleven (11) two storey townhouse style dwellings fronting Mosbri Crescent are also proposed, located above a basement car park containing 34 visitor spaces and 11 private garages with a car space and storage.

Feedback from Newcastle City Council regarding acoustics with consideration to the development included the following:

"The ESU also notes on Drawing Numbers DA2.08 - 09 and 11 prepared by Marchese Partners dated January 2019 have marked "plant areas". Given the position of the proposed development with the potential for both on and offsite acoustic impacts, the ESU will require a qualified consultant to prepare an acoustic assessment to support the proposed development. The acoustic assessment is to include but not be limited to all mechanical plant associated with the development demonstrating that the operation of the plant will not result in adverse impacts for any affected receivers".

This report addresses the council feedback outlined above particularly for rooftop mechanical plant.

An image illustrating the approximate site location and the surrounding area is provided in Figure 1.

Figure 1 Site and Surrounding Area

1.1 Limitations

The purpose of this report is to provide an independent noise assessment to support the proposal.

It is not the intention of the assessment to cover every element of the acoustic environment, but rather to conduct the assessment with consideration to the prescribed work scope.

The findings of the noise assessment represent the findings apparent at the date and time of the assessment undertaken. It is the nature of environmental assessments that all variations in environmental conditions cannot be assessed and all uncertainty concerning the conditions of the ambient environment cannot be eliminated. Professional judgement must be exercised in the investigation and interpretation of observations.

In conducting this assessment and preparing the report, current guidelines for noise were referred to. This work has been conducted in good faith with RAPT Consulting's understanding of the client's brief and the generally accepted consulting practice.

No other warranty, expressed or implied, is made as to the information and professional advice included in this report. It is not intended for other parties or other uses.

2. Existing Environment

To establish background noise levels for night time in the vicinity of the development, short term attended noise monitoring was undertaken on February 25, 2018 at 11 Mosbri Crescent.

During the site visit it was noted that existing low level urban 'hum' insects and occasional distant road noise primarily described the ambient noise environment and is indicative of an urban environment.

The monitoring was conducted using a RION NL-42 type 2 integrated sound level metre within calibration. These units are capable of measuring continuous sound pressure levels and are able to record LAmin, LA90, LA10, LAmax and LAeq noise descriptors. Background Levels (LA90) and Ambient Levels (LAeq) are provided in Table 1 below.

Table 1 Background and Ambient Noise Monitoring Results

11 Mosbri Crescent	**25 February 2019** **5:30am to 5:45am**
L_{A90}	33
L_{Aeq}	41

3. Noise Criteria

3.1 Operational Noise

The New South Wales Noise Policy for Industry (NPfI) provides guidance on the assessment of operational noise impacts. The guidelines include both intrusive and amenity criteria that are designed to protect receivers from noise significantly louder than the background level and to limit the total noise level from all sources near a receiver.

Intrusive noise limits set by the NPfI control the relative audibility of operational noise compared to the background level. Amenity criteria limit the total level of extraneous noise. Both sets of criteria are calculated and the lower of the two in each time period normally apply. Intrusive criteria are simply 5 decibels above the measured (or adopted) background level with a minimum of 40 dB(A) for daytime and 35 dB(A) for evening and night time as per Table 2.1 of the NPfI.

Amenity criteria are determined based on the overall acoustic characteristics of the receiver area and the existing level of noise excluding other noises such as traffic and insects. Residential receiver areas are characterised into 'urban', 'suburban', 'rural' or other categories based on land uses, the existing level of noise from industry, commerce, and road traffic. Project amenity noise levels (ANL) are the ANL (Table 2.2 of the NPfI) minus 5 dB(A) plus 3 dB(A) to convert from a period level to a 15-minute level. The project noise trigger level is the lower value between the intrusive and the amenity noise levels.

The NPfI noise criteria are planning levels and are not mandatory limits required by legislation however the noise criteria assist the regulatory authorities to establish licensing conditions. Where noise criteria are predicted to be exceeded, feasible and reasonable noise mitigation strategies should be considered. In circumstances where noise criteria cannot be achieved negotiation is required to evaluate the economic, social and environmental costs and benefits of the development against the noise impacts. The regulatory authority then sets statutory compliance levels that reflect the achievable and agreed noise limits from the development.

The NPfI is generally intended for large and complex industrial sources and recommends considerable monitoring and assessment measures that may not always be applicable to certain situations. However, the NPfI will be referred to for determining operational noise goals for this project.

In determining project noise trigger levels from RBLs, the community's expectations also need to be considered. The community generally expects greater control of noise during the more sensitive evening and night-time periods than during the less sensitive daytime period. Therefore, in determining project noise trigger levels for a particular development, it is generally recommended that the project intrusiveness noise level for evening be set at no greater than the project intrusiveness noise level for daytime. The project intrusiveness noise level for night-time should be no greater than the project intrusiveness noise level for day or evening. Alternative approaches to these recommendations may be adopted if appropriately justified. Project noise trigger levels are provided for residential premises in Table 1.

Table 2 Project Noise Trigger Levels

	Night **10 pm to 7 am**
Background Level $L_{A90(Period)}$	33
Project Intrusive Noise Level, $L_{Aeq(15min)}$	38
Project Amenity Noise Level (Urban), $L_{Aeq(Period)}$	40
Project Amenity Noise Level $L_{Aeq(15min)}$	43
Project Noise Trigger Level Residential	**38 $L_{Aeq(15\ min)}$**
School Classroom – Internal (when in use)	**35**

4. Assessment of Potential Impacts

4.1 Operational Noise

Assessment approach

Acoustic modelling was undertaken using Bruel and Kjaer's "Predictor" to predict the effects of site mechanical plant noise. Predictor is a computer program for the calculation, assessment and prognosis of noise propagation. Predictor calculates environmental noise propagation according to ISO 9613-2, "Acoustics – Attenuation of sound during propagation outdoors". Terrain topography, ground absorption, atmospheric absorption and relevant shielding objects are taken into account in the calculations.

Modelling results are based on available information provided and should only be used as a guide for comparative purposes. Site layout and building structures were based on information provided at the time of the assessment.

Each unit is understood to include air conditioning. Mechanical plant located on the rooftops have been assumed to be 15kw Daikin reverse cycle air conditioner units, each with a sound power level of 67dB(A). Mechanical plant has been placed on roof tops based on provided site layout and in the form of:

- 24 units on the 6-storey roof top of Building A;
- 44 units on the 9-storey roof top of Building A;
- 59 units on the 7-storey roof top of Building B;
- 34 units on the 5-storey roof top of Building C.

Anticipated mechanical plant activities have been simulated to be operating simultaneously for day, evening and night situations. Figure 3 shows the results of the modelling.

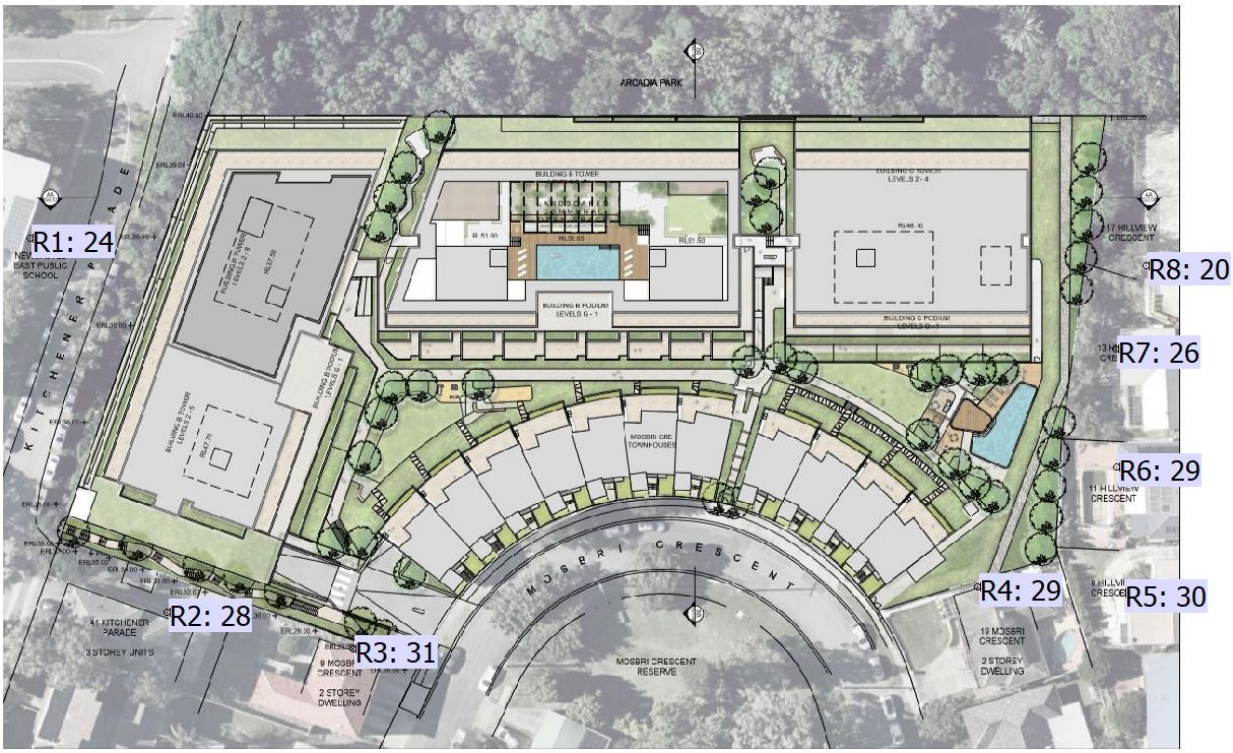

Figure 3 Noise Modelling Results dB(A) Leq(15min)

As can be seen from the results of the modelling, compliance is expected at all nearest residential and nearby Newcastle East Public School receptors for day, evening and night time scenarios.

Based on this mechanical plant assessment, compliance can be expected for the development. While compliance is expected with no acoustic attenuation measures in place, it is recommended that during the mechanical plant selection process is taking place for the project, sound power levels be considered. Additionally while acoustic screens for mechanical plant are not expected to be necessary it may be an option to further reduce any potential noise issues.

5. Conclusion

This noise assessment has been undertaken for Crescent Newcastle Pty Ltd. as part of a Development Application (DA) for a residential development at 11-17 Mosbri Crescent, The Hill NSW.

All calculations have assumed a worst-case scenario for roof top mechanical plant with no acoustic attenuation measures in place. Based on the results and the information provided regarding the development, compliance with all noise goals is expected for the development on neighbouring residences.

Should you have any further questions regarding this report, please do not hesitate to contact Greg Collins on 0488512224 or greg@raptconsulting.com.au.

Thank you,

Greg Collins

Director – RAPT Consulting