13 November 2020

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Melrose Park, Tomola – Acoustic Design

1 Introduction

This report details the acoustic review of the proposed Melrose Park, Tomola residential project and the potential for the site to be acoustically designed to comply with the relevant design standards.

2 Site Location

The site is located on the corner of Hope Street and Hughes Avenue, Melrose Park.

The site is located within an area which include noise resulting from movement of vehicles on surrounding roadways and surrounding land used.

The proposed Tomola site neighbours the *Wharf Road, Melrose Park* development, which has previously included an acoustic assessment for the proposed residential dwellings and is detailed within the Acoustic Logic Consultancy *Wharf Road, Melrose Park – DA Acoustic Assessment (ref:20141478.1/1012A/R1/BW).*

ABN: 35 632 449 122

The proposed Tomola site location is detailed in the figure below.

Figure 1 – Proposed Tomola Site Location

3 Noise Impacts

Noise impacts on the future residential dwellings on the site will result from vehicle movements on surrounding roadways as well as noise resulting from surrounding land used.

Based on the relevant acoustic requirements noise impacts on the site will be required to be design in accordance with the following standards:

1. The Australian Standard AS2107:2000 *Acoustics - Recommended design sound levels and reverberation times for building interiors.*
2. The Department of Planning *Development Near Rail Corridor and Busy Roads – Interim Guideline* (DNRCBR).
3. Council DCP requirements.

The suitable internal noise levels within the project, including the standards above, are detailed in the following sections.

3.1 Australian Standard AS2107:2016

The Australian Standard AS2107:2016 *Acoustics - Recommended design sound levels and reverberation times for building interiors* recommended levels for various areas of a project. The recommended noise levels for residential dwellings near major roadways detailed within AS2107:2016 are detailed in the table below.

Table 1 – Recommended Internal Noise Levels AS2107:2016

Type of Occupancy/Activity	Design sound level maximum ($L_{Aeq,t}$)
Common areas (e.g. foyer, lift lobby)	50
Residential - Living areas	45
Residential - Sleeping areas (night time)	40
Toilets	55
Small retail areas	50
Note: The relevant time period (t) for all areas detailed is 15 minutes.	

3.2 Department of Planning Development Near Rail Corridor and Busy Roads – Interim Guideline

The DNRCBR includes the following requirements for the relevant design of internal areas of residential developments near busy roads, including the following:

> ***For Clauses 87 (Rail) and 102 (Road):***
> *If the development is for the purpose of a building for residential use, the consent authority must be satisfied that appropriate measures will be taken to ensure that the following LA_{eq} levels are not exceeded:*
> - *in any bedroom in the building: 35dB(A) at any time 10pm–7am*
> - *anywhere else in the building (other than a garage, kitchen, bathroom or hallway): 40dB(A) at any time.*

3.3 Project Internal Noise Level Criteria

The required levels for various areas of the project are detailed in the following table.

Table 2 - Design Recommended Internal Noise Levels

Type of Occupancy	Type of Occupancy/Activity	Design Internal Noise Level
Residential	Apartment common areas (e.g. foyer, lift lobby)	55 $L_{Aeq\ 15\ hour}$
	Residential - Living areas	40 $L_{Aeq\ 15\ hour}$
	Residential - Sleeping areas (night time)	35 $L_{Aeq\ 9\ hour}$[1]
	Toilets	55 $L_{Aeq\ 15\ hour}$
Retail and commercial tenancies	Retail and office areas	45 $L_{Aeq\ 15\ hour}$
Note 1: The relevant time period for bedrooms include the period of 10pm to 7am		

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5 Noise Emissions

This section of the report details the relevant noise level criteria for noise emissions generated on the site once completed.

The relevant authority which provides the required noise level criteria for noise levels generated on the site includes the NSW Environmental Protection Authority's (EPA) Noise Policy for Industry (NPI).

5.1 NSW Environmental Protection Authority, Noise Policy for Industry

The NSW Environmental Protection Authority (EPA) Noise Policy for Industry (NPI), previously Industrial Noise Policy, details noise criteria for the control of noise generated from the operation of developments and the potential for impact on surrounding receivers.

The NPI includes both intrusive and amenity criteria which are summarised below.

1. Intrusive noise level criteria, The NPI states the following:

   'The intrusiveness of an industrial noise source may generally be considered acceptable if the level of noise from the source (represented by the LAeq descriptor), measured over a 15minute period, does not exceed the background noise level by more than 5 dB when beyond a minimum threshold. This intrusiveness noise level seeks to limit the degree of change a new noise source introduces to an existing environment.'

2. Amenity noise level criteria, The NPfI states the following:

   'To limit continuing increases in noise levels from application of the intrusiveness level alone, the ambient noise level within an area from all industrial noise sources combined should remain below the recommended amenity noise levels specified in Table 2.2 where feasible and reasonable. The recommended amenity noise levels will protect against noise impacts such as speech interference, community annoyance and some sleep disturbance.'

   Project amenity noise level for industrial developments = recommended amenity noise level (Table 2.2) minus 5 dB(A)

   Where the resultant project amenity noise level is 10 dB or more lower than the existing industrial noise level. In this case the project amenity noise levels can be set at 10 dB below existing industrial noise levels if it can be demonstrated that existing industrial noise levels are unlikely to reduce over time.

The LAeq is determined over a 15-minute period for the project intrusiveness noise level and over an assessment period (day, evening and night) for the project amenity noise level. This leads to the situation where, because of the different averaging periods, the same numerical value does not necessarily represent the same amount of noise heard by a person for different time periods. To standardise the time periods for the intrusiveness and amenity noise levels, this policy assumes that the LAeq,15min will be taken to be equal to the LAeq, period + 3 decibels (dB), unless robust evidence is provided for an alternative approach for the particular project being considered.

Project amenity noise level (ANL) is urban ANL (Table 2.1) minus 5 dB(A) plus 3 dB(A) to convert from a period level to a 15-minute level (dB = decibel; dB[A] = decibel [A-weighted]; RBL = rating background noise level).

Noise level used in the assessment of noise emission from the site have been based on the noise level survey conducted at the site and detailed in this section of the report.

Consequently, the resulting noise level criteria are summarised in the table below. The criteria are nominated for the purpose of determining the operational noise limits for the operation of the site including mechanical plant associated with the development which can potentially affect noise sensitive receivers and operational noise levels from the future tenancies. For each assessment period, the lower (i.e. the more stringent) of the amenity or intrusive criteria are adopted. The calculated *Project Amenity Noise Level* includes either the Recommended Amenity Noise Level minus 5 dB(A) plus 3 dB(A) (for a 15minum period) or the measured existing Leq noise level – 10 dB if this is greater as determined by the NPfI.

6 Project Acoustic Design

The proposed Tomola site the project can be acoustically designed such that compliance with the relevant acoustic requirements can be achieved.

Based on the acoustic assessment of the neighbouring Wharf Road development including the previously conducted acoustic assessment (including the Acoustic Logic Consultancy *Wharf Road, Melrose Park – DA Acoustic Assessment (ref:20141478.1/1012A/R1/BW))* the expected acoustic treatments will include the following:

1. Upgraded façade treatments to external glazing including laminated glazing similar to 10.38mm laminated or 6.38mm laminated glass.
2. Treatments to building services opening in the façade including lined mechanical ductwork or the like.
3. Treatment to external rood constructions including insulation within roof/ceiling cavities.
4. Acoustic assessment and treatment to building services including locations, lined ductwork, silencers and the like.

As part of the approvals stages of the project a detailed *Noise Impact Assessment* would be undertaken and provided as part of the DA submission of the project. This assessment would include an acoustic survey of the site and details of the required treatments for compliance with the relevant acoustic criteria as detailed in this report.

Experience of similar projects, including the neighbouring residential development, indicates that the project can be acoustically designed to ensure all relevant criteria is achieved and the site is acoustically acceptable to include residential dwellings.

7 Conclusion

This report details the acoustic review of the proposed Tomola residential development, located on the corner of Hope Street and Hughes Avenue, Melrose Park.

Experience of similar projects, including the neighbouring residential development, indicates that the project can be acoustically designed to ensure all relevant criteria is achieved and the site is acoustically acceptable to include residential dwellings including the Australian Standards, EPA and Council DCP.

A detailed *Nosie Impact Assessment* would be undertaken and provided as part of the normal *Development Application* of the project.

If you have any additional questions, please contact the author below.

Regards

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