

MANAGING DIRECTORS

MATTHEW PALAVIDIS
VICTOR FATTORETTO

DIRECTORS

MATTHEW SHIELDS
BEN WHITE



7 - 33 Water Street, Strathfield South

Acoustic Assessment

SYDNEY

A: 9 Sarah St Mascot NSW 2020

T: (02) 8339 8000

F: (02) 8338 8399

SYDNEY MELBOURNE BRISBANE CANBERRA

LONDON DUBAI SINGAPORE GREECE

www.acousticlogic.com.au

ABN: 11 068 954 343

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1 INTRODUCTION

Acoustic Logic Consultancy (ALC) have been engaged to conduct an acoustic assessment of potential noise impacts associated with the proposed residential development to be located at 7 - 33 Water Street, Strathfield South.

This document presents the acoustic review of potential environmental noise impacting the future residence within the development.

An acoustic review of the development has been undertaken and the relevant criteria which are suitable for the development to comply with have been reviewed and include the following:

- Strathfield Municipal Council;
- NSW Industrial Noise Policy (INP);
- State Environmental Planning Policy (Infrastructure) 2007.
- Australian and New Zealand AS/NZS 2107:2000 '*Recommended design sound levels and reverberation times for building interiors*'.

ALC confirms that the development can comply with all of the aforementioned authorities and standards on the proviso that the acoustic treatments nominated in this report are adopted.

2 SITE PROPOSAL

The subject site is located to the west of Water Street with surrounding residential and industrial properties as detailed in the figure below.



Figure 1: Site Survey and Monitoring Location

- Subject site
- Surrounding residential properties
- Surrounding industrial properties

3 EXISTING ACOUSTIC ENVIRONMENT

The existing acoustic environment is categorised by high traffic noise levels from Liverpool Road.

3.1 NOISE DESCRIPTORS

Traffic noise constantly varies in level, due to fluctuations in traffic speed, vehicle types, road conditions and traffic densities. Accordingly, it is not possible to accurately determine prevailing traffic noise conditions by measuring a single, instantaneous noise level. To accurately determine the effects of traffic noise a 15-20 minute measurement interval is utilised. Over this period, noise levels are monitored on a continuous basis and statistical and integrating techniques are used to determine noise description parameters. These parameters are used to measure how much annoyance would be caused by a particular noise source.

In the case of environmental noise three principle measurement parameters are used, namely L_{10} , L_{90} and L_{eq} .

The L_{10} and L_{90} measurement parameters are statistical levels that represent the average maximum and average minimum noise levels respectively, over the measurement intervals.

The L_{10} parameter is commonly used to measure noise produced by a particular intrusive noise source since it represents the average of the loudest noise levels produced by the source.

Conversely, the L_{90} level (which is commonly referred to as the background noise level) represents the noise level heard in the quieter periods during a measurement interval. The L_{90} parameter is used to set the allowable noise level for new, potentially intrusive noise sources since the disturbance caused by the new source will depend on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the L_{90} level.

The L_{eq} parameter represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the measurement period. L_{eq} is important in the assessment of traffic noise impact as it closely corresponds with human perception of a changing noise environment; such is the character of traffic noise.

Current practice favours the L_{eq} parameter as a means of measuring traffic noise, whereas the L_{10} parameter has been used in the past and is still incorporated in some codes. For the reasons outlined above, the L_{90} parameter is not used to assess traffic noise intrusion.

4 ENVIRONMENTAL NOISE CRITERIA

Environmental noise criteria has been assessed in accordance with the requirements of Strathfield Municipal Council and the NSW State Environmental Planning Policy (SEPP Infrastructure) 2007.

4.1 STRATHFIELD MUNICIPAL COUNCIL

Environmental noise requirements for multi-unit housing are detailed in Part C Section 2.5 of the Strathfield Municipal Council Development Control Plan 2005 which states:

6. *Developments adjoining a major road or railway line shall take into consideration impacts of the noise source on the future amenity of residents on the site, ensuring noise sensitive uses are placed in more shielded locations (refer to figure 12).*

For development located close to busy roads, reference should be made to AS2107 "Acoustics – Recommended Design Sound Levels & Reverberation Times for Building Interiors" and AS3671 – 1989 "Acoustics – Road Traffic Noise Intrusion – Building Siting & Construction".

4.2 STATE ENVIRONMENTAL PLANNING POLICY (SEPP INFRASTRUCTURE) 2007

Clause 102 of the NSW SEPP for road traffic noise stipulates,

"This clause applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transit way or any other road with an annual average daily traffic volume of more than 40,000 vehicles (based on the traffic volume data published on the website of the RTA) and that the consent authority considers is likely to be adversely affected by road noise or vibration:

(a) a building for residential use,

If the development is for the purposes of a building for residential use, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following L_{Aeq} levels are not exceeded:

(a) in any bedroom in the building – 35 dB(A) at any time between 10 pm and 7am,

(b) anywhere else in the building (other than a garage, kitchen, bathroom or hallway) – 40 dB(A) at any time."

4.3 PROJECT ACOUSTIC OBJECTIVES

The requirements of the SEPP Infrastructure will be stricter than Strathfield Municipal Council. On this basis, the project traffic noise intrusion requirements are detailed below.

Table 1 – Traffic Noise Objectives

Internal Area	Traffic Noise Level dB(A) L_{Aeq} 15 hour	Traffic Noise Level dB(A) L_{Aeq} 9 hour
Bedroom	40	35
Living Area	40	40

5 RECOMMENDED CONSTRUCTIONS

Based on the location of the site and the surrounding roadways and land use activities compliance with the project will be able to comply with the relevant noise level criteria as detailed in this report using standard single glazing such as 6.38mm laminated or 10.38mm laminated glass. Details of the external glass will be provided during detailed DA submission stage and CC stage of the project.

6 NOISE EMISSION OBJECTIVES

Noise level generated from site will be assessed to comply with the requirements of Strathfield Municipal Council and the EPA's Industrial Noise Policy, as detailed in this section of the report.

6.1 STRATHFIELD MUNICIPAL COUNCIL

Strathfield Municipal Council DCP Part D ("Industrial Development") states the following with regards to industrial noise emissions:

"5. Noise associated with the premises including plant and equipment will be subject to the NSW Environmental Protection Authority's Environmental Noise Control Manual and Industrial Noise Policy 2000 and the Protection of the Environment Operations Act 1997.

6. Noise generated from fixed sources or motor vehicles associated with the proposed industrial development must be effectively insulated or otherwise minimised.

7. The operating noise level of plant and equipment shall generally not exceed 5dB(A) above the background noise level when measured at the boundaries of the premises between the hours of 7.00am and 10.00pm. If existing background levels are above the Environmental Protection Authority (EPA) criteria, then a merit based assessment will be carried out."

6.2 NSW EPA INDUSTRIAL NOISE POLICY.

The EPA Industrial Noise Policy, has two criteria which need to be satisfied namely Intrusiveness and Amenity.

The EPA Industrial Noise Policy sets out acceptable noise levels for various localities. Table 2.1 on page 16 of the policy indicates 4 categories to distinguish different residential areas. They are rural, suburban, urban and urban/industrial interface. Under the policy the nearest residence would be assessed against the urban/industrial interface criteria.

Noise levels are to be assessed at the property boundary or nearby dwelling, or at the balcony or façade of an apartment.

6.2.1 Intrusiveness Criteria

The guideline is intended to limit the audibility of noise emissions at residential receivers and requires that noise emissions measured using the L_{eq} descriptor not exceed the background noise level by more than 5dB(A). Where applicable, the intrusive noise level should be penalised (increased) to account for any annoying characteristics such as tonality.

Background noise levels adopted are presented in Section 4. Noise emissions from the site should be assessed at the most affected residential properties boundaries.

6.2.2 Amenity Criterion

The guideline is intended to limit the absolute noise level from all noise sources to a level that is consistent with the general environment.

The EPA's Industrial noise policy sets out acceptable noise levels for various localities. Table 2.1 on page 16 of the policy indicates 4 categories to distinguish different residential areas. They are

rural, suburban, urban and urban/industrial interface. This site is categorised by the residential receivers as urban industrial interface. For the purposes of this condition:

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays;
- Evening is defined as the period from 6pm to 10pm;
- Night is defined as the remaining periods.

Table 2 – EPA Amenity Noise Levels

Type of Receiver	Indicative Noise Amenity Area	Time of day	Recommended Noise Level dB(A) _{Leq(period)}	
			Recommended	Maximum
Residences	Suburban	Day	55	60
		Evening	45	50
		Night	40	45

6.3 SLEEP DISTURBANCE

To minimise the potential for sleep arousal the L_1 (1 minute) noise level of any specific noise source does not exceed the background noise level (L_{90}) by more than 15 dB(A) outside a resident's bedroom window, as specified in the *Noise Guide for Local Government* (NGLG) between the hours of 10pm and 7am. The L_1 noise level is the level exceeded for 1 per cent of the time and approximates the typical maximum noise level from a particular source. Where the typical repeatable existing L_1 levels exceed the above requirement then the existing L_1 levels form the basis for, sleep disturbance criteria.

6.4 MECHANICAL NOISE EMISSION ASSESSMENT

All mechanical plant for the proposed development shall be selected and treated to comply with the NSW EPA Industrial Noise Policy.

At this stage, no mechanical plant is proposed. If necessary, acoustic treatments for mechanical plant should be determined at CC stage, with the provision of acoustic screens, silencers etc as necessary.

Experience with similar projects indicate that the successful treatment of the mechanical equipment will be possible using regularly used acoustic treatments as detailed above.

7 CONCLUSION

This report presents the preliminary acoustic assessment of noise impacts associated with the proposed residential development to be located at 7 - 33 Water Street, Strathfield South.

It can be confirm that acoustic treatments will be possible and practical to the building façade to ensure that internal noise levels comply with the requirements of the State Environmental Planning Policy (SEPP) Infrastructure 2007 and Strathfield Municipal Council.

Mechanical plant servicing the development should be assessed at the construction certificate stage to ensure compliance with the noise emission requirements of Strathfield Municipal Council and can be suitably treated to ensure compliance with the relevant criteria as detailed in this report.

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

Yours faithfully,

A handwritten signature in dark ink, appearing to read "B.G. White." with a stylized, cursive script.

Acoustic Logic Consultancy Pty Ltd
Ben White