

245 MARION STREET, LEICHHARDT
ACOUSTIC PLANNING ASSESSMENT

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PREPARED FOR

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GLOSSARY OF ACOUSTIC TERMS

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors, which are demonstrated in the graph below, are here defined.

Maximum Noise Level (L_{Amax}) – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

L_{A1} – The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.

L_{A10} – The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} is a common noise descriptor for environmental noise and road traffic noise.

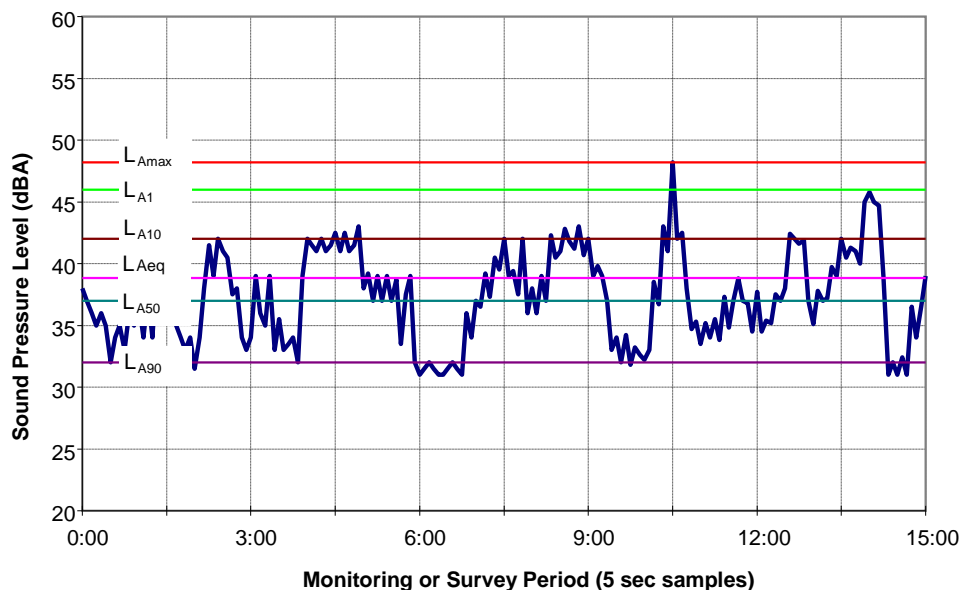
L_{A90} – The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

L_{Aeq} – The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

ABL – The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and night time) for each day. It is determined by calculating the 10th percentile (lowest 10th percent) background level (L_{A90}) for each period.

RBL – The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night time.

Typical Graph of Sound Pressure Level vs Time



1 INTRODUCTION

Wilkinson Murray has been commissioned to assess noise impacts associated with the planning proposal of 245 Marion Street, Leichhardt.

It is proposed to turn the existing light industrial facility (light vehicle service workshop) into a mixed-use development containing light industrial in the basement, ground level commercial/retail spaces and residential towers located above ground.

The purpose of this report is to determine if there is a noise conflict between the proposed residential development and the light industrial use.

2 SITE DESCRIPTION

The existing site's southern façade fronts Marion Street with rear service road access via Walter Street. The site is currently classified under a IN2 – Light Industrial zoning and is surrounded by a commercial property on Walter Street, an aged care facility adjacent to the east, recreational grounds to the south, the light rail corridor and Marion Street Station adjacent to the west of site and residences to the north.

The site is shown in Figure 2-1.

Figure 2-1 Location Plan



It is proposed to use the site for mixed use.

The immediate redevelopment of the site is proposed to consist of an 8-storey mixed-use development with two residential towers formed from a single commercial retail podium; and mixed light industrial / car parking basement levels as shown in Figure 2-2 and Figure 2-3.

The development is proposed as follows:

- Basement Levels 1, 2, 3
 - Car spaces (mixed residential, leasable and commercial / retail)
 - Light industrial premises (car servicing workshop)
- Ground / Level 1
 - Commercial and retail premises
 - Ramp access to basement parking and industrial premises
- Levels 2 – 9
 - Residential apartments
 - Communal spaces on Level 2 and Tower Rooftops

Figure 2-2 Proposed Development Elevation

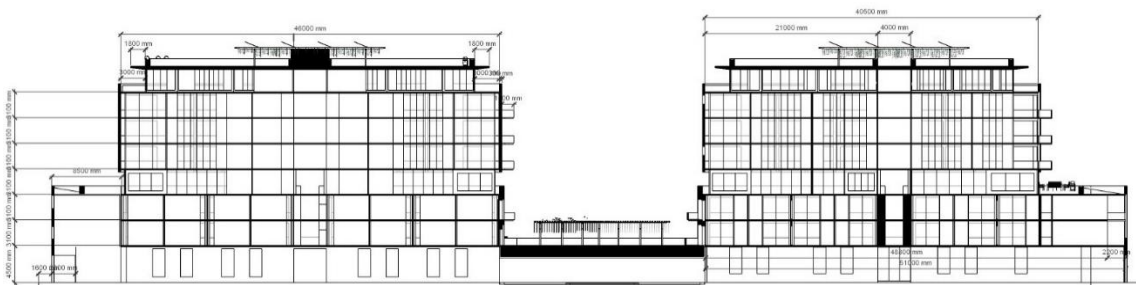
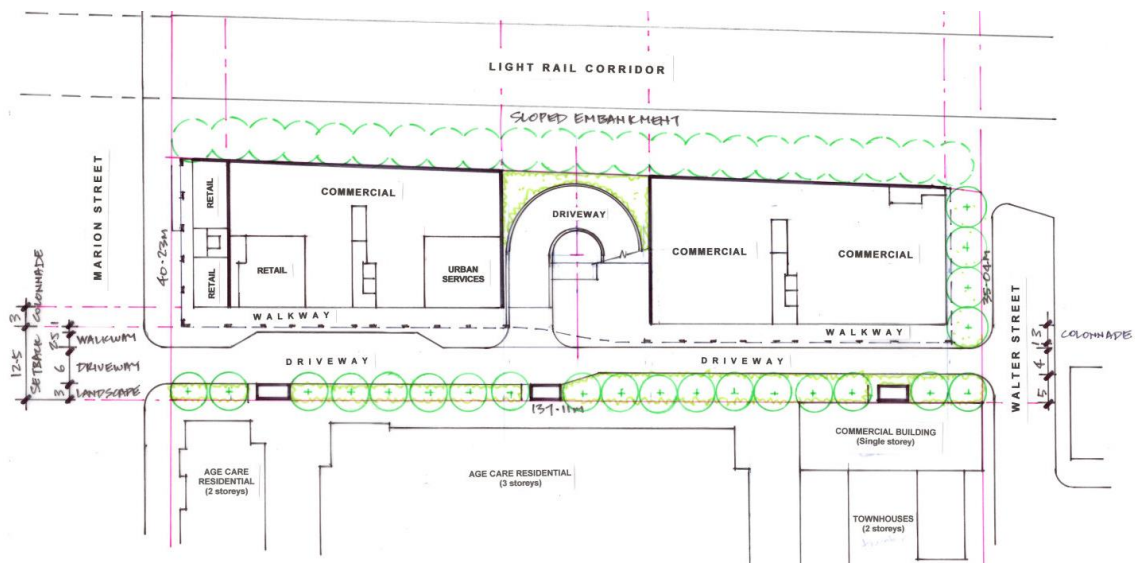


Figure 2-3 Proposed Development Ground Floor Plan



3 NOISE IMPACT CRITERIA

Mixed-use developments incorporating residential components require that the residential component have adequate acoustic amenity. In future development applications, the construction and operational noise will be required to be assessed to address the risk of adverse noise impacts to surrounding residences and the effect of environmental noise upon the development will also need to be assessed.

The NSW *Noise Policy for Industry (NPfI)* provides a framework and process for deriving noise criteria for consents and licences that enable the NSW Environment Protection Authority (EPA) and others to regulate premises that are scheduled under the NSW *Protection of the Environment Operations Act 1997 (POEO)*. Whilst specifically aimed at assessment and control of noise from industrial premises regulated by the EPA, the policy is also appropriate for use by the Department of Planning and Environment (DP&E) when assessing major development proposals.

In the case of noise from the light industrial use where noise may be transmitted into residential components of the development through the structure, the internal noise limits may be taken from Australian Standard AS/NZS 2107:2016. This standard recommends levels up to 45dBA in living areas and up to 40dBA in sleeping areas.

4 NOISE SOURCE LEVELS

Noise source level measurements were conducted on Monday 27 May 2019, within the existing light industrial warehouse site to determine the potential impacts of activities on residents. The existing site consisted of a car servicing workshop.

On inspection of the site, a few select activities produced noise including general workshop noise (consisting of a radio, cars entering and exiting at low speed, vacuums, hydraulic hoists and hand tools), air impact wrenches, pressure washers and air compressors.

All measurements were conducted using a Brüel & Kjær Type 2250 Sound Level Meter. This sound level meter conforms to Australian Standard 1259 *Acoustics – Sound Level Meters* as a Type 1 Precision Sound Level Meter which has an accuracy suitable for field and laboratory use. Monitoring was conducted with A-Weighting and Fast time weighting filters.

Calibration of the meter was checked before and after the measurements with a Brüel & Kjær Type 4231 sound level calibrator and no significant drift was noted. The Brüel & Kjær Type 2250 and Type 4231 carry appropriate and current NATA (or manufacturer) calibration certificates within the previous two years in accordance with our in-house Quality Assurance procedures.

Table 4-1 details a summary of noise producing activities.

Table 4-1 Light Industrial Noise Activity Summary

Activity	Distance	L _{Aeq}
General Internal Workshop Level	-	75
Air Impact Wrench	5m	82
Pressure Washer	5m	80

5 NOISE IMPACT ASSESSMENT

The light industrial use proposed in the development is currently selected as the existing car servicing workshop and this type of operation is typical of light industry. This is to operate from Basement Level 2 in accordance with preliminary development plans. Given there will be a minimum of two concrete floor slabs between the car service workshop and the nearest residents, transmission loss will substantially reduce operational noise levels reaching residents. Activities producing noise impacts from the workshop will translate to below 30dBA in the most affected apartments, making workshop operations inaudible.

Provided the car servicing workshop and car park are located in the basement of the proposed development, mechanical ventilation will be required. HVAC services will also be required for the commercial and retail premises at ground level. These additions to operational noise are to be considered as potential noise impacts to residential receivers above and will require acoustic assessment when details are known.

Noise impact consideration throughout the design stages of development should include locating plant and mechanical equipment on the roof of the building to reduce the potential for noise impacts to residential receivers. Provision should be made to include ventilation shafts servicing the basement levels, acoustic barriers for rooftop mechanical plant and attenuators if required. The inclusion of this type of acoustic mitigation will allow operational noise to comply with noise criteria.

Air exhaust outlets and supply should be located away from residents. Provision is to be made for ventilation fans and exhaust and supply air openings to be located on the roof. Acoustic treatment can be applied where required.

6 CONCLUSION

The mixed-use development can house light industrial uses in the basement, commercial activity on the ground level and residences above, providing:

- All external air conditioning plant is located on the roof;
- All ventilation fans and intakes and exhausts are located on the roof; and
- Sufficient space is available to acoustically treat these with noise walls and attenuators, if required.

During the development application, a full noise assessment will be required in regard to aircraft noise, road noise, rail noise and sports noise potentially affecting the development and in regard to development mechanical and vehicle noise potentially affecting neighbouring residents.