Longhurst Group

The Edgecliff Centre Redevelopment

Planning Proposal - Acoustic Review

AC01

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Contents

Appendices

1 Introduction

This acoustic review has been prepared on behalf of Longhurst Investments No. 1 Pty Ltd in support of a planning proposal for the Edgecliff Centre (the site).

This Planning Proposal relates to the Edgecliff Centre at 203–233 New South Head Road and part of the adjoining Council-owned road reserve fronting New McLean Street (herein collectively identified as the **site**). It seeks the following amendments to the Woollahra Local Environmental Plan 2014 (**WLEP 2014**) to support the mixed-use redevelopment of the site:

- Increasing the maximum permitted Height of Buildings from part 0 m, part 6 m and 26 m to part 13 and part 35 storeys plus plant.
- Increase the maximum permitted GFA on the Edgecliff Centre portion of the site to 44,190 m^2;
- Increase the maximum permitted GFA on the Council-owned road reserve to 3,300 m^2; and
- Introduce a site-specific provision to retain a minimum 2:1 FSR for non-residential purposes.

The Planning Proposal will also incorporate a portion of residual land which forms part of the New MacLean Street road-reserve, abutting the southern boundary of the Site, and the FSR and Height of Buildings development standard proposed for the Site are proposed to extend to this portion of land.

The Planning Proposal is supported by an indicative development concept to demonstrate the anticipated built form outcome envisioned for the site under the proposed amendments to the WLEP 2014. The concept is centred around revitalising the site for a vibrant mixed-use development that can simultaneously give back to the community through a combination of community uses and public open spaces, the provision of essential medical services whilst increasing employment generating floor space and housing close to transport.

Specifically, the concept includes:

- A combination of commercial (including office and retail), residential, and medical land uses with a total Gross Floor Area of circa 44,190 m^2;
- The distribution of form comprising:
    - A mixed-use podium between two and three storeys with retail, office, medical, community uses and public open space;
    - Two individual tower components for commercial and residential uses up to a height of part 13 storeys and part 35 storeys plus plant;
- Basement with capacity for End of Trip facilities along with circa 333 car parking spaces, 429 bicycle spaces and 34 motorcycle spaces;
- Activated and landscaped frontages to New McLean and New South Head Road within an integrated civic ground floor retail precinct;

- Delivery of a town square plaza, open green space and forecourt visibly prominent and publicly accessible, and
- Introduction of a network of pedestrian laneways, through site links and colonnade.

A detailed description is provided within the Planning Proposal Justification Report prepared by Ethos Urban.

1.1 Site location

This site, identified as 203-233 New South Head Road, forms the gateway precinct to the Eastern suburbs and is a substantial land holding within the Edgecliff corridor and the Woollahra local government area (LGA) (see Figure 1). The corridor serves as a fundamental hub for all mixed-uses including commercial, retail and residential. These are well serviced with proximity to the major transport node of the Woollahra LGA, being the Edgecliff train station and bus terminal located within the adjoining East Point Development.

Figure 1: Site forms the gateway precinct to the Eastern Suburbs

The Edgecliff Centre site area is approximately 4,910 m^2 and currently accommodates a 7-storey retail/commercial building with a further 2-storey cut-in car park. It has a total of 11,217 m^2 of Net Leasable Area (NLA) with 254 car spaces. It is located at the intersection of New South Head Road and New Maclean Street, and is surrounding by a mix of commercial, retail and residential uses (see Figure 2).

Figure 2: Site location and surrounds

1.2 Scope of report

As the planning submission does not seek consent for the specific development, a detailed quantitative assessment of the proposal is not considered to be warranted. However, a qualitative review has been carried out, having regard to the indicative scheme prepared. Accordingly, this report provides a high-level review of the potential uses and built form, discussing their likely suitability, and requirements for future assessment and detailed design. Accordingly, this report:

- Discusses the current and potential future acoustic environment and surrounding land use context
- Identifies the relevant acoustic policies and standards that are likely to govern the future development, to be confirmed at later application stages
- Identifies the acoustic factors that may influence the future assessment and design of the site
- Identify the acoustic assessment approach for subsequent DA stages or subsequent stages of the planning, design and delivery of the development.

2 Acoustic review

The acoustic review is structured as follows:

- Discussion regarding potential impacts upon the development
- Discussion regarding potential impact from the development, onto both existing surrounding development and future uses within the site, and
- A summary of the acoustic factors against relevant guidelines and the approach to future detailed development applications

2.1 Impact upon the development

The primary environmental acoustic factors with the potential to influence the development is road traffic noise from New South Head Road, operation of the bus terminal and potential ground borne noise and vibration from the underground station.

The most noise sensitive component proposed as part of the scheme is residential development, however it is noted that residential development is currently permissible on the site and the proposed scale of development does not specifically alter the design implications.

Regarding road traffic noise, the Annual-Average Daily Traffic (AADT) volumes along New South Head Road in proximity to the site are identified to be over 70,000, which triggers assessment and design in accordance with the NSW State Environmental Planning Policy (Transport and Infrastructure) 2021 [1] ('TISEPP) [ref: *Transport for NSW, Traffic Volume Viewer ID.10011, New South Head Road - 90 m east of Bayswater Road, Edgecliff*].

Notwithstanding the high traffic volumes, only residential, educational and places of worship require assessment according to the SEPP. In the current scheme, only residential development is identified, and is situated to the south of the site, removed from New South Head Road. A detailed assessment will still be warranted at later stages of the design; however, the building design can readily address the control of road traffic noise ingress.

Regarding the rail ground borne noise and vibration, underground, while a detailed assessment is warranted, the sensitive residential development is offset from the rail tunnel and residential apartments commence from Level 3, providing some distance attenuation. Further, being at a station location, trains would be travelling at a lower speed and thus generate lower vibration levels. Nevertheless, options for vibration isolation of the building can be incorporated if deemed required and would not necessitate modification of the rail infrastructure. However, should an opportunity present to modify the trackform, reducing vibration generation at the source would provide benefit to the whole project and adjacent land uses.

Environmental noise exposure from the bus terminal operation should be given consideration, and opportunities to mitigate impact upon the proposed residential development and public realm explored. Preference should be given to measures

to mitigate noise at the source, or intervening shielding to sensitive areas, however residual impact can readily be addressed through acoustic design of the residential façade. The proposal is not considered to present any additional constraint upon the use of the bus terminal, given existing neighbouring residential development in close proximity (180 Ocean Street).

Assessment would also need to consider any major building services equipment, particularly that located on rooftops of adjacent sites that the project may overlook.

2.2 Impact from the development

Notwithstanding higher noise levels expected during the construction phase of the project, noise and vibration emission from the site would not be anticipated to have a significant impact on the surrounding land use and environment.

The development largely provides opportunity to enhance outcomes. While works do not extend into the station proper, the project provides opportunity to enhance the aural experience for commuters through improvements to the architectural design of the station entry and connected spaces. At the station interface, consideration may need to be given to TfNSW requirements regarding acoustic treatment and public-address systems however this is expected to be determined at a later stage.

The primary activation of the site is to the north of the site, away from more sensitive receptors and ‘quieter’ acoustic environment. Activation toward New South Head Road is considered readily compatible, given the existing mixed land use and higher noise level environment.

Noise and vibration during the construction phase will also warrant further detailed assessment during the planning and design phases. As the works do not propose alteration to the rail tunnels or station proper, impact to the either structures or operations are not expected. Planning of construction works will however need to consider appropriate methodologies to minimise the effects of vibration, however similar works have been successfully undertaken in proximity to other operating rail lines. Temporary provisions will also be required to address potential impacts, while minor, to commuter amenity, through appropriate acoustic separation of pedestrian access to concourse areas and platforms. Similarly, major construction projects have taken place at other stations sites, that have successfully mitigated and managed the impacts of construction noise on staff and commuters.

2.3 Summary of relevant policies, standards and assessment approach

The following policies and standards are identified to be relevant to the future development of Edgecliff Centre. The acoustic feasibility and assessment approach for the future development application are also provided in the table.

Table 1: Summary of relevant acoustic policies and standards

Acoustic aspect	Noise and vibration sources	Policies and standards	Assessment approach for future development applications
Noise and vibration impact on the development	Road noise Rail noise and vibration	State Environmental Planning Policy *(Transport and Infrastructure) 2021* [1] State Environmental Planning Policy No 65 – *Design Quality of Residential Apartment Development* [2] NSW *Apartment Design Guide* (ADG) [3] NSW DoP *Development Near Rail Corridors and Busy Roads – Interim Guideline* [4]	The TISEPP is required for development near rail lines and roads over 20,000 AADT. It applies to noise sensitive development, which includes residential accommodation, place of public worship, hospitals, educational establishments or centre-based child care facilities. Detailed acoustic assessment during DA stage will need to be carried out to demonstrate appropriate methods by which the acoustic criteria could be achieved. For residential apartments, consideration also needs to be given to SEPP 65 and the ADG, which largely defers to the TISEPP requirements.
Noise emission to the environment	Industrial noise including building services equipment	NSW EPA *Noise Policy for Industry* (NPfI) [5]	The NSW NPfI is typically applied not only to industrial sites, but also industrial type noise sources, such as building services equipment. Other onsite operations, such as loading docks and carparks are also typically assessed by reference to the NPfI criteria. Acoustic assessment at the development application stage should quantify existing ambient noise levels, establish appropriate acoustic criteria, assess sources where appropriate detail is available and/or propose appropriate acoustic mitigation and management measures. Detailed design measures are typically not determined until construction documentation is prepared prior to issue of the construction certificate.
	Road Noise	NSW EPA *Road Noise Policy* (RNP) [6]	Noise from road traffic generated by the development and its potential impact to nearby noise sensitive premises would generally be assessed in accordance with the RNP. Acoustic assessment for the potential noise impacts from the traffic generated by the development and loading dock usage should be carried out at the DA stage.

Acoustic aspect	Noise and vibration sources	Policies and standards	Assessment approach for future development applications
	Retail uses	-	There are no NSW policies or standards specific to the operation of retail activities such as patron and music noise. Typically, guidance is taken from the NPfI in the absence of other specific criteria. The initial DA should aim to establish appropriate criteria that it reflective of the intended uses and activities.
	Public realm	-	There are no NSW policies or standards specific activity in the public realm. While assessments can be carried out for structured activities or events, mitigation and management are limited and it is preferred that the use is not unnecessarily regulated for risk of reducing community benefit. Accordingly, where these uses have the potential to impact future noise sensitive uses, it is recommended that the design of receiver buildings address potential impacts if relevant. This aspect should be discussed in the first stage DA.
Demolition and Construction noise and vibration	Construction noise and vibration emission	*Interim Construction Noise Guideline* [7] *Assessing Vibration: A Technical Guideline* [8]	The construction phase of the project has potential to impact surrounding development, and therefore is recommended to be assessed and managed in accordance with relevant NSW policies and standards. Typically, early stage DAs may present a preliminary assessment along with mitigation and management guidelines. More detailed noise and vibration management plans would be required of contractors prior to the commencement of works.

3 Conclusion

Based on the acoustic review of the Planning Proposal for the Edgecliff Centre, it is considered feasible to comply with relevant acoustic policies and standards. Detailed acoustic and vibration studies will be required during the development application stages to inform the detailed building designs, including confirmation of relevant criteria, assessment of proposed uses and development of more specific mitigation and management strategies.

References

[1] NSW Government, “State Environmental Planning Policy (Transport and Infrastructure) 2021,” 13 May 2022. [Online]. Available: https://legislation.nsw.gov.au/view/html/inforce/current/epi-2021-0732.

[2] NSW Government, “State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development,” 2017.

[3] NSW Department of Planning and Environment, “Apartment Design Guide - Tools for improving the design of residential apartment development,” NSW Department of Planning and Environment , Sydney, 2015.

[4] NSW Department of Planning, “Development Near Rail Corridors and Busy Roads - Interim Guideline,” NSW Department of Planning, Sydney, 2008.

[5] NSW Environmental Protection Authority, “NSW Noise Policy for Industry,” NSW EPA, Sydney, 2017.

[6] NSW Environmental Protection Authority, “NSW Road Noise Policy,” NSW Environmental Protection Authority, Sydney, 2012.

[7] Department of Environment & Climate Change NSW (DECC), “Interim Construction Noise Guideline (ICNG),” NSW DECC, Sydney, July 2009.

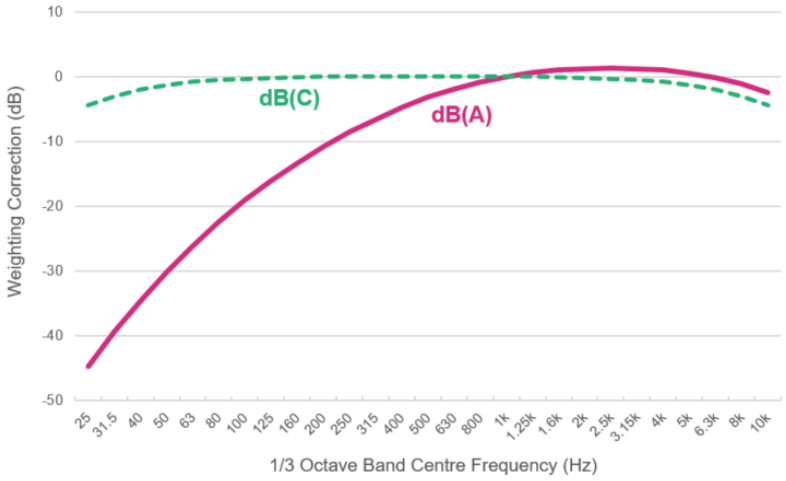
[8] Department of Environment and Conservation (NSW), “Assessing Vibration: A technical guideline,” Department of Environment and Conservation (NSW), Sydney, 2006.

Appendix A

Glossary

Term	Definition
Ambient noise level	The ambient noise level is the overall noise level measured at a location from multiple noise sources. When assessing noise from a particular development, the ambient noise level is defined as the remaining noise level in the absence of the specific noise source being investigated. For example, if a fan located on a building is being investigated, the ambient noise level is the noise level from all other sources without the fan operating, such as traffic, birds, people talking and other noise from other buildings.
Background noise level	The background noise level is the noise level that is generally present at a location at all or most times. Although the background noise may change over the course of a day, over shorter time periods (e.g. 15 minutes) the background noise is almost-constant. Examples of background noise sources include steady traffic (e.g. motorways or arterial roads), constant mechanical or electrical plant and some natural noise sources such as wind, foliage, water and insects. **Assessment Background Level (ABL)** A single-number figure used to characterise the background noise levels from a single day of a noise survey. ABL is derived from the measured noise levels for the day, evening or night time period of a single day of background measurements. The ABL is calculated to be the tenth percentile of the background L_{A90} noise levels – i.e. the measured background noise is above the ABL 90% of the time. **Rating Background Level (RBL / min$L_{A90,1hour}$)** A single-number figure used to characterise the background noise levels from a complete noise survey. The RBL for a day, evening or night time period for the overall survey is calculated from the individual Assessment Background Levels (ABL) for each day of the measurement period, and is numerically equal to the median (middle value) of the ABL values for the days in the noise survey.
Decibel (dB)	The logarithmic scale used to measure sound and vibration levels. Human hearing is not linear and involves hearing over a large range of sound pressures, which would be cumbersome if presented on a linear scale. An increase of approximately 10 dB corresponds to a subjective doubling of the loudness of a noise. The minimum increase or decrease in noise level that can be noticed is typically 2 to 3 dB.
dB weighting curves	The frequency of a sound affects its perceived loudness and human hearing is less sensitive at low and very high frequencies. When seeking to represent the summation of sound pressure levels across the frequency range of human hearing into a single number, weighting is typically applied. Most commonly, A-weighting, denoted as dB(A), is used for environmental noise assessment. This is often supplemented by the linear or C-weighting curves, where there is the potential for excess low-frequency sound at higher sound pressure levels.

Term	Definition



dB(A)

dB(A) denotes a single-number sound pressure level that includes a frequency weighting ('A-weighting') to reflect the subjective loudness of the sound level.

The frequency of a sound affects its perceived loudness. Human hearing is less sensitive at low and very high frequencies, and so the A-weighting is used to account for this effect. An A-weighted decibel level is written as dB(A).

Some typical dB(A) levels are shown below.

Sound Pressure Level dB(A)	Example
130	Human threshold of pain
120	Jet aircraft take-off at 100 m
110	Chain saw at 1 m
100	Inside nightclub
90	Heavy trucks at 5 m
80	Kerbside of busy street
70	Loud stereo in living room
60	Office or restaurant with people present
50	Domestic fan heater at 1m
40	Living room (without TV, stereo, etc)
30	Background noise in a theatre
20	Remote rural area on still night
10	Acoustic laboratory test chamber
0	Threshold of hearing

$L_{1(period)}$

The sound level exceeded for 1% of the measurement period.
As an example, 65 $dBL_{A1,1min}$ indicates that the A-weighted sound level would not exceed 67 dB for more than 0.6 seconds in the 1-minute measurement period.

$L_{10(period)}$

The sound level exceeded for 10% of the measurement period, or alternatively, the sound levels would be lower for 90% of the time.

The L_{10} is often defined as the 'average maximum' sound level over a measurement period, as in Australian Standard 1055.

$L_{90(period)}$

The sound level exceeded for 90% of the measurement period.

Term	Definition
	The L_{90} is often defined as the 'average minimum' or 'background' noise level for a period of measurement. For example, 45 $dBL_{A90,15min}$ indicates that the sound level is higher than 45 dB(A) for 90% of the 15-minute measurement period.
$L_{eq(period)}$	The equivalent ('eq') continuous sound level, used to describe the level of a time-varying sound or vibration measurement. The L_{eq} is often defined as the 'average' level, and mathematically, is the energy-average level over a measurement period.
L_{max}	The L_{max} is the 'absolute maximum' level of a sound or vibration recorded over the measurement period. As the L_{max} is often caused by an instantaneous event, it can vary significantly between measurements.
Vibration	Waves in a solid material are called 'vibration', as opposed to similar waves in air, which are called 'sound' or 'noise'. If vibration levels are high enough, they can be felt; usually vibration levels must be much higher to cause structural damage. A vibrating structure (e.g. a wall) can cause airborne noise to be radiated, even if the vibration itself is too low to be felt. Structureborne vibration limits are sometimes set to control the noise level in a space. Vibration levels can be described using measurements of displacement, velocity and acceleration. Velocity and acceleration are commonly used for structureborne noise and human comfort. Vibration is described using either metric units (such as mm, mm/s and mm/s^2) or else using a decibel scale.