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TJ086-01F02 (r3) Acoustic Statement

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Sydney Polo Club - Acoustic Statement for Planning Proposal

1 Introduction

Renzo Tonin & Associates was engaged by JBA Urban Planning Consultants Pty Ltd (JBA) to provide an acoustic statement to accompany the Planning Proposal for Sydney Polo Club, Richmond Lowlands. The Planning Proposal prepared by JBA on behalf of Basscave Pty Ltd ('Basscave') seeks amendments to the current RU2 zoning of the site in order to permit a range of additional uses on the site. Of the various additional uses, we are advised that the 'function centre' component is the most pertinent to acoustics.

1.1 Site description

The site is located in the Hawkesbury local government area (LGA) and comprises 23 allotments at Ridges Lane, Triangle Lane and Old Kurrajong Road, Richmond, see Figure 1. It is situated on the south-eastern bank of the Hawkesbury River, some 2km to the north-west of Richmond town centre.

The majority of the site is currently used for agricultural (grazing) purposes and polo facilities. These uses are located on land collectively referred to as the Sydney Polo Club which is owned by Basscave, Muscat and Huston. A tourist accommodation facility is also located in the south-western section of the site on land owned by Huston, and a turf farming use in the centre of the site on land owned by Muscat.

The site is predominantly zoned RU2 – Rural Landscape. A small portion in its southern section is zoned E2 Environmental Conservation and a small portion is zoned W1 Natural Waterways along the Hawkesbury River.

Figure 1: Location Map

1.2 Overview of proposed development

The Planning Proposal is seeking to include the following uses as additional permitted uses in the RU2-zoned portion of the site:

- Eco-tourist facilities
- Industrial retail outlet
- Function centres
- Market
- Medical centre
- Recreation facility (major)

- Recreation facility (outdoor)
- Sewage reticulation system
- Sewage system
- Sewage treatment plant
- Veterinary hospital
- Water supply system
- Local industry (microbrewery)
- Food and drink premises
- Shop
- Kiosk

A more detailed and comprehensive description of the proposal is contained in the Planning Proposal prepared by JBA. All three landowners support the Planning Proposal and have provided 'owner's consent' under a separate cover.

1.3 Scope of acoustic assessment

As the Planning Proposal does not seek approval for the specific uses of the site, an acoustic assessment of potential operational noise cannot be carried out, however, the proposed Function Centres have been identified as the uses with the greatest potential to cause noise impacts. Therefore, this report outlines the relevant considerations for the detailed Function Centre DAs, including relevant criteria and assessment methodology.

2 DA requirements

2.1 Assessment criteria

Development proposal are to be assessed in accordance with relevant NSW policies and guidelines, such as those listed below.

Policy or guideline	Assessment outline
NSW Industrial Noise Policy (EPA, 1999)	Operational noise, including retail use, loading docks and mechanical equipment serving the development, and its potential impact on surrounding noise sensitive land uses.
Office of Liquor Gaming and Racing	Operational noise from within any licensed premises should they be proposed as part of the development.
NSW Road Noise Policy (EPA, 2011)	Road traffic generated by the development on the local road network and its potential impact on surrounding noise sensitive land uses.

2.2 Assessment approach

The following outlines the general approach for the acoustic assessment of the DA(s):

- Examine the proposed development to identify acoustic aspects of the operation,
- Identify the sensitive receiver locations surrounding the site, which are to be assessed with regard to operational activities,
- Establish the existing noise environment at the site and surrounding receiver locations for the purpose of setting noise targets for the project,
- Carry out a quantitative acoustic assessment of potential impacts and compare against the relevant noise and vibration targets,
- Where required, identify potential noise and vibration mitigation measures, inclusive of both physical and management measures for the operation phases. The report will also outline where further design development and detailed specifications are required.

2.3 Preliminary site review

At this stage, a preliminary review of the site and surrounds has been carried out to establish the nearest most potentially affected receiver locations. The primary locations considered with regard to operational noise are the residential dwellings located within the site and those to the north east across Powells Lane and to the west across the Hawkesbury River.

The portion of the site to which the Planning Proposal relates is Zoned RU2 Rural Landscape. The following key uses are permitted with consent in the RU2 zone:

- Animal boarding and training establishments
- Farm stay accommodation
- Recreations area, and
- Restaurants or cafes.

Given that restaurants/cafes can have the same or similar noise generating activities of a function centre it is not considered unreasonable for function centres to be the permitted on the site subject to development consent.

2.4 Design considerations

With regard to operational noise, the primary acoustic aspects of the development are expected to be related to external patron areas, provision of music/entertainment, associated carparks and the mechanical plant and equipment serving the function centres. Traffic generated by the development on the local road network and within the site as well as loading dock operations will also need to be assessed.

The large site provides a large degree of flexibility in locating the function centres and carparks away from sensitive receivers. The function centres themselves can then be orientated so that external patron areas and loading docks face away from receivers and the buildings provide shielding. Other measures that can be implemented include:

- The adoption of localised barriers,
- The utilisation of music noise monitoring and sound system limiting devices,
- Management methods to limit the hours of operation for certain activities and external patron areas.
- Mechanical plant noise emission can be controlled by appropriate mechanical system design and implementation of common engineering methods, which may include:
 - procurement of 'quiet' plant
 - strategic positioning of plant away from sensitive neighbouring premises to maximise intervening acoustic shielding between the plant and sensitive neighbouring premises
 - commercially available acoustic attenuators for air discharge and air intakes of plant
 - acoustically lined and lagged ductwork
 - acoustic barriers between plant and sensitive neighbouring premises
 - partial or complete acoustic enclosures over plant

3 Conclusion

Renzo Tonin & Associates was engaged by JBA Urban Planning Consultants Pty Ltd (JBA) to provide an acoustic statement to accompany the Planning Proposal for Sydney Polo Club, Richmond Lowlands. The subject Planning Proposal seeks amendment to the subject sites RU2 zone in order to permit a range of additional uses (subject to consent). Most pertinent to acoustics, is the addition of function centres, for which this acoustic review specifically relates.

The review outlines the relevant NSW policies and guidelines with regard to operational noise and vibration, which are recommended for the assessment of future development applications for function centres on the site. It is noted that the relevant criteria also apply to restaurants and cafes which are already permissible with consent in the zone. Therefore, the inclusion of function centres should not permit additional noise to what is already possible under the current zoning. This report also outlines the noise and vibration assessment methodology and preliminary design considerations expected to be detailed in the future DAs.

References

- [1] NSW EPA, NSW Road Noise Policy, Sydney: NSW EPA, 2011.
- [2] NSW EPA, NSW Industrial Noise Policy, Sydney: NSW EPA, 1999.

Document control

Date	Revision history	Non-issued revision	Issued revision	Prepared	Instructed	Authorised
15.04.2016	Internal draft	0		BC	GW	
21.04.2016	Issued draft		1	BC	GW	GW
21.04.2016	Issued final		2	BC	GW	GW
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We have prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

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APPENDIX A Glossary of terminology

The following is a brief description of the technical terms used to describe noise to assist in understanding the technical issues presented.

Adverse weather	Weather effects that enhance noise (that is, wind and temperature inversions) that occur at a site for a significant period of time (that is, wind occurring more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of the nights in winter).
Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Assessment period	The period in a day over which assessments are made.
Assessment point	A point at which noise measurements are taken or estimated. A point at which noise measurements are taken or estimated.
Background noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L90 noise level (see below).
Decibel [dB]	The units that sound is measured in. The following are examples of the decibel readings of every day sounds: 0dB The faintest sound we can hear 30dB A quiet library or in a quiet location in the country 45dB Typical office space. Ambience in the city at night 60dB CBD mall at lunch time 70dB The sound of a car passing on the street 80dB Loud music played at home 90dB The sound of a truck passing on the street 100dB The sound of a rock band 115dB Limit of sound permitted in industry 120dB Deafening
dB(A)	A-weighted decibels. The A-weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter.
dB(C)	C-weighted decibels. The C-weighting noise filter simulates the response of the human ear at relatively high levels, where the human ear is nearly equally effective at hearing from mid-low frequency (63Hz) to mid-high frequency (4kHz), but is less effective outside these frequencies.
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Impulsive noise	Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.
Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.
L _{Max}	The maximum sound pressure level measured over a given period.
L _{Min}	The minimum sound pressure level measured over a given period.

L ₁	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L ₁₀	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L ₉₀	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
L _{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
Reflection	Sound wave changed in direction of propagation due to a solid object obscuring its path.
SEL	Sound Exposure Level (SEL) is the constant sound level which, if maintained for a period of 1 second would have the same acoustic energy as the measured noise event. SEL noise measurements are useful as they can be converted to obtain L _{eq} sound levels over any period of time and can be used for predicting noise at various locations.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
Sound absorption	The ability of a material to absorb sound energy through its conversion into thermal energy.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power.
Tonal noise	Containing a prominent frequency and characterised by a definite pitch.