15 March 2019

Australian Turf Club Limited
C/o Mostyn Copper Group
Attention: Hayden Kegg

Our ref: 210921309
Your ref:

Dear Hayden

ATC Randwick - Leger Lawn Development
Scoping report advice - Acoustics

1 Introduction

Royal Randwick Racecourse is located in the eastern suburbs of Sydney NSW, approximately 6 km from Sydney's CBD. It consists of the course proper (2224 m circumference) and the inner Kensington track (2100 m circumference). The site is on Crown Land leased to The Australian Turf Club and is bounded by Alison Road, Wansey Rd, High Street & Doncaster Ave. Along these boundaries are a diverse range of neighbouring properties of varying heights, including the UNSW Sydney campus along with several commercial and residential properties.

The Australian Turf Club proposes to undertake development in the Leger Lawn area ('the proposal') of the Royal Randwick Racecourse. The location of the proposal is shown in Figure 1.

The proposal aims to create a new tiered retaining structure facing the racetrack. Supporting infrastructure such as the creation of an active 'eat street' and marquees, lifts, amenities and kitchens will also be constructed as part of the proposal.

This letter provides a preliminary acoustic review of the proposal and a proposed methodology for a detailed acoustic assessment.

Figure 1 Proposal location

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2 Methodology

The following methodology is proposed for the acoustic assessment:

- Determine relevant operational and construction noise emission criteria based on monitoring data available in the public domain in the vicinity of the Randwick Racecourse or from other projects on the site
- Previous noise measurements undertaken at the site for crowd noise, etc. will be used to establish and quantify the operational noise emission sources
- It is assumed that construction staging, hours and equipment details will be provided by ATC. This data will be used to establish relevant construction modelling scenarios
- Undertake operational and construction noise modelling to determine the noise emission from the proposal
- Operational noise will be assessed against the *Noise Policy for Industry* (EPA, 2017)
- Construction noise will be assessed against the *Interim Construction Noise Guideline* (DECC, 2009)
- The increase in road traffic would be assessed for the proposal against the *Road Noise Policy* (DECCW, 2011). For this assessment existing traffic and traffic generation on the road network would need to be supplied by either ATC or the consultant undertaking the traffic assessment
- Where required, provide mitigation recommendations to reduce noise levels to compliant levels.

3 Available background monitoring data

Background noise monitoring data was obtained from *CBD and South East Light Rail Project Volume 6 Technical papers Technical paper 11: Noise and Vibration Impact Assessment* (SLR 2013). The background noise monitoring locations BG07, BG08 and BG10 (refer to Figure 2) were considered representative of existing background noise levels at the nearest sensitive receivers.

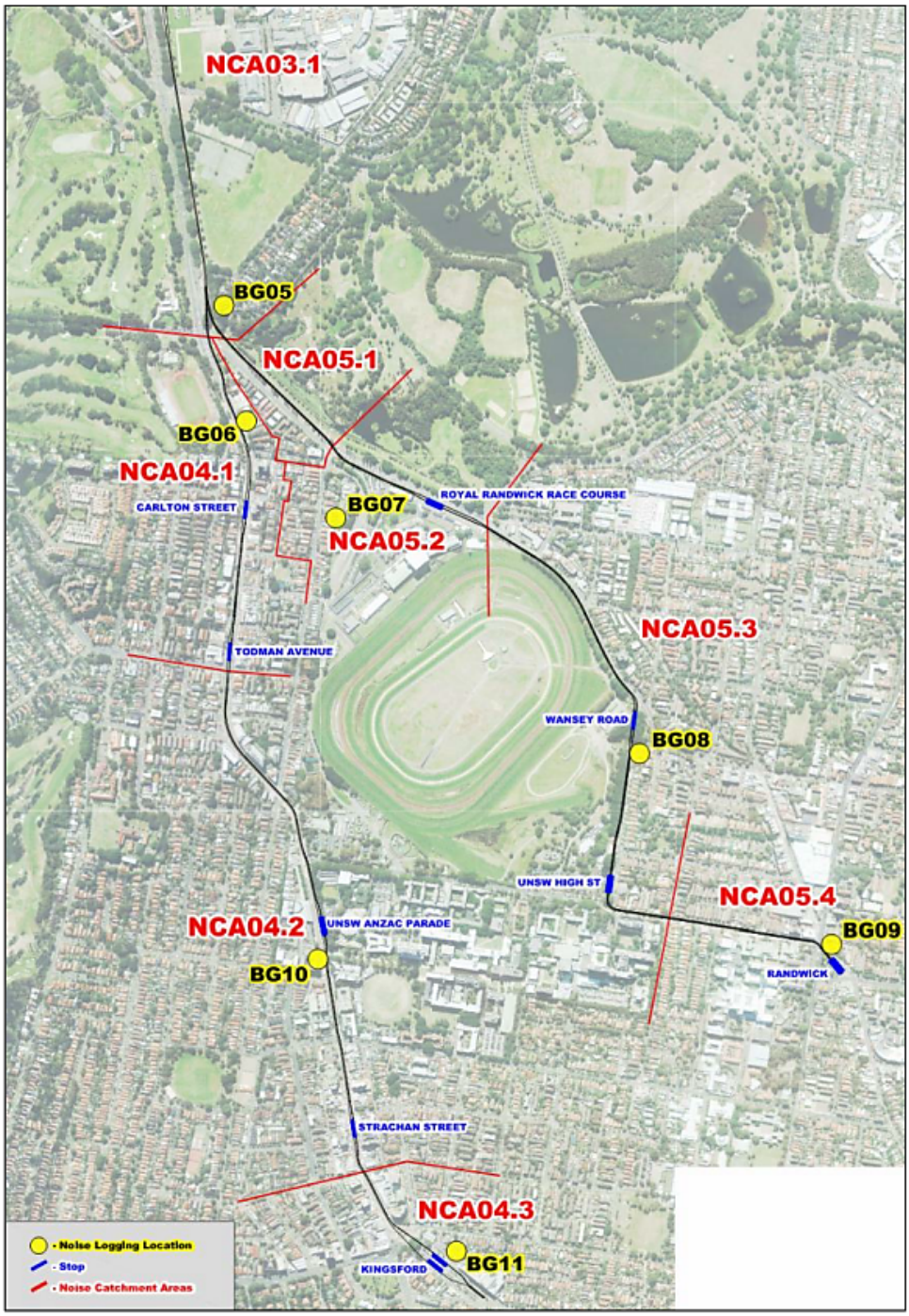

Figure 2 Representative background noise monitoring locations

Source: CBD and South East Light Rail Project Volume 6 Technical papers Technical paper 11: Noise and Vibration Impact Assessment, 2013

A summary of the ambient and background noise monitoring data at BG07, BG08 and BG10 is provided in Table 3-1.

Table 3-1 Summary of noise monitoring results (SLR 2013), dBA

Location	Rating background level (RBL)			L_{Aeq} ambient noise level		
	Day	Evening	Night	Day	Evening	Night
BG07 (Randwick)	44	44	38	54	52	46
BG08 (Randwick)	47	45	39	62	59	56
BG10 (Kensington/Kingsford)	59	57	46	72	71	68

Note: The NPI defines day, evening and night time periods as:

- Day: the period from 7 am to 6 pm Monday to Saturday; or 8 am to 6 pm on Sundays and Public Holidays.
- Evening: the period from 6 pm to 10 pm.
- Night: the remaining period.

4 Noise criteria

The noise emission from the proposal at ATC Randwick will be assessed in accordance with the following guidelines.

4.1 Noise Policy for Industry (NPI)

4.1.1 Operational noise emission

The *Noise Policy for Industry* (NPI) (EPA, 2017) provides guidance on the assessment of operational noise impacts. The guidelines include both intrusive and amenity criteria that are designed to protect receivers from noise significantly louder than the background level and to limit the total noise level from all sources near a receiver.

The intrusiveness noise level aims to protect against significant changes in noise levels. Typically, this will be the project noise trigger level in areas with low existing background noise levels. The intrusiveness noise level is determined by a 5 dBA addition to the measured background noise level. The NPI recommends that the intrusive noise criteria for the evening period should not exceed the day-time period and the night-time period should not exceed the evening period. The intrusiveness noise criteria are only applicable to residential receivers.

The recommended amenity noise level is the noise level objective for total industrial noise at a receiver and is determined based on the overall acoustic characteristics of the receiver area, the receiver type and the existing level of industrial noise.

The project amenity noise level represents the noise level objective for noise from a single development. It aims to limit the cumulative noise impacts from other industries and developments on all receiver types. The project amenity noise level is determined by a 5 dBA subtraction from the recommended amenity noise level for receivers that are not impacted by more than four individual industrial noise sources.

The NPI recommended amenity criteria for the identified receiver types surrounding the Project site are provided in Table 4-1.

Table 4-1 – NPI amenity noise levels

Type of receiver	Noise amenity area	Time of day	Recommended amenity noise level $L_{Aeq(period)}$ noise level, dBA
Residence	Rural	Day	50
		Evening	45
		Night	40
	Suburban	Day	55
		Evening	45
		Night	40
	Urban	Day	60
		Evening	50
		Night	45
Hotels, motels, caretakers' quarters, holiday accommodation, permanent resident caravan parks	See column 4	See column 4	5 dBA above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day
School classroom	All	When in use (noisiest 1 hour period)	35 (internal)
Hospital ward	All	When in use (noisiest 1 hour period)	35 (internal) 50 (external)
Place of worship	All	When in use	40 (internal)
Passive recreation	All	When in use	50
Active recreation	All	When in use	55
Commercial premises	All	When in use	65
Industrial premises	All	When in use	70

Type of receiver	Noise amenity area	Time of day	Recommended amenity noise level $L_{Aeq(period)}$ noise level, dBA
Industrial interface (applicable only to residential noise amenity areas)	All	All	5 dBA above recommended noise amenity area

The proposal specific noise criteria that would be used to assess operational noise impacts are provided in Table 4-2.

Table 4-2 - Proposal specific noise criteria, dBA

Receiver	Time period	Amenity criteria (acceptable noise level) $L_{Aeq(period)}$	Modified amenity criteria[1] $L_{Aeq(period)}$	Rating background level, L_{A90}	Intrusive criteria, $L_{Aeq(15min)}$	Proposal specific noise criteria (external) $L_{Aeq(15min)}$
Residential receivers BG07 (Randwick)	Day	55	53	44	49	**49**
	Evening	45	43	44	49	**43**
	Night	40	38	38	43	**38**
Residential receivers BG08 (Randwick)	Day	55	53	47	52	**52**
	Evening	45	43	45	50	**43**
	Night	40	38	39	44	**38**
Residential receivers BG10 (Kensington/Kingsford)	Day	55	53	59	64	**53**
	Evening	45	43	57	62	**43**
	Night	40	38	46	51	**38**
Note 1: Adjusted from $L_{Aeq(period)}$ to $L_{Aeq(15\ minutes)}$ (plus 3 dB) and for the project (minus 5 dB) as per the NPI.						

4.1.2 Sleep disturbance

Should the operation of the facility extend into the night-time period (10 pm to 7 am / 8 am on Sundays and Public Holidays), an assessment of sleep disturbance will be required. The *Noise Policy for Industry* provides the most recent guidance for the assessment of sleep disturbance. The NPI recommends a maximum noise level assessment to assess the potential for sleep disturbance impacts which include awakenings and disturbance to sleep stages. An initial screening test for the maximum noise levels events should be assessed to the following levels.

- $L_{Aeq(15\ min)}$ 40 dBA or the prevailing RBL plus 5 dB, whichever is greater; and/or
- L_{AFmax} 52 dBA or the prevailing RBL plus 15 dB, whichever is greater.

If the screening test indicates there is a potential for sleep disturbance then a detailed maximum noise level assessment should be undertaken. The detailed assessment should cover the maximum noise level, the extent to which the maximum noise level exceeds the rating background noise level, and the number of times this happens during the night-time period.

4.2 Construction noise

The *Interim Construction Noise Guideline* (ICNG) (DECC 2009) applies to the management of construction noise in NSW. The guideline provides recommendations on construction noise management levels (NMLs) and standard construction periods.

Construction noise management levels for residential premises and other sensitive land uses are provided in the ICNG. The method to determine the noise management levels in accordance with the ICNG is outlined in Table 4-3.

Table 4-3 Noise management levels for residential receivers

Time of day	Noise management level, $L_{Aeq(15\ min)}$	Application notes
Recommended standard hours (Monday to Friday: 7 am to 6 pm, Saturday: 8 am to 1 pm, Sunday/Public Holiday: No work)	Noise affected: RBL + 10 dBA	The noise affected level represents the point above which there may be some community reaction to noise. • where the predicted or measured $L_{Aeq(15\ min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. • the proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected: 75 dBA	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: • times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences) • if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected: RBL + 5 dBA	A strong justification would typically be required for works outside the recommended standard hours.

Time of day	Noise management level, $L_{Aeq(15\ min)}$	Application notes
		The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5 dBA above the noise affected level, the proponent should negotiate with the community.

Noise management levels for other sensitive land uses are provided in Table 4-4 and only apply when the properties are in use.

Table 4-4 Noise management levels for other sensitive land uses

Land use	Noise management level, $L_{Aeq(15\ min)}$
Classrooms Hospital wards and operating theatres Places of worship	45 dBA (internal)
Active recreation areas	65 dBA (external)
Passive recreation areas	60 dBA (external)
Commercial premises	70 dBA (external)
Industrial premises	75 dBA (external)

A summary of the project construction noise management levels for residential receivers in the area is provided in Table 4-5. The noise management levels at non-residential receivers are as per Table 4-4.

Table 4-5 Project construction noise management levels, dBA

Receiver type	Construction noise management levels, $L_{Aeq(15\ min)}$				
	Standard construction hours		Outside standard construction hours		
	Noise affected	Highly noise affected	Day	Evening	Night
Residential receivers BG07 (Randwick)	54	75	49	49	43
Residential receivers BG08 (Randwick)	57	75	52	50	44
Residential receivers BG10 (Kensington/Kingsford)	69	75	64	62	51

4.3 Traffic generation

The *Road Noise Policy* (DECCW 2011) provides traffic noise criteria for sensitive receivers affected by additional traffic on existing freeways/arterial/sub-arterial and local roads generated by land use developments (Table 4-6). The criteria are applied to traffic on public roads to identify potential road traffic impacts and the requirement for reasonable and feasible mitigation measures.

The *Road Noise Policy* (DECCW 2011) application notes state that *"for existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level as a result of the development should be limited to 2 dB above that of the noise level without the development. This limit applies wherever the noise level without the development is within 2 dB of, or exceeds, the relevant day or night noise assessment criterion."*

If road traffic noise increases during operation is within 2 dBA of current levels then the objectives of the *Road Noise Policy* (DECCW 2011) are met and no specific mitigation measures are required.

Table 4-6 Road traffic noise criteria, dB(A)

Type of development	Day 7 am to 10 pm	Night 10 pm to 7 am
Existing residence affected by additional traffic on arterial roads generated by land use developments	60 $L_{Aeq(15\ hr)}$	55 $L_{Aeq(9\ hr)}$
Existing residence affected by additional traffic on local roads generated by land use developments	55 $L_{Aeq(1\ hr)}$	50 $L_{Aeq(1\ hr)}$

4.4 Protection of the Environment Operations Act

The POEO act defines 'offensive noise' as noise

a) *That, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:*

   i) *Is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or*

   ii) *Interferers unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or*

b) *That is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances prescribed by the regulations.*

Guidance from the EPA's *Noise Guide for Local Government* (EPA, 2013) has been used to interpret offensive noise as noise which exceeds background noise levels by more than 5 dB(A) when tested at the boundary of the nearest sensitive receiver.

5 Assessment

A noise assessment and reporting will be undertaken in accordance with the methodology presented in Section 2 above.

Where required, should the noise emission from the proposal exceed the relevant noise emission criteria, GHD will work in conjunction with the ATC to determine suitable mitigation options to reduce noise levels to acceptable levels.

Sincerely
GHD

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