Your ref
Our ref 258152-00
File ref AC03 (v2)

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Dear Tony

ANHF Gordon – Response to The Acoustic Group report

We respond to The Acoustic Group report 47.5289.L2:MSC which outlines outstanding concerns for the development by reference to the acoustic assessment prepared by Arup (258152-AC02, dated 11 October 2017).

We trust the following provides appropriate clarity to the assessment presented in the Arup report.

Sleep disturbance criteria and assessment

The Arup report refers to the sleep disturbance screening criteria of $L_{A1(1minute)} \leq L_{A90} + 15$ dB. Given that the EPA outline that the frequency of events shall be considered, and considering the low frequency of movements outlined in the report, guidance on possible impact was made by reference to the review of research in the EPA *Road Noise Policy*, as referred in the NSW *Industrial Policy* Application notes. Complete disregard for the EPA *Road Noise Policy* review material for vehicle movements on the access ramp is considered unreasonable. While the vehicle movements may not strictly constitute 'free-flowing traffic', references to tennis court developments is considered far less appropriate. The higher sleep disturbance criterion, despite the low frequency of events, was adopted to inform potential mitigation measures.

Regarding the predicted noise levels, the highest noise events were related to the community bus departing (up ramp). The frequency of this activity was outlined, and is summarised as follows:

- 6:45 to 7:00: One departure or one arrival.
- 22:00 to 23:00: One departure and one arrival

Table 1 presents the predicted noise levels, including the bus arrival (down ramp), which indicates only two movements a day, one in each shoulder period, is predicted to exceed the sleep disturbance screening criteria.

Table 1: Sleep disturbance assessment – bus movements

Assessment location	Predicted sound level, $L_{A1\text{-}1min}$		Sleep disturbance criteria, $L_{A1,1min}$, dB(A)		
	Bus – up ramp	Bus – down ramp	Time period	Screening L_{A90} + 15 dB	Upper level
29 Bushlands Avenue	58	51	10 pm to 11 pm	51	60
			6 am to 7 am	53	60
32 Bushlands Avenue	59	48	10 pm to 11 pm	51	60
			6 am to 7 am	53	60

Regarding car movements, Table 2 presents the noise predictions, including the down ramp movements. Movements down the ramp are predicted to comply with the screening criteria during all time periods. Movements up the ramp, generally satisfy criteria during the shoulder periods, only marginally exceeding at 32 Bushlands Avenue between 10 pm and 11 pm (1 dB). Predicted exceedance for the 11 pm to 6 am period is greater, however movements during this period are expected to be minimal, noting that staff changes over periods are at 7 – 9am and 10 pm, while the peak shift change occurs in the late afternoon. It is also noted that provision of the community bus is intended to reduce the number of staff driving to work.

Table 2: Sleep disturbance assessment – car movements

Assessment location	Predicted sound level, $L_{A1\text{-}1min}$		Sleep disturbance criteria, $L_{A1,1min}$, dB(A)		
	Car – up ramp	Car – down ramp	Time period	Screening L_{A90} + 15 dB	Upper level
29 Bushlands Avenue	50	43	10 pm to 11 pm	51	60
			11 pm to 6 am	46	60
			6 am to 7 am	53	60
32 Bushlands Avenue	52	43	10 pm to 11 pm	51	60
			11 pm to 6 am	46	60
			6 am to 7 am	53	60

With consideration of the frequency of events that might exceed the sleep disturbance screening criteria, and the level of this exceedance, the proposed operations and mitigation measures are considered appropriate.

Intrusiveness noise assessment

TAG requests clarification of the predicted noise levels at A2. Utilising the sound power levels presented in Table 5 of the Arup report, frequency of movements presented and distance of 25 m from the ramp to boundary, the following contributions are predicted.

Table 3: Intrusiveness assessment – Location A2

Location	Movement	$L_{Aeq(15minute)}$
32 Bushlands - boundary	Bus Down x 1	28
	Bus up ramp x 1	39
	Car down x 2	26
	Car up ramp x 2	35
	Total $L_{Aeq15min}$ (Daytime)	**41**

It is noted that Table 7 was incorrectly captioned with ‘no-mitigation’, and we confirm that the predicted noise levels to location A1, include acoustic shielding.

Mechanical plant assessment

Design of the mechanical services plant and equipment is not typically available at the Development Application stage, that would otherwise allow a quantitative acoustic assessment. This is typical of much development, and it is standard to require confirmation of the design prior to issue of the Construction Certificate. This approach was also acknowledged and recommended in the Acoustic Logic Consultancy review.

Other on site activities

The matter of internal common areas being used during the evening and night period can readily be addressed in the design and management of the development. During the design development stage, and appropriate conditions can be imposed requiring that the design and management measures are determined and documented prior to the Construction Certificate being issued.

It is noted that potential impact upon the bedrooms within the development would be as of much of a concern as impact upon surrounding residential premises, with areas within the development being in closer proximity.

Yours sincerely

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Associate