Attn: Robert McKnight – Project Manager

RE: New High School in Jerrabomberra SSD RFI

Reference is made to the response submissions from the Department of Planning, Industry and Environment (DPIE), - Queanbeyan-Palerang Regional Council and NSW Environment Protection Authority (EPA) with respect to SSDA submission for the New High School in Jerrabomberra (Reference SSD – 24461956).

For any queries regarding this correspondence, please contact Glen Campbell or the undersigned on (02) 8339 8000

Yours sincerely,

Glen Campbell

Senior Engineer

E gcampbell@acousticlogic.com.au

M +61 0400 673 458

Table 1 EPA RtS Letter

EPA Submissions		
No.	EPA RtS Letter	Response
EPA – Appendix A	Mechanical Plant and Equipment The EPA is unclear whether mechanical plant and equipment (especially mechanical ventilation plant) has been selected. Accordingly, the EPA anticipates that details of mechanical services, plant and equipment are not yet available and the EIS does not appear to show the location of plant and equipment. **The EPA recommends that the proponent ensure that mechanical plant and equipment installed does not generate noise that:** • **Exceeds 5 dBA above the rating background noise level (day, evening and night) measured at the boundaries of the proposal site, and** • **Exhibits tonal or other annoying characteristics.**	The proposed mechanical plant design for the main noise emitting items (that is, air conditioning outdoor units) has been assessed. The remaining plant is minor in nature and/or can be readily treated to comply. The condensing units are currently proposed to be located on the western and northern side of Building A, and the eastern side of Building B. The noise emissions from the proposed plant have been assessed in accordance with the EPA Noise Policy for Industry. The sensitive receivers around the site are noted on the attached plan (located in Appendix A) obtained from the ePlanning Spatial Viewer (with the subject site marked on it), and include: • Greenfield B7 zoning (i.e. commercial/industrial use zoning) • Conservation and recreation zonings. • Residential properties Assessment criteria in accordance for the most affected receivers using the Noise Policy For Industry guideline are: • Residence – day – 40dB(A) L_{eq}, evening -38dB(A) L_{eq} and night – 35 dB(A) L_{eq}. • Commercial – 63 dB(A) L_{eq} • Conservation and recreation – (assuming "passive recreation", which is the most conservative assumption) – 48 dB(A) L_{eq}

		Section 2.6 of the Noise Policy for Industry defines the required assessment locations: • *"For a **residence**, the project noise trigger level and maximum noise levels are to be assessed at the reasonably most-affected point on or within the residential property boundary or, if that is more than 30 metres from the residence, at the reasonably most affected point within 30 metres of the residence, but not closer than 3 metres to a reflective surface and at a height of between 1.2–1.5 metres above ground level."* • *at **commercial or industrial premises**, the noise level is to be assessed at the reasonably most-affected point on or within the property boundary.* • *at **passive and active recreational areas**, the noise level is to be assessed at the most-affected point within the area that is reasonably expected to be used by people, for example, picnic areas or walking tracks.* The assessment location at all receivers were the nearest (and most affected) boundary to the plant being assessed. The nearest plant for the 3 receiver types are approximately: • Residential – 100m • Commercial – 50m • Passive recreation – 130m As a conservative measure we have adopted a 5 dB(A) tonality penalty in accordance with Noise Policy for Industry Fact Sheet C (located in Appendix B). The predicted noise levels are: • Residential - 35 • Commercial – 42 • Passive recreation - 33 Which are all compliant.

EPA – Appendix A	Public Address and School Bell System The EPA notes that inadequate design and installation as well as inappropriate use of school public address and bell system can have noise impacts on nearby sensitive receivers. Appropriate design, installation and operation of these system can both meet the objectives of proper administration of the school and ensuring the safety of students, staff and visitors and avoid interfering unreasonably with the comfort and repose of nearby sensitive receivers. **The EPA recommends that the school public address and bel system be designed, installed and operated to ensure that the system does not interfere unreasonably with the comfort and repose of nearby sensitive receivers.**	The AL Noise Impact Assessment ref: 20210459.2/0311A/R4/GC date 3/1/2021 proposed that noise emissions should comply with assessment criteria determined using the EPA Noise Policy for Industry, the same criteria as for mechanical plant (refer previous comment). The impact assessment provides general recommendations to achieve compliance. As is typical of schools, these systems are designed during construction, and installed and operated to comply. It has been our practice to conduct verification measurements upon completion to confirm emissions comply with the stated noise criteria. A detailed design to be assessed at SSDA stage is unnecessary, especially as there a significant distance separation to residential receivers, and the risk of non-compliance (taking into account the design and compliance process proposed) is minimal. The proposed design and verification processes will ensure no adverse impacts at sensitive receivers.

Appendix A – NSW Planning Map (Provided by NSW ePlanning Spatial Viewer)

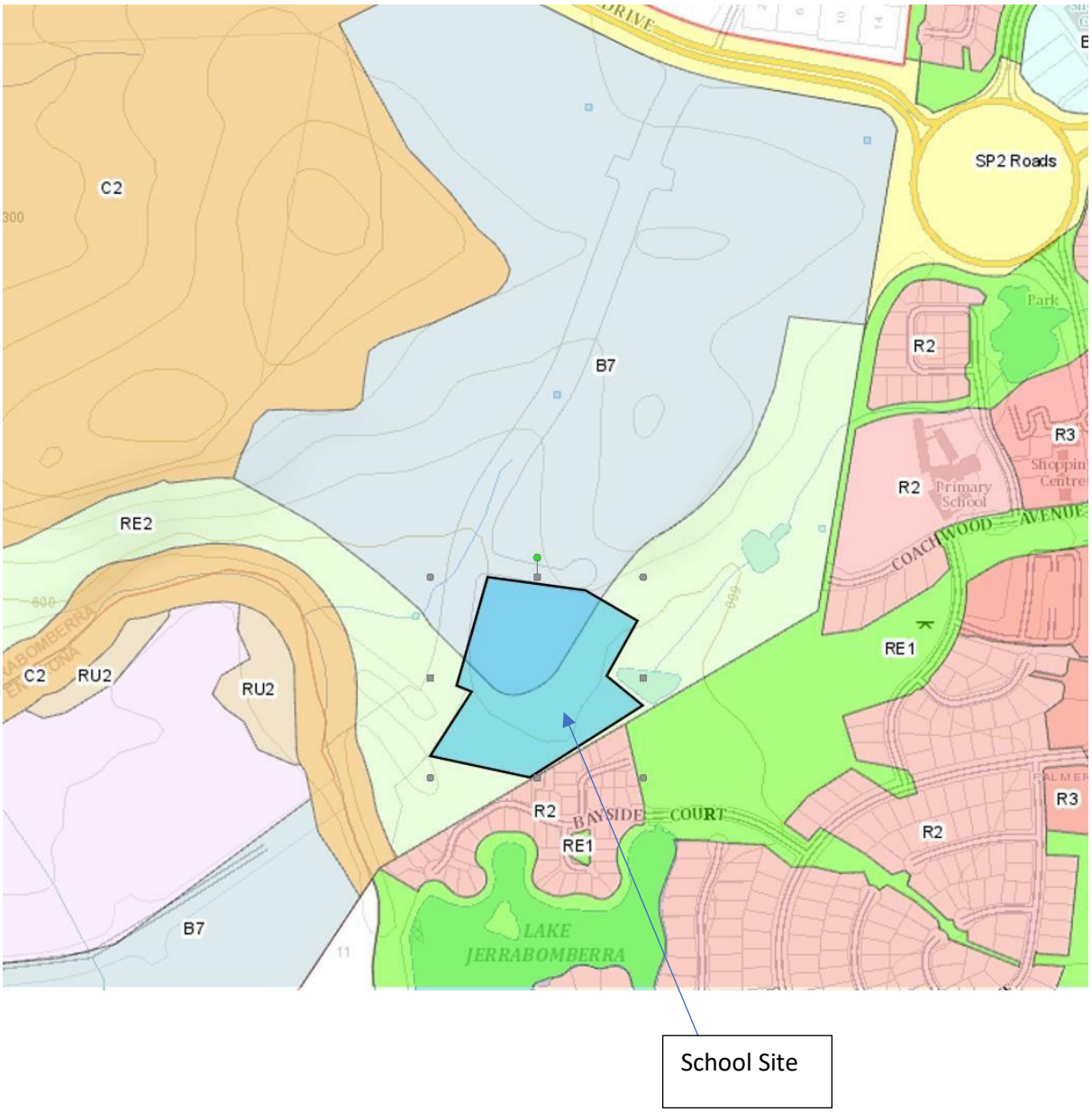

Figure 1 – NSW Planning Map (Provided by NSW ePlanning Spatial Viewer)

Appendix B – NSW EPA Noise Policy for Industry Fact Sheet C

Fact Sheet C: Corrections for annoying noise characteristics

C1 Introduction

Where a noise source contains certain characteristics, such as tonality, intermittency, irregularity or dominant low-frequency content, there is evidence to suggest that it can cause greater annoyance than other noise at the same noise level. On the other hand, some sources may cause less annoyance where only a single event occurs for a limited duration. This section outlines the correction factors to be applied to the source noise level at the receiver before comparison with the project noise trigger levels specified in Section 2, to account for the additional annoyance caused by these modifying factors.

The modifying factor corrections should be applied having regard to:

- the contribution noise level from the premises when assessed/measured at a receiver location, and
- the nature of the noise source and its characteristics (as set out in this fact sheet).

Table C1 sets out the corrections to be applied. The corrections specified for tonal, intermittent and low-frequency noise are to be added to the measured or predicted noise levels at the receiver before comparison with the project noise trigger levels. The adjustments for duration are to be applied to the criterion.

Table C1: Modifying factor corrections (see definitions in Section C2).

Factor	Assessment/ measurement	When to apply	Correction[1]	Comments
Tonal noise	One-third octave band analysis using the objective method for assessing the audibility of tones in noise – simplified method (*ISO1996.2-2007 – Annex D*).	Level of one-third octave band exceeds the level of the adjacent bands on both sides by: • 5 dB or more if the centre frequency of the band containing the tone is in the range 500–10,000 Hz • 8 dB or more if the centre frequency of the band containing the tone is in the range 160–400 Hz • 15 dB or more if the centre frequency of the band containing the tone is in the range 25–125 Hz.	5 dB[2,3]	Third octave measurements should be undertaken using unweighted or Z-weighted measurements. **Note:** Narrow-band analysis using the reference method in *ISO1996-2:2007, Annex C* may be required by the consent/regulatory authority where it appears that a tone is not being adequately identified, e.g. where it appears that the tonal energy is at or close to the third octave band limits of contiguous bands.
Low-frequency noise	Measurement of source contribution C-weighted and A-weighted level and one-third octave measurements in the range 10–160 Hz	Measure/assess source contribution C- and A-weighted $L_{eq,T}$ levels over same time period. Correction to be applied where the C minus A level is 15 dB or more and: • where any of the one-third octave noise levels in Table C2 are exceeded by up to and including 5 dB and cannot be mitigated, a 2-	2 or 5 dB[2]	A difference of 15 dB or more between C- and A-weighted measurements identifies the potential for an unbalance spectrum and potential increased annoyance. The values in Table C2 are derived from

		dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period • where any of the one-third octave noise levels in Table C2 are exceeded by more than 5 dB and cannot be mitigated, a 5-dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period and a 2-dB(A) positive adjustment applies for the daytime period.		Moorhouse (2011) for DEFRA fluctuating low-frequency noise criteria with corrections to reflect external assessment locations.
Intermittent noise	Subjectively assessed but should be assisted with measurement to gauge the extent of change in noise level.	The source noise heard at the receiver varies by more than 5 dB(A) and the intermittent nature of the noise is clearly audible.	5 dB	Adjustment to be applied for **night-time only**.
Duration	Single-event noise duration may range from 1.5 min to 2.5 h.	One event in any assessment period.	0 to 20 dB(A)	The project noise trigger level may be increased by an adjustment depending on duration of noise (see Table C3).
Maximum adjustment	Refer to individual modifying factors.	Where two or more modifying factors are indicated.	Maximum correction of 10 dB(A)[2] (excluding duration correction).	

Notes:
1. Corrections to be added to the measured or predicted levels, except in the case of duration where the adjustment is to be made to the criterion.
2. Where a source emits tonal and low-frequency noise, only one 5-dB correction should be applied if the tone is in the low-frequency range, that is, at or below 160 Hz.
3. Where narrow-band analysis using the reference method is required, as outlined in column 5, the correction will be determined by the *ISO1996-2:2007* standard.

C2 Definitions to support the modifying factor corrections

Tonal noise: noise containing a prominent frequency and characterised by a definite pitch.

Low-frequency noise: noise with an **unbalanced spectrum** and containing major components within the low-frequency range (10–160 Hz) of the frequency spectrum.

Table C2: One-third octave low-frequency noise thresholds.

Hz/dB(Z)	**One-third octave $L_{Zeq,15min}$ threshold level**												
Frequency (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
dB(Z)	92	89	86	77	69	61	54	50	50	48	48	46	44

Notes:

- dB(Z) = decibel (Z frequency weighted).
- For the assessment of low-frequency noise, care should be taken to select a wind screen that can protect the microphone from wind-induced noise characteristics at least 10 dB below the threshold values in Table C2 for

wind speeds up to 5 metres per second. It is likely that high performance larger diameter wind screens (nominally 175 mm) will be required to achieve this performance (Hessler, 2008). In any case, the performance of the wind screen and wind speeds at which data will be excluded needs to be stated.

- Low-frequency noise corrections only apply under the standard and/or noise-enhancing meteorological conditions.
- Where a receiver location has had architectural acoustic treatment applied (including alternative means of mechanical ventilation satisfying the Building Code of Australia) by a proponent, as part of consent requirements or as a private negotiated agreement, alternative external low-frequency noise assessment criteria may be proposed to account for the higher transmission loss of the building façade.
- Measurements should be made between 1.2 and 1.5 metres above ground level unless otherwise approved through a planning instrument (consent/approval) or environment protection licence, and at locations nominated in the development consent or licence.

Intermittent noise: noise where the level suddenly drops/increases several times during the assessment period, with a noticeable change in source noise level of at least 5 dB(A); for example, equipment cycling on and off. The intermittency correction is not intended to be applied to changes in noise level due to meteorology.

Correction for duration: this is applied where a single-event noise is continuous for a period of less than two and a half hours in any assessment period. The allowable exceedance of the $L_{Aeq,15min}$ equivalent noise criterion is shown in Table C3 for the duration of the event. This adjustment is designed to account for unusual and one-off events, and does not apply to regular and/or routine high-noise level events.

Table C3: Adjustment for duration.

Allowable duration of noise (one event in any 24-hour period)	**Allowable exceedance of $L_{Aeq,15min}$ equivalent project noise trigger level at receptor for the period of the noise event, dB(A)**	
	Daytime and evening (7 am–10 pm)	**Night-time (10 pm–7 am)**
1 to 2.5 hours	2	Nil
15 minutes to 1 hour	5	Nil
6 minutes to 15 minutes	7	2
1.5 minutes to 6 minutes	15	5
less than 1.5 minutes	20	10

Note: Where the duration of the noise event is smaller than the duration of the project noise trigger level (that is, less than 15 minutes) the allowable adjusted project noise trigger level becomes:

$$10Log_{10}(\left(10^{\frac{PNTL}{10}} x \left(\frac{900 - duration}{900}\right)\right) + \left(10^{\frac{PNTL+allowable\ exceedance\ (Table\ C3)}{10}} x\ duration\right))$$

Maximum correction: the maximum correction to be applied to the predicted or the measured level where two or more modifying factors are present. The maximum adjustment is 10 dB(A) where the noise contains two or more modifying factors (excluding the duration correction).