6 November 2020

610.18552-L01-v0.4 RTS Acoustics.docx

Bloompark Consulting Pty Ltd
Suite 2.04/41 McLaren Street,
North Sydney NSW 2060

Attention: Peter Brogan

Dear Peter

Trinity Grammar School Renewal Project
Response to Submissions - Acoustics

SLR Consulting has been engaged by Trinity Grammar School to provide acoustic design advice for the Renewal Project at Summer Hill Campus (SSD-10371).

This letter addresses the acoustic items included in the Response to Submissions from the NSW Department of Planning, Industry and Environment (DPIE) dated 12 June 2020 as reproduced below:

> *3. Acoustic*
>
> - *It is unclear whether an acoustic assessment of out of school hours community use of school facilities has been conducted. An updated acoustic assessment including this component is to be provided, in case this has been excluded. The acoustic assessment must include recommendations regarding limitations on permitted hours and frequency of such use, in particular for any outdoor spaces, to mitigate potential noise impacts on the neighbouring residents.*
> - *Operational noise impact of outdoor play areas and multi-purpose hall is to be provided, given the increase in student numbers proposed. The updated assessment must include details of proposed times and frequency of use of these areas.*
> - *Although there are no anticipated changes to the use of public address system or school bell, no assessment has been presented on the likely impacts of these components. Further details should be provided on the design, siting and operation of these elements to minimise / mitigate noise impacts on the surrounding community.*

Additional comment was received from DPIE on 12 October 2020 following submission of the previous version of this report (610.18552-L01-v0.2 dated 19 August 2020). This is reproduced below:

> *Operational noise from outdoor play areas has not been assessed against the criteria established in Table 6 of the original acoustic assessment. The increased use of the outdoor areas including during school times such as at lunchtime, as well as the out of hours activities considered in the supplementary assessment, should be assessed against the noise criteria, with existing and proposed noise levels provided. The proposal also creates a new outdoor play area on Seaview Street and this should also be assessed. All these matters are to be addressed in the RtS*

SLR provides the following response to the above items.

1 OOSH School & Community Usage

SLR understands that the proposed OOSH activities are to remain unchanged from the existing use. These activities are summarised in **Table 1** and are drawn from the usage document provided to SLR dated 24 October 2019.

Table 1 OOSH School & Community Usage

Event	**Day of Week**	**Frequency** (days per year)	**Hours of Operation**	**Existing facility where event is currently held**	**Duration of each session**	**Current & Proposed attendance at event** (people)
Anglican EdComm	Friday	Annually - (Two events)	6pm to 9pm	Assembly Hall, The Latham Theatre	3 Hours	50 - 150
Aussi Masters Swimming	Monday - Thursday & Saturdays	All Year	7pm - 8:30pm & Sat 1pm - 2pm	25m Pool	1.5 & 1 Hour	10
Meriden School - Athletics Training	Tuesday & Thursday	Term Time Only - (Three events)	3:45pm - 5:15pm	No. 2 Oval	1.5 Hours	40
NSW Basketball	Monday, Wednesday, Friday	Term Time Only - Monthly	6:30pm - 9pm	Sports Centre & C0.1	2.5 Hours	30
NSW Institute of Sport	Wednesday	Annually - (Six events)	8am - 10am	50 m Pool	2 Hours	50
NSW Rugby	Tuesday & Thursday	Annually - (Two events)	9am - 4:30pm	No. 1 Oval	6.5 Hours	23
PLC Diving	Friday	Term Time Only - Terms 1 - 4	5:15pm - 6:45pm	25m Pool	1.5 Hours	20
Quilt NSW	Saturday - Sunday	Annually - (Two events)	8am - 7pm	C1.1 (Centenary Centre)	11 Hours	30
Swim League Pty. Ltd.	Saturday	Annually - (Two events)	1pm - 6:15pm	50m Pool	5.15 Hours	50
Sydney City Volleyball	Wednesdays	Term Time Only - Terms 1 - 4	7pm - 9pm	C0.1 (Centenary Centre)	2 Hours	30
Sydney Comets Basketball	Monday - Thursday	Term Time Only - Terms 1 - 4	5:30pm - 9pm	Sports Centre & C0.1	3.5 Hours	30
Sydney University Volleyball	Wednesdays	Term Time Only - Terms 1 - 4	7pm - 9pm	Sports Centre	2 Hours	30

Event	Day of Week	Frequency (days per year)	Hours of Operation	Existing facility where event is currently held	Duration of each session	Current & Proposed attendance at event (people)
The Associated Schools of NSW - Football Training	Monday	Annually - (One event)	4pm - 5pm	No. 2 Oval	1 Hour	23

DPIE has requested an assessment be provided of the existing and proposed OOSH activities against the criteria provided in Table 6 of the acoustic report (SLR report 610.18552-R01-v1.1 dated 4 February 2020) at the nearest receivers to each activity area. The criteria from Table 6 are reproduced in **Table 2** below, with additional criteria provided for receivers on Victoria St based on the noise survey results included in Table 5 of the report.

Table 2 Operational Noise Criteria – Outdoor Play Areas

Assessment Location	Duration	Time of Day	Measured RBL L_{A90}	Criteria ($L_{Aeq(15minute)}$)
Seaview St noise-sensitive receiver[1]	Up to 2 hours (total) per day	Daytime	42	52
	More than 2 hours per day	Daytime	42	47
Victoria St noise-sensitive receiver[1]	Up to 2 hours (total) per day	Daytime	44	54
	More than 2 hours per day	Daytime	44	49

Note 1: The assessment location is defined as the most affected point on or within any residential receiver property boundary.

It is noted that there is no proposed change to numbers in attendance, hours of operation or location for the activities in **Table 1.** Predicted noise levels for external OOSH activities are provided in **Table 3** since these would generate the most significant impact. During detailed design any upgraded building facades would be designed to ensure that no significant noise contributions to external activity would occur at the nearest receivers.

Assumptions made for the existing and proposed activities assessment include:

- Sound power level of 10 students has been taken from the upper end of the range provided in the AAAC "*Guideline for Child Care Centre Acoustic Assessment*".
- Activity duration is considered to be more than 2 hours per day for all locations, which accounts for other activities that would occur during school hours.
- All external activities included in **Table 1** occur during the daytime period.

Table 3 OOSH School & Community Usage – Existing and Proposed Noise Levels

Event	Activity Location	Current & Proposed attendance at event (people)	Offset distance to nearest receiver [1]	Predicted LAeq Receiver level (dB)	Criteria	Existing/Proposed Compliance
Meriden School - Athletics Training	No. 2 Oval	40	60 m	51	49	No
NSW Rugby	No. 1 Oval	23	75 m	47	49	Yes
The Associated Schools of NSW - Football Training	No. 2 Oval	23	60 m	48	49	Yes

Note 1: The nearest receiver is Victoria St for No.2 Oval and Prospect St for No.1 Oval. No noise monitoring was conducted on Prospect St, however the daytime RBL is conservatively assumed to be the same as Victoria St for the purpose of this assessment (likely to be higher due to the proximity to Old Canterbury Road).

The results in **Table 3** indicate that compliance is expected for most existing and proposed OOSH outdoor activities at the nearest receivers. For the Meriden School Athletics Training a 2 dB exceedance is predicted for both existing and proposed activities.

2 Operational Noise from Outdoor Play Areas

All outdoor play activities are proposed to maintain the same hours and locations as existing, with some activities proposed to increase in numbers compared to the current maximum attendance.

The predicted increase in noise levels for these activities have been assessed in **Table 4** based on the change in maximum attendance. This assessment considers that for a given number of people involved in a sports activity, at any time the noise generated will be based on the speech noise level from a proportion of the total number speaking or shouting. As the total number of participants increases, so does the speech noise level in accordance with the following relationship:

*Change in L_{Aeq} noise level = 10 * log (Proposed no. of sources / Current no. of sources)*

Table 4 Operational Noise Increase from Outdoor Play

Activity	Location	Hours	Current Maximum Attendance	Proposed Maximum Attendance	Predicted Increase in L_{Aeq} Noise Level
Summer Sport Training	Ovals 1, 2, 3, C0.1, Sports Centre	7am - 8:30am & 1:50pm - 5pm	550	600	0.4 dB
Track & Field Team Training	Ovals, 1, 2, 3 and No. 2 Oval running track, Fitness Centre	3:40pm - 6pm	140	160	0.6 dB
Winter Sport Training	Ovals 1, 2, 3 & Sports Centre	7am - 8:30am & 1:50pm - 5pm	550	600	0.4 dB

Activity	Location	Hours	Current Maximum Attendance	Proposed Maximum Attendance	Predicted Increase in L_{Aeq} Noise Level
Co-curricular (Cadets with Meriden School)	No. 1 Oval, Quad, Classrooms	3:40pm - 5pm	650	700	0.3 dB

The predictions in **Table 4** indicate that in all cases the proposed increase in maximum numbers would result in a noise level increase of less than 1 dB, which would not be a noticeable change from the current use.

Irrespective of the proposed increase in attendance numbers, given that the activity location and hours of operation would remain unchanged the predicted change in noise level is not considered acoustically significant.

DPIE has also requested an assessment of existing and proposed noise levels against the criteria included in **Table 2**. The maximum attendance numbers from **Table 4** have been divided proportionally amongst the different activity locations and the predicted noise levels at the nearest receiver are indicated in **Table 5** for existing and proposed student numbers. In addition, estimated student numbers in external areas during lunchtime for both Junior school and Senior school areas has also been assessed.

Table 5 Outdoor Play – Noise Levels Predictions for Current and Proposed Student Numbers

Event	Outdoor Activity Location	Existing attendance	Proposed attendance	Offset distance to nearest receiver[1]	Predicted Existing LAeq Receiver level (dB)	Predicted Proposed LAeq Receiver level (dB)	Criteria	Compliance
Summer Sport Training	No. 1 Oval	120	130	75 m	54	54	49	No
	No. 2 Oval	120	130	60 m	55	56	49	No
	No. 3 Oval	120	130	60 m	55	56	49	No
Track & Field Team Training	No. 1 Oval	25	30	75 m	47	48	49	Yes
	No. 2 Oval	50	55	60 m	52	52	49	No
	No. 3 Oval	25	30	60 m	49	49	49	Yes
Winter Sport Training	No. 1 Oval	150	165	75 m	55	55	49	No
	No. 2 Oval	150	165	60 m	56	57	49	No
	No. 3 Oval	150	165	60 m	56	57	49	No
Co-curricular (Cadets with Meriden School)	No. 1 Oval	200	220	75 m	56	57	49	No

Event	Outdoor Activity Location	Existing attendance	Proposed attendance	Offset distance to nearest receiver[1]	Predicted Existing LAeq Receiver level (dB)	Predicted Proposed LAeq Receiver level (dB)	Criteria	Compliance
Lunchtime	No. 1 Oval	200	250	75 m	56	57	49	No
	No. 2 Oval	200	250	60 m	58	59	49	No
	No. 3 Oval	200	250	60 m	58	59	49	No
	Junior School Play	80	80	20 m	55	55	47	No

Note 1: The nearest receiver is Victoria St for No.2 and No.3 Oval, Prospect St for No.1 Oval and Seaview St for Junior School Play. No noise monitoring was conducted on Prospect St, however the daytime RBL is conservatively assumed to be the same as Victoria St for the purpose of this assessment (likely to be higher due to the proximity to Old Canterbury Road).

The noise level predictions in **Table 5** for existing and proposed student numbers confirm that noise levels are expected to change by no more than 1 dB at each receiver location for all existing outdoor areas, which is not considered acoustically significant. No difference in compliance with the criteria will occur as a result in the proposed attendance numbers.

The new Junior School play area adjacent to Seaview St has been assessed separately based on the proposed use. Assumptions made for the assessment include:

- Sound power level of 10 students has been taken from the range provided in the AAAC "*Guideline for Child Care Centre Acoustic Assessment*".
- Activity duration is considered for up to 2 hours per day.

The results of the assessment are included in **Table 6**.

Table 6 New Junior School Outdoor Play – Noise Levels Predictions

Number of students	Play duration	Screening	Offset distance to nearest receiver	Predicted LAeq Receiver level (dB)	Criteria	Compliance?
80 students	< 2 hours	None	30 m	58	52	No
40 students	< 2 hours	None	30 m	55	52	No

The results in **Table 6** indicate that exceedances of 6 dB and 3 dB are predicted at the nearest receivers with 80 and 40 students, respectively. It is noted that the goals in the AAAC Guideline are not mandatory and where they are not achieved, then it does not necessarily follow that noise levels would result in unacceptable impacts at the surrounding receivers. Based on previous experience, noise from children playing is generally not considered an offensive source of noise by most people.

Furthermore, reference to the monitored noise data shows that existing daytime $L_{Aeq(15minute)}$ noise levels during the survey were generally between 55 and 65 dBA near Seaview Street, which is comparable to or higher than the worst-case predicted level from the new play area. Additionally, noise from children playing is an existing feature of the area.

Where mitigation is considered necessary for the new outdoor play area, a boundary fence of solid construction which blocks line of sight to the nearest receivers would likely be effective.

3 Operational Noise Emission from Multi-Purpose Hall

Noise breakout from the new Multi-Purpose Hall has been assessed to the nearest receiver on Victoria St, located approximately 90 m to the West. The highest noise impact is considered likely to occur during sporting activity such as a competition basketball game with crowd.

Previously measured source noise levels for a comparable environment have been taken from the SLR database. The following assumptions have been made for the purpose of this breakout assessment:

- Reverberant sound pressure level (basketball game with crowd): L_{Aeq} 84 dBA
- Windows (closed): 6mm single float glazing (Rw 28 dB)
- Walls: External cladding (minimum 15 kg/m^2) on 90mm timber or metal frame, cavity insulation and internal lining (minimum 10 kg/m^2) (Rw 37 dB)
- Doors (northern façade): Construction to be advised (Rw 28 dB)
- Roof: Metal deck with thermal insulation and open/perforated ceiling (Rw 32 dB)

For operational activities occurring regularly, a criteria of RBL + 5 dB is considered appropriate in accordance with Section 4.3.2 of the acoustic report. For receivers along Victoria Street this corresponds to a criteria of L_{Aeq} 49 dB during the daytime period (7.00am to 6.00pm).

The predicted noise breakout from the Multi-Purpose Hall during a representative basketball event is included in **Table 7**. The assessment assumes windows and doors would be closed with mechanical ventilation operating during high noise level activities.

Table 7 Noise Breakout from Multi-Purpose Hall

Hall LAeq source level (dB)	Composite façade transmission loss (dB)	Offset distance to receiver on Victoria St	Predicted LAeq Receiver level (dB)	Criteria	Compliance
84	Rw 35	90 m	<30	49	Yes

The results in **Table 7** indicate that compliance with the operational noise criteria would be expected at the nearest receivers on Victoria St.

4 PA System and School Bell

The design of the School Bell, PA and EWIS system would be carried out as part of the Detailed Design phase so there is no specification or acoustic data available at this stage. It is proposed to install a new PA system which would integrate with the existing systems as appropriate.

New loudspeaker locations will be selected to cover both internal and external areas within the Renewal Project. With regard to external locations, it is anticipated that the only significant addition to the existing system coverage is likely to be in the vicinity of the new Multi-Purpose Hall. However the coverage area of the additional loudspeaker(s) would be further from the school boundaries than the existing No. 1 Oval and No. 3 Oval.

With appropriately designed speaker coverage limited to the vicinity of the new Hall only, it is not anticipated that the addition of these loudspeakers would result in any increase of PA system noise at the residential receivers located to the West or East of the School.

For operational activities occurring regularly including PA system announcements, a criteria of RBL + 5 dB is considered appropriate in accordance with Section 4.3.2 of the acoustic report. For receivers along Victoria Street this corresponds to a criteria of L_{Aeq} 49 dB during the daytime period (7.00am to 6.00pm). The PA system should be designed to achieve compliance with this or other relevant agreed criteria at the nearest receivers.

Should you have any further queries, please don't hesitate to contact the undersigned.

Yours sincerely

MARK IRISH
Principal - Acoustics & Vibration

Checked/
Authorised by: AMC