

**VICTORIA PARK CHRISTIAN SCHOOL
PROPOSED NEW DROP-OFF / PICK-UP
27 COLOMBO STREET
VICTORIA PARK**

ENVIRONMENTAL NOISE ASSESSMENT

NOVEMBER 2023

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ACOUSTIC ASSESSMENT
VICTORIA PARK CHRISTIAN SCHOOL
27 COLOMBO STREET, VICTORIA PARK

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RISE URBAN

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1.0 INTRODUCTION

Herring Storer Acoustics was commissioned by Rise Urban to undertake an acoustical assessment of the noise associated with the proposed additional car parking and student capacity at the Victoria Park Christian School located at 27 Colombo Street, Victoria Park.

The proposed additional parking is to provide a student morning drop-off and afternoon pick up facility and would only be accessible / open for limited periods in the morning and afternoon.

It is proposed to increase the capacity of the school from 150 to 250 students.

It is noted that because the development application relates to educational activities, the noise emissions from this premises would be considered as “community noise” under the *Environmental Protection (Noise) Regulations 1997*. As a consequence, the “assigned noise levels” are not applicable. Under the Regulations, noise emissions would be considered under Regulation 16 – Community Noise. For reference, Regulation 16 – Community Noise and Schedule 2 that defines community noise are attached in Appendix A.

We also note that from information received from DWER, the bitumised area would be considered as a road, thus noise relating to motor vehicles is exempt from the *Environmental Protection (Noise) Regulations 1997*. We note however, that these noise sources are rarely critical in the determination of compliance. However, it could be interpreted that the closing of a car door is not exempt from the Regulations, thus an assessment with regards to compliance with the Regulations for car doors closing has been undertaken. Additionally, for completeness the noise associate with car movements and cars starting have also been assessed.

For information, the proposed plan for the new parking area is attached in Appendix B.

2.0 SUMMARY

Noise emissions from this premises would be considered as “community noise” under the *Environmental Protection (Noise) Regulations 1997*. As a consequence, the “assigned noise levels” do not apply. Under the Regulations, noise emission would be considered under Regulation 16 – Community Noise.

Even so, we note that the noise received at the neighbouring residences from the noise associated with the cars using the proposed new parking area would easily comply with the requirements of the Environmental Protection (Noise) regulations 1997.

Finally, we note that the increase in the number of children would in the worst case, increase the noise from children playing outside during lunch and recess by up to 2 dB(A). An increase of 2 dB(A) is barely perceivable. Additionally, the noise received at some of the residences to the north east and east from children playing within the playing ground, would with the construction of the new parking area remain the same or in fact reduce. This is because the children will no longer be able to play up against or near the fence.

The duration of this possible increase would only be for 2 short period of the day, with lunch being between 11:20am and 12:00 noon; and recess between 1:30 and 1:50pm. We also note that the although the lunch period is 40 minutes, a reasonable proportion of that time is taken up by the children eating lunch.

Thus, noise from the proposed additional car parking and student capacity would be deemed to comply with the requirements of the Environmental Protection (Nose) Regulations 1997.

3.0 ACCEPTABLE NOISE LEVELS

The allowable noise level at the surrounding locales is prescribed by the *Environmental Protection (Noise) Regulations 1997*. Noise emissions from an educational facility (ie school) would be considered as community noise, thus, the requirements of Regulation 16 – Community Noise would be applicable. Thus, under this Regulation, noise from educational facilities are classified as community noise and Regulation 7 – Prescribed Standard for Noise Emissions, does not apply to community noise. From Schedule 2 of the Regulations :

4. *Noise emitted as a consequence of a recreational or educational activity from premises occupied for educational purposes if the activity –*
- (a) *is conducted under the control of the occupier of the premises; and*
 - (b) *does not include the use of mechanical equipment other than musical instruments.*

Thus, Regulations 7 (ie the assigned noise levels) does not apply to the noise associated with school activities, such as children playing outside. However, we note that under Schedule 2, the noise emitted from “*mechanical equipment other than musical instruments*” is not exempt under the Schedule 2 – Community Noise. Thus, the noise received at the neighbouring residences from the noise associated with cars within the proposed new parking area would not be exempt and would need to comply with the assigned the appropriate assigned noise levels.

Note : With regard to noise emission associated with cars, associated with the propulsion or braking would also be exempt. Thus, only the noise associated with car doors closing needs to comply with the assigned noise levels. However, for completeness the noise associated with car movements and cars starting have also been assessed against the appropriate assigned noise levels.

3.1 ASSIGNED NOISE LEVELS

Regulations 7 & 8 stipulate maximum allowable external noise levels. For highly sensitive area of a noise sensitive premises this is determined by the calculation of an influencing factor, which is then added to the base levels shown below in Table 3.1. The influencing factor is calculated for the usage of land within two circles, having radii of 100m and 450m from the premises of concern. For other areas within a noise sensitive premises, the assigned noise levels are fixed throughout the day, as listed in Table 3.1.

TABLE 3.1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises : highly sensitive area	0700 - 1900 hours Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days (Evening)	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	35 + IF	45 + IF	55 + IF

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.
IF is the influencing factor.

It is a requirement that received noise be free of annoying characteristics (tonality, modulation and impulsiveness), defined below as per Regulation 9.

- “impulsiveness”** means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax(Slow)}$ is more than 15 dB when determined for a single representative event;
- “modulation”** means a variation in the emission of noise that –
- (a) is more than 3 dB L_{AFast} or is more than 3 dB L_{AFast} in any one-third octave band;
 - (b) is present for more at least 10% of the representative assessment period; and
 - (c) is regular, cyclic and audible;
- “tonality”** means the presence in the noise emission of tonal characteristics where the difference between –
- (a) the A-weighted sound pressure level in any one-third octave band; and
 - (b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,
- is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as L_{ASlow} levels.

Where the noise emission is not music, if the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 3.2 below.

TABLE 3.2 - ADJUSTMENTS TO MEASURED LEVELS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

For this proposal, the neighbouring residences of concern are the residences to the north west across Oswald Street and those abutting the school to the north east, as indicated on Figure 3.1. For these residences, with Canning Highway being within 450 metres and the commercial premises in the area, the influencing factor (IF) has been calculated at +3 dB.

We note that the residences to the east, as denoted on Figure 3.1, are located adjacent to the existing car park and the noise levels received at these residences would remain unchanged.

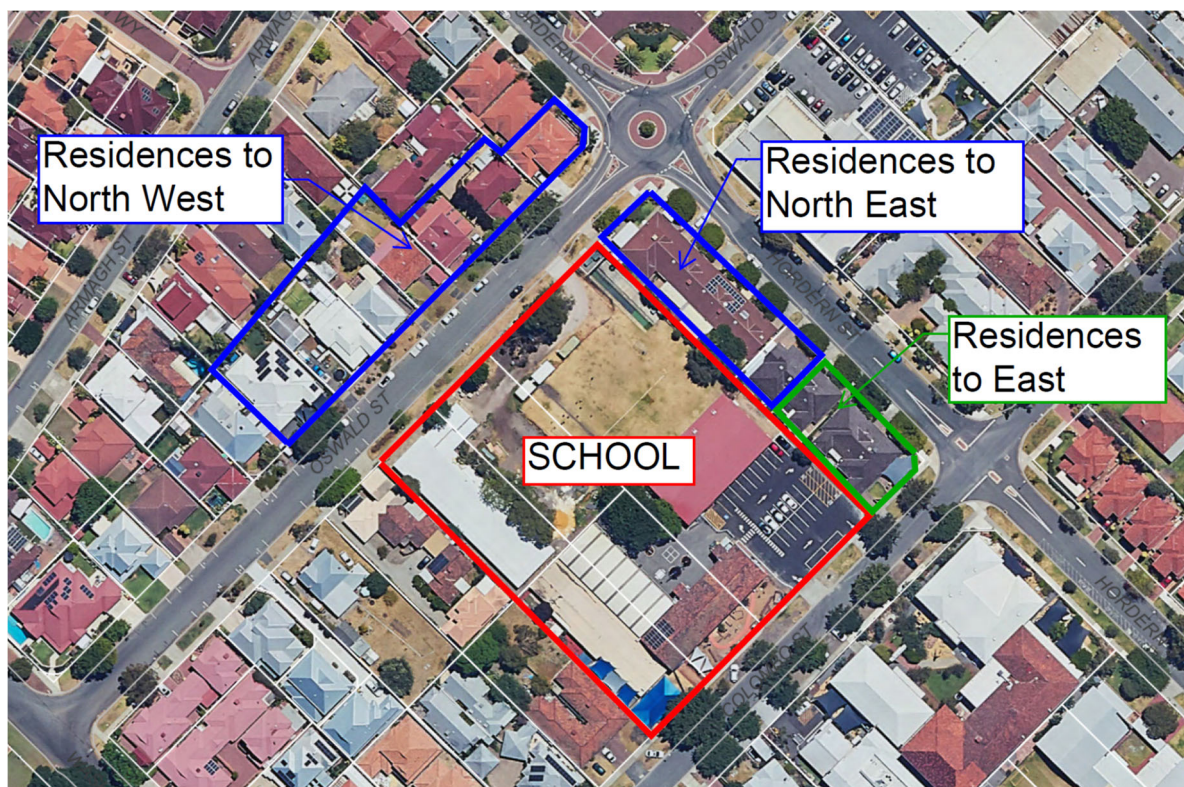


FIGURE 3.1 – NEIGHBOURING RESIDENCES

Based on the above influencing factor, the assigned outdoor noise levels for the neighbouring residential locations are listed in Table 3.3.

TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L _A 10	L _A 1	L _A max
Noise sensitive premises	0700 - 1900 hours Monday to Saturday	48	58	68
	0900 - 1900 hours Sunday and Public Holidays	43	53	68
	1900 - 2200 hours all days	43	53	58
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	38	48	58

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.

3.2 ADDITIONAL FACTORS

The following are provided with regards to the perception of noise :

To give these values some perspective, to human ear the general rule of thumb is:

1 dB difference	Almost imperceptible
2 dB difference	Just perceptible
3 dB difference	Noticeable
5 dB difference	Clearly Noticeable
10 dB difference	Twice (or half) as loud

4.0 USAGE

It is understood that the new parking area would be use solely for the dropping off of students in the morning and again for pick ups in the afternoon. Thus, the parking area would only be open for short periods in the morning and afternoon. From information provided, we understand that the parking area would be open / available for the following times :

Morning	-	8:20am to 8:50am.
Afternoon	-	3:10pm to 3:40pm.

For information, the school hours and the times for recess and lunch are :

School hours	–	8:50am – 3:10pm.
Lunch	-	11:20am – 12 noon.
Recess	-	1:30pm - 1:50pm.

5.0 NOISE MODELLING

To assess the noise received at the neighbouring premises from the proposed development, noise modelling was undertaken using the noise modelling program SoundPlan.

Calculations were carried out using the DWER weather conditions as stated in the Department of Environment Regulation “*Draft Guidance on Environmental Noise for Prescribed Premises*”.

Calculations were based on the sound power levels used in the calculations are listed in Tables 5.1 and 5.2.

**TABLE 5.1 – SOUND POWER LEVELS
CAR WITHIN CAR PARK**

Item	Sound Power Level, dB(A)
Car Moving in Car Park	79
Car Starting	85
Door Closing	87

**TABLE 5.2 – SOUND POWER LEVELS
CHILDREN PLAYING**

Item	Sound Power Level, dB(A)
Pre-primary student playing	83 (per 10 children)
primary student playing	87 (per 10 children)

Note : For the children playing outside, noise modelling was based on the full current capacity of 150 students and the future full capacity of 250 students all at play outside at the one time and does not include children occupied in passive play. Thus, the above noise levels would be considered to be conservative, with the actual noise level received at the neighbouring residences being less than those predicted and are provided to show the difference in noise level that would results in the additional 100 students.

6.0 RESULTS

The resultant noise levels at the neighbouring residence from the parking area and children playing outdoors are tabulated in Tables 6.1 to 6.3.

6.1 CAR PARKING

With regards to noise associated with cars within the proposed new parking area, resultant noise levels are tabulated in Table 6.1 and 6.3. It is noted that noise emissions from a moving car being an L_{A1} noise level, with noise emissions from cars starting and doors closing being an L_{Amax} noise level.

Based on the definitions of tonality, noise emissions from car movements and car starts, being an L_{A1} and L_{Amax} respectively, being present for less than 10% of the time, would not be considered tonal. Thus, no penalties would be applicable, and the assessment would be as listed in Table 6.1 (Car Moving) and Table 6.2 (Car Starting). However, noise emissions from car doors closing could be impulsive, hence the +10dB penalty has been included in the assessment.

TABLE 6.1 - ACOUSTIC MODELLING RESULTS L_{A1} CRITERIA
CAR MOVEMENT

Neighbouring Premises	Calculated Noise Level (dB(A))
North West (Oswald Street)	
19	42
25	43
27	42
29	41
31	39
33	38
35	35
North East (Hordern Street)	
15	45
17	46
19	46
21	46
23	46
East (Hordern and Colombo Streets)	
25 Hordern	46
27 Hordern	46
23 Colombo	40

**TABLE 6.2 - ACOUSTIC MODELLING RESULTS L_{Amax} CRITERIA
CAR STARTING / DOOR CLOSING**

Neighbouring Premises	Calculated Noise Level (dB(A))	
	Car Starting	Car Door
North West (Oswald Street)		
19	43	45 [55]
25	44	46 [56]
27	43	45 [55]
29	42	44 [54]
31	41	43 [53]
33	40	41 [51]
35	37	38 [48]
North East (Hordern Street)		
15	46	48 [58]
17	46	49 [59]
19	46	49 [59]
21	46	49 [59]
23	41	43 [53]
East (Hordern and Colombo Streets)		
25 Hordern	39	41 [51]
27 Hordern	35	37 [47]
23 Colombo	17	20 [30]

[] Includes +10 dB(A) penalty for impulsiveness.

6.2 ADDITIONAL CHILDREN IN PLAY GROUND

Noise emissions from current 150 students and the future 250 students playing are listed in Table 6.3. From previous measurements, does not contain any annoying characteristics.

**TABLE 6.3 - ACOUSTIC MODELLING RESULTS FOR L_{A10} CRITERIA
OUTDOOR PLAY AREAS**

Neighbouring Premises	Calculated Noise Level (dB(A))		Difference In Noise Level (dB(A))
	Current Student Numbers	Future Student Numbers	
North West (Oswald Street)			
19	52	54	2
25	53	55	2
27	54	56	2
29	54	56	2
31	53	55	2
33	51	53	2
35	46	47	1
North East (Hordern Street)			
15	56	56	0
17	55	55	0
19	55	55	0
21	54	55	1
23	46	45	-1
East (Hordern and Colombo Streets)			
25 Hordern	44	40	-4
27 Hordern	45	42	-3
23 Colombo	38	40	2

We note that the above noise levels are for the full current capacity of 150 students and the future full capacity of 250 students all at play outside at the one time and does not include children occupied in passive play. Thus, the above noise levels would be considered as being conservative, with the actual noise level received at the neighbouring residences being less than those predicted and are provided to show the difference in noise level that would result in the additional 100 students.

We also note that the noise received at some of the residences to the north east and east from children playing within the playing ground, would with the construction of the new parking area remain the same or in fact reduce. This is because the children will no longer be able to play up against or near the fence.

For information, noise contour plots for the current capacity of 150 students and the future full capacity of 250 students all at play outside at the one time are shown as Figures 6.1 and 6.2.

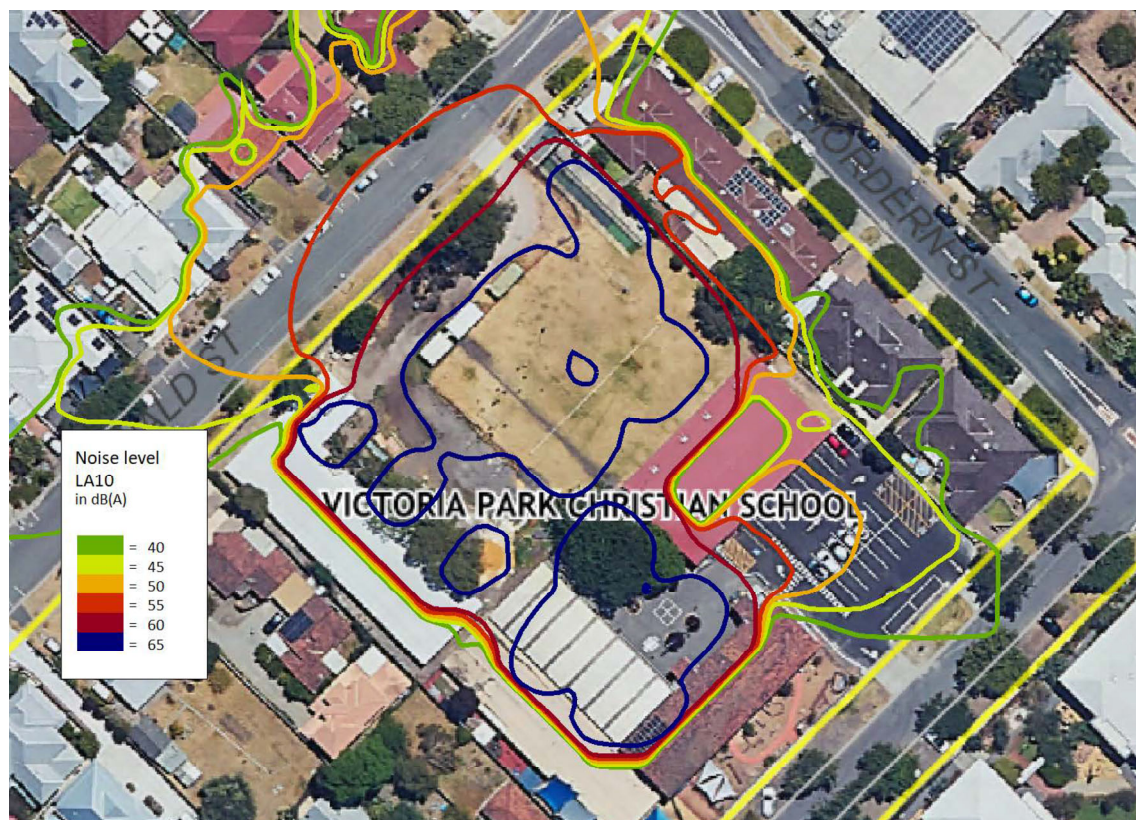


FIGURE 6.1 – CURRENT CHILDREN IN PLAYGROUND

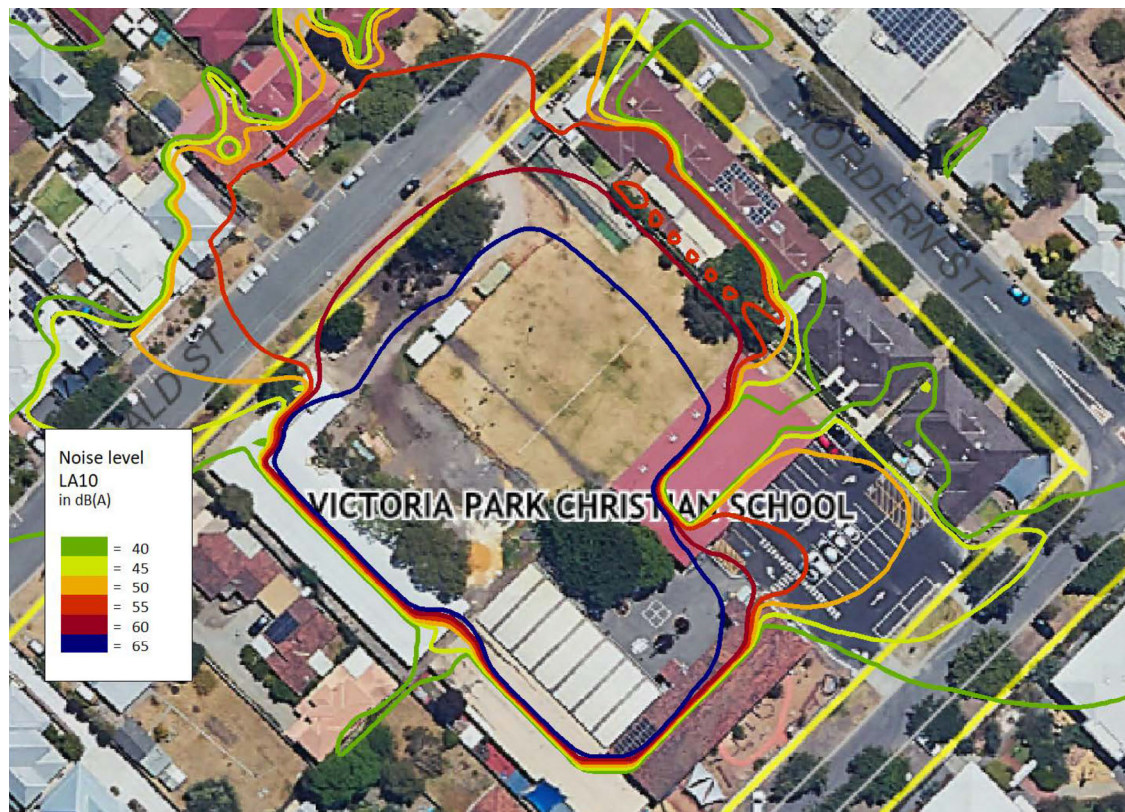


FIGURE 6.2 – FUTURE CHILDREN IN PLAYGROUND

7.0 ASSESSMENT

With regards to noise associated with cars within the parking area, resultant noise levels are tabulated in Tables 7.1 (car movements) and 7.2 (car starts and doors closing). It is noted that noise emissions from a moving car being an L_{A1} noise level, with noise emissions from cars starting and doors closing being an L_{Amax} noise level.

Based on the definitions of tonality, noise emissions from car movements and car starts, being an L_{A1} and L_{Amax} respectively, being present for less than 10% of the time, would not be considered tonal. Thus, no penalties would be applicable, and the assessment would be as listed in Table 6.1 (Car Moving) and Table 6.2 (Car Starting). However, noise emissions from car doors closing could be impulsive, hence the +10dB penalty has been included in the assessment.

Tables 7.1 to 7.3 summarise the applicable Assigned Noise Levels, and assessable noise level emissions for each identified noise.

**TABLE 7.1 – ASSESSMENT OF L_{A1} DAY PERIOD NOISE LEVEL EMISSIONS
CAR MOVEMENTS**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
North West (Oswald Street)			
19	42	57	Complies
25	43		Complies
27	42		Complies
29	41		Complies
31	39		Complies
33	38		Complies
35	35		Complies
North East (Hordern Street)			
15	45	57	Complies
17	46		Complies
19	46		Complies
21	46		Complies
23	46		Complies
East (Hordern and Colombo Streets)			
25 Hordern	44	57	Complies
27 Hordern	43		Complies
23 Colombo	36		Complies

**TABLE 7.2 – ASSESSMENT OF L_{A1} DAY PERIOD NOISE LEVEL EMISSIONS
CAR STARTS**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
North West (Oswald Street)			
19	43	67	Complies
25	44		Complies
27	43		Complies
29	42		Complies
31	41		Complies
33	40		Complies
35	37		Complies
North East (Hordern Street)			
15	46	67	Complies
17	46		Complies
19	46		Complies
21	46		Complies
23	41		Complies
East (Hordern and Colombo Streets)			
25 Hordern	39	67	Complies
27 Hordern	35		Complies
23 Colombo	17		Complies

**TABLE 7.3 – ASSESSMENT OF L_{A1} DAY PERIOD NOISE LEVEL EMISSIONS
CAR DOORS**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
North West (Oswald Street)			
19	55	67	Complies
25	56		Complies
27	55		Complies
29	54		Complies
31	53		Complies
33	51		Complies
35	48		Complies
North East (Hordern Street)			
15	58	67	Complies
17	59		Complies
19	59		Complies
21	59		Complies
23	53		Complies
East (Hordern and Colombo Streets)			
25 Hordern	51	67	Complies
27 Hordern	47		Complies
23 Colombo	30		Complies

8.0 DISCUSSION

An assessment has been undertaken of the proposed new car parking area for compliance with the requirements of the Environmental Protection (Noise) Regulations 1997. The results show that noise received at the neighbouring residences from the new parking area would easily comply with the Regulatory requirements.

The increase in the capacity of the school from 150 to 250 students would increase the noise received from children playing outside, in the worst case, for 7 residences would be 2 dB(A), which would just be perceivable.

We also note that the noise received at some of the residences to the north east and east from children playing within the playing ground, would with the construction of the new parking area remain the same or in fact reduce. This is because the children will no longer be able to play up against or near the fence.

Thus, noise from the proposed additional car parking and student capacity would be deemed to comply with the requirements of the Environmental Protection (Noise) Regulations 1997.

APPENDIX A

Regulation 16 and Schedule 2

Division 5 — Community activities

[Heading inserted: Gazette 5 Dec 2013 p. 5688.]

16. Community noise

- (1) In this regulation —
community noise means a noise of a type listed in Schedule 2;
noise control notice means a notice under subregulation (4).
- (2) Nothing in this regulation —
 - (a) affects the application of regulations 5 and 15 and sections 79 to 81A of the Act; or
 - (b) applies to noise emitted in accordance with an approval granted under regulation 18B or 18.
- (3) Regulation 7 does not apply to community noise.
- (4) If the CEO is satisfied that —
 - (a) a type of community noise has increased, or has increased its effect on the environment, since the coming into operation of these regulations; or
 - (b) a type of community noise has, or is likely to have, a detrimental effect on the environment that exceeds the benefit to the community of the activity that gives rise to that noise,

the CEO may cause to be served on the owner or the occupier, or on both the owner and the occupier, of the premises or public place a noise control notice in respect of the community noise.
- (5) A noise control notice —
 - (a) is to specify the reason for which it is served; and
 - (b) may include a requirement that any person bound by it is to take such measures as —
 - (i) the CEO considers necessary to control or abate the emission of noise to which the noise control notice relates; and
 - (ii) are specified in the noise control notice,within such period, or at such times, as are specified in the noise control notice; and
 - (c) may include a direction that any person bound by it is to make one of the following applications, as specified in the direction —
 - (i) an application under regulation 17 for approval to allow the emission of noise to exceed or vary from the standard prescribed under regulation 7;
 - (ii) an application under regulation 18 for approval to conduct an event that is likely to result in the emission of noise in contravention of the standard prescribed under regulation 7.

- (6) The measures required under a noise control notice by the CEO may include a requirement that the person on whom a noise control notice is served is to prepare a noise management plan specifying —
 - (a) the levels of noise emissions specified in the notice from the premises; and
 - (b) strategies the person bound by the notice will adopt to manage the noise emissions.
- (7) A noise control notice, while it is in force, binds each owner or occupier on whom it is served.
- (8) If —
 - (a) a person bound by a noise control notice fails to comply with a requirement of the notice; or
 - (ba) a person bound by a noise control notice who has prepared a noise management plan under subregulation (6) —
 - (i) allows an emission of noise to exceed the level of noise emission specified in the plan; or
 - (ii) does not follow the strategies specified in the plan;or
 - (b) the Minister refuses to grant an application for approval made pursuant to a direction under subregulation (5)(c),then —
 - (c) the emission of noise to which the notice or refusal relates ceases to be community noise for the purposes of this regulation; and
 - (d) regulation 7 applies to that emission of noise.
- (9) The CEO may by written notice served on every person bound by a noise control notice revoke the notice or amend it —
 - (a) by extending the period within which a requirement contained in the notice is to be complied with if the CEO is satisfied that the circumstances of the case justify such an extension;
 - (b) by revoking or amending any requirement included in the notice.
- (10) The CEO, before exercising in respect of a person, the power of amendment under subregulation (9)(b), is to afford the person a reasonable opportunity to show cause in writing why that power should not be exercised in respect of that person.
- (11) An opportunity is not a reasonable opportunity within the meaning of subregulation (10) unless the relevant person is informed of the right to show cause under that subregulation not less than 21 days before the day on which the CEO exercises the power in question.
- (12) A person who is aggrieved by —
 - (a) a requirement under subregulation (5)(b) included in a noise control notice served on that person; or
 - (b) an amendment included in a notice served on that person under subregulation (9),may within 14 days of that service lodge with the Minister an appeal in writing setting out the grounds of that appeal.
- (13) Sections 105 to 110 of the Act apply to an appeal lodged under subregulation (12) as if the appeal were an appeal referred to in section 103 of the Act.

Schedule 2 — Community noise

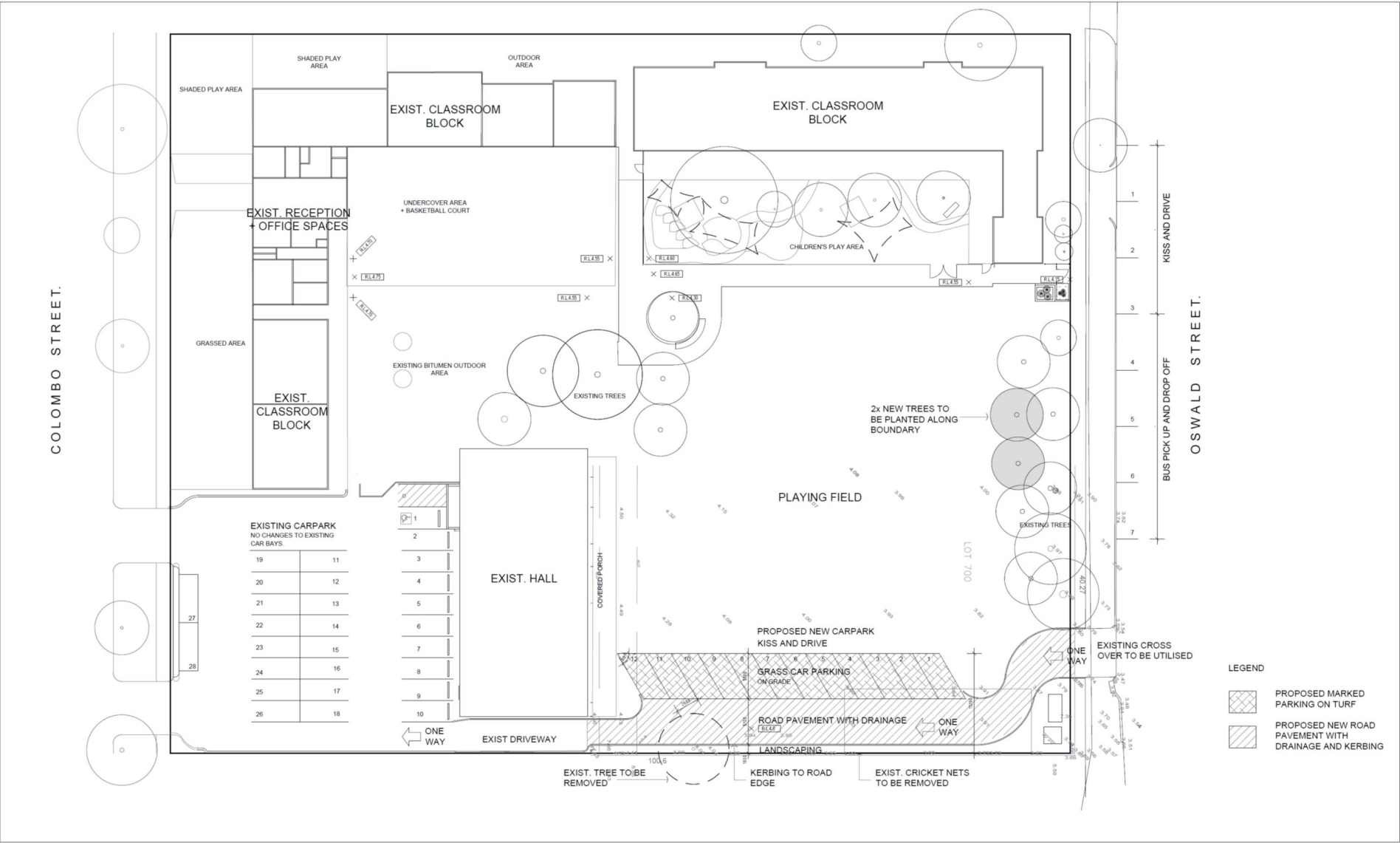
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[Heading inserted: Gazette 5 Dec 2013 p. 5716.]

Item	Activity
1.	Noise emitted by spectators at a sporting activity that is — (a) arranged by a sporting organization; or (b) conducted at a sporting venue; or (c) advertised prior to the conduct of the event.
2.	Noise emitted by participants and spectators at a meeting or procession authorised under a permit granted under the <i>Public Order in Streets Act 1984</i> .
3.	Noise emitted from an assembly convened solely for the purpose of divine worship where — (a) the noise is not noise of a kind referred to in regulation 15(2); and (b) the premises or public place on which the worship takes place is land which is referred to in section 6.26(2)(d), (e) or (f) of the <i>Local Government Act 1995</i>.
4.	Noise emitted as a consequence of a recreational or educational activity from premises occupied for educational purposes if the activity — (a) is conducted under the control of the occupier of the premises; and (b) does not include the use of mechanical equipment other than musical instruments.
5.	Noise emitted from agricultural shows, fairs, fetes, exhibitions and like events.

APPENDIX B

SITE PLAN OF PROPOSED PARKING AREA



VICTORIA PARK CHRISTIAN SCHOOL COLOMBO ST VICTORIA PARK
PROPOSED NEW CARPARK
21 NOVEMBER 2023 | SCALE 1:400 @ A3

