

**PROPOSED CHILDCARE CENTRE
385 ALEXANDER DRIVE
LANDSDALE**

ENVIRONMENTAL ACOUSTIC ASSESSMENT

MAY 2026

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ENVIRONMENTAL ACOUSTIC ASSESSMENT
PROPOSED CHILD CARE CENTRE
LANDSDALE

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FOR

BLACKOAK CAPITAL

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1. INTRODUCTION

Herring Storer Acoustics were commissioned by Blackoak Capital to undertake an acoustic assessment of noise emissions associated with the proposed child care to be located at 385 Alexander Drive, Landsdale.

The report considers noise received at the neighbouring premises from the proposed development for compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997*. This report considers noise emissions from:

- Children playing within the outside play areas of the centre.
- Mechanical Plant.

It is noted that the adjacent carpark is shared by the shopping centre as a result are considered 'uncontrolled', i.e. any patron may park there and thus has not been assessed within this report.

Furthermore, noise associated with the propulsion and braking systems of motor vehicles operating on a road are exempt from the *Environmental Protection (Noise) Regulations 1997*.

For information, a plan of the proposed development is attached in Appendix A.

2. SUMMARY

Noise received at the neighbouring residences from the outdoor play areas would comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*, provided outdoor play is limited to the day period (i.e. after 7am).

Noise from the mechanical services has also been assessed to comply with the relevant criteria given the implementation of a barrier. However, as the design of the mechanical services has not been undertaken at this stage of the project, it is recommended that the mechanical services design be reviewed for compliance with the Regulatory requirements.

Thus, noise emissions from the proposed development, would be deemed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* for the proposed hours of operation, with the inclusion of the following:

- 1 Although the proposed facility would open before 7 am (i.e. during the night period), the outdoor play area would not be used until after 7am. Thus, noise received at the neighbouring existing residences from the outdoor play area needs to comply with the assigned day period noise level.
- 2 For the outdoor play area, only proposed boundary fences as shown on the plans in Appendix A would be required.
- 3 No car bays would need to be restricted.

3. CRITERIA

The allowable noise level at the surrounding locales is prescribed by the *Environmental Protection (Noise) Regulations 1997*. 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
Commercial Premises	All Hours	60	75	80
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80

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.

Under the Regulations, a highly sensitive area means that area (if any) of noise sensitive premises comprising –

- (a) A building, or a part of a building, on the premises that is used for a noise sensitive purpose; and
- (b) Any other part of the premises within 15 m of that building or that part of the building.

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.

The closest noise sensitive premises adjacent to the development have been identified City of Wanneroo Intramaps, listed below and shown in Figure 3.1.

- R1 – Western residences within 450m of Landsdale Road and Alexander Drive.
- R2 – Western and northern residences within 450m of Alexander Drive.
- R2a – Future undeveloped residential premises within 450m of Alexander Drive.
- R3 – Northern residences within 100m of Alexander Drive.
- R4 – Future proposed commercial

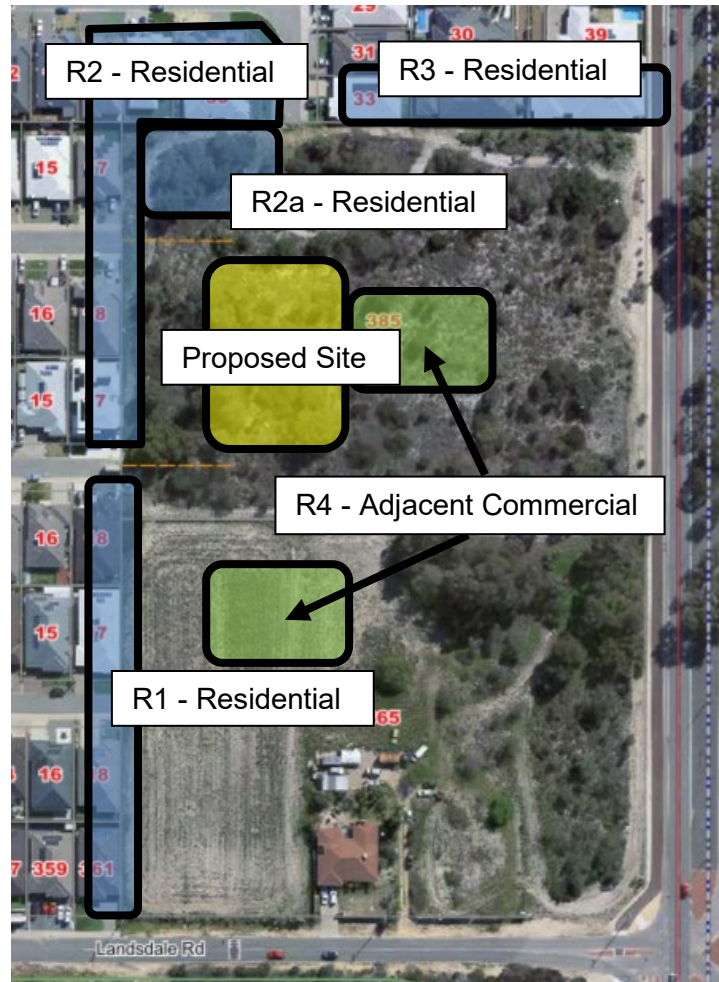


FIGURE 3.1 - RESIDENTIAL LOCATIONS

Based on the above, the following influencing factors have been calculated for each noise sensitive premises.

TABLE 3.3 – CALCULATION OF INFLUENCING FACTOR

Description	Highly Noise Sensitive Premises		
	R1	R2, R2a	R3
Commercial (Inner Circle)	25% = +1.25 dB	25% = +1.25 dB	25% = +1.25 dB
Commercial (Outer Circle)	7% = +0.35 dB	7% = +0.35 dB	7% = +0.35 dB
Roads Major (Inner Circle)	-	-	+6 dB
Roads Major (Outer Circle)	+4 dB	+2 dB	-
TOTAL	6 dB	4 dB	8 dB

The Assigned Noise Levels at the closest neighbouring residences would be as listed in Tables 3.4.

TABLE 3.4 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
R1	0700 - 1900 hours Monday to Saturday (Day)	51	61	71
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	46	56	71
	1900 - 2200 hours all days (Evening)	46	56	61
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	41	51	61
R2, R2a	0700 - 1900 hours Monday to Saturday (Day)	49	59	69
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	44	54	69
	1900 - 2200 hours all days (Evening)	44	54	59
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	39	49	59
R3	0700 - 1900 hours Monday to Saturday (Day)	53	63	73
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	48	58	73
	1900 - 2200 hours all days (Evening)	48	58	63
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	43	53	63
R4	All Hours	60	75	80

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.
R2A has only been flagged for.

4. PROPOSAL

From information supplied, we understand that the child care centre normal hours of operations would likely be between 0630 and 1800 hours, Monday to Friday (closed on public holidays). It is understood that the proposed childcare centre will cater for 84 children.

It is noted that although the proposed child care centre would open before 7 am (i.e. during the night period), the outdoor play area would not be intended to be used until after 7am.

Similarly, mechanical plant would possibly operate all hours of the day.

5. 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's weather conditions, which relate to worst case noise propagation, as stated in the Department of Environment Regulation "*Draft Guidance on Environmental Noise for Prescribed Premises*". These conditions include winds blowing from sources to the receiver(s).

Calculations were based on the sound power levels used in the calculations are listed in Table 5.1, as well as plans provided by the client.

TABLE 5.1 – SOUND POWER LEVELS

Item	Sound Power Level, dB(A)
Children Playing	<24 months 78 (per 10 children) Between 24 and 36 months 85 (per 10 children) >36 months 87 (per 10 children)
Kitchen/Bathroom Exhaust (2x)	71 each
Childcare Air conditioning condensing Unit (3x)	73 each

Notes:

- Acoustic modelling of outdoor play noise was made, based on 90 children within the outdoor play area (i.e. worst case scenario) broken down as follows:
0-2 years – 24 places
2-3 years – 30 places
3+ years – 30 places
- The noise level for the mechanical plant has been based on the sound power levels used for previous assessment of child care centres. From other studies, we understand that the noise associated with the condensing units would be conservative.
- For this child care centre, the mechanical plant units have been placed within the proposed AC area.
- For the outdoor play area, barriers as shown in Appendix A have been utilised.
- Calculations were undertaken for the receivers at 1.5 metres above the ground level.
- Noise modelling was undertaken to a number of different receiver locations for each of the neighbouring residences. However, to simplify the assessment, only the noise level in the worst case location (i.e. highest noise level), have been listed.

6. ASSESSMENT

The tables below show the assessment of noise emissions of concern from the operation. Standard building construction will be sufficient to ensure that noise from inside the building will meet the regulations.

The resultant noise levels at the neighbouring residence from children playing outdoors and mechanical plant are tabulated in Table 6.1.

From previous measurements, noise emissions from children playing does not contain any annoying characteristics, however mechanical plant emissions would be considered tonal and attract a +5 dB(A) Penalty. Noise emissions from outdoor play needs to comply with the assigned L_{A10} noise levels.

**TABLE 6.1 - ACOUSTIC MODELLING RESULTS FOR L_{A10} CRITERIA
OUTDOOR PLAY AREAS AND MECHANICAL PLANT**

Neighbouring Premises	Calculated Noise Level (dB(A))	
	Children Playing	Mechanical Plant
R1 Residential	33	31 (36)
R2 Residential	49	33 (38)
R3 Residential	32	21 (26)
R4 Commercial	50	27 (33)

() Includes +5 dB(A) penalty for tonality

Tables 6.2 to 6.3 summarise the applicable Assigned Noise Levels, and assessable noise level emissions for each identified noise.

**TABLE 6.2 – ASSESSMENT OF L_{A10} NOISE LEVEL EMISSIONS
OUTDOOR PLAY (DAY PERIOD)**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
R1 Residential	33	51	Complies
R2 Residential	49	49	Complies
R3 Residential	32	53	Complies
R4 Commercial	50	60	Complies

**TABLE 6.3 – ASSESSMENT OF L_{A10} DAY PERIOD NOISE LEVEL EMISSIONS
MECHANICAL PLANT**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
R1 Residential	36	41	Complies
R2 Residential	38	39	Complies
R3 Residential	26	43	Complies
R4 Commercial	32	60	Complies

7. CONCLUSION

Noise received at the neighbouring residences from the outdoor play area would comply during the day period, thus, outdoor play would be limited to the day period (i.e. – after 7am).

Noise received at the neighbouring residences from the mechanical plant would comply at all hours, if “quiet mode” is used during night time operation. Note, once mechanical selection and placement is finalised, it is recommended that an updated acoustic report be provided to ensure the selection complies.

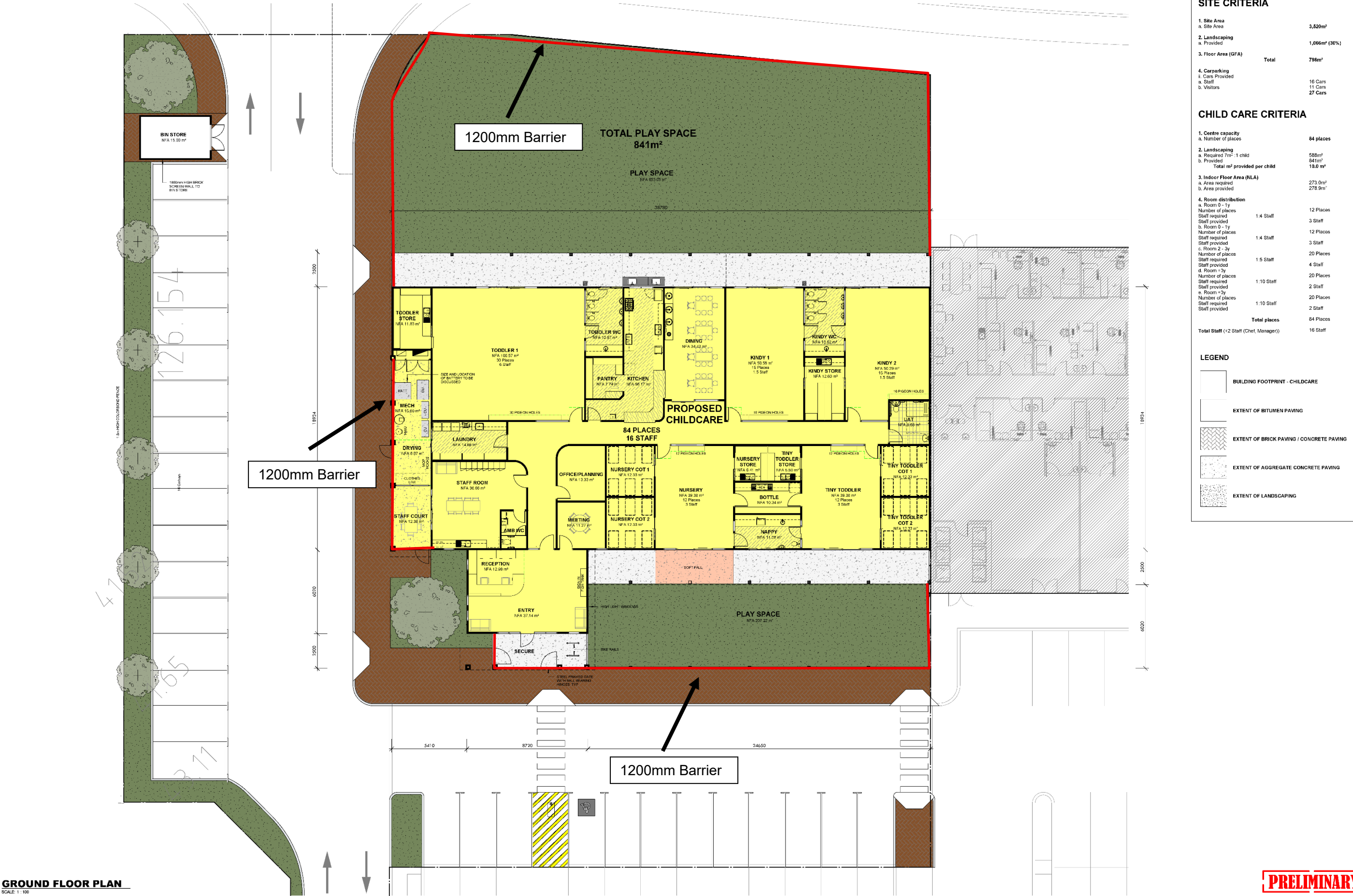
Thus, noise emissions from the proposed development, would be deemed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* for the proposed hours of operation, with the inclusion of the following:

- 1 For the outdoor play area, barriers as shown in Appendix A would be required.
- 2 Mechanical plant would need to be placed within the proposed plant area.
- 3 No car bays would be required to be restricted during the “Night Period”.

Finally, it is recommended to adopt best practices in managing a child care centre to reduce noise, including but not limited to no music to be played outside, and favouring soft finishes in the outdoor play area.

APPENDIX A

PLANS



GROUND FLOOR PLAN

SCALE: 1 : 100

PROPOSED CHILDCARE DEVELOPMENT

LOCATION : 365 LANDSDALE ROAD & 385 ALEXANDER DRIVE (LOTS 154 & 155), LANDSDALE
FOR : BLACKOAK

PRELIMINARY