

**PROPOSED CHILD CARE CENTRE
LOT 500 BERKSHIRE ROAD
FORRESTFIELD**

ENVIRONMENTAL ACOUSTIC ASSESSMENT

JUNE 2025

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PROPOSED CHILD CARE CENTRE
FORRESTFIELD

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FOR

WEST PROPERTY GROUP

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1. INTRODUCTION

Herring Storer Acoustics were commissioned to undertake an acoustic assessment of noise emissions associated with the proposed day care centre to be located at Lot 500 (# 21) Berkshire Road, Forrestfield.

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; and
- Mechanical services.

We 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 that these noise sources are rarely critical in the determination of compliance. However, as requested by council and for completeness, they have been included in the assessment, for information purposes only.

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 area would comply with day period assigned noise level with the boundary fencing as shown on Figure 5.1 in Section 5 - Modelling.

The air conditioning condensing units, being located as shown on the drawings attached in Appendix A, have also been assessed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times, with the air conditioning condensing units to be installed with "low" noise night time modes, which reduce noise levels during the night period by at least 4 dB(A).

It is noted that noise associated with cars movements and cars starting are exempt from complying with the Regulations. However, noise emissions from car doors are not strictly exempt from the Regulations. Noise received at the neighbouring residences from these noise sources would comply at all times.

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 Outdoor play to be limited to the day period (ie after 7am).
- 2 Fencing to be as shown on Figure 5.1 in Section 5 - Modelling.
- 3 The air conditioning condensing units to be installed "low noise" night time modes, which reduce noise levels during the night period by at least 4 dB(A).

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

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 development, the closest existing neighbouring residences are located as shown below on Figure 3.1.



FIGURE 3.1 – NEIGHBOURING LOTS

At the neighbouring residences, the Influencing Factor, with Berkshire Road being a secondary road, has been determined to be +2 dB. Thus, the assigned noise levels would be as listed in Table 3.3.

TABLE 3. - 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)	47	57	67
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	42	52	67
	1900 - 2200 hours all days (Evening)	42	52	57
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	37	47	57

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.

4. PROPOSAL

From information supplied, we understand that the child care centre normal hours of operations would be between 0630 and 1830 hours, Monday to Friday (closed on public holidays). It is understood that the proposed childcare centre will cater for a maximum of 104 children: with the following breakdown:

Nursery	12 places
Tiny Toddlers (under 2 years)	12 places
Toddlers	40 places
Kindy	40 places

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

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).

We note that under the latest AAAC guideline the following is provided as the sound power level for outdoor play:

Table 1 – Effective Sound Power Levels ($L_{Aeq, 15min}$) for Groups of 10 Children Playing

Number and Age of Children	Sound Power Levels [dB] at Octave Band Centre Frequencies [Hz]								
	dB(A)	63	125	250	500	1k	2k	4k	8k
10 Children - 0 to 2 years	78	54	60	66	72	74	71	67	64
10 Children - 2 to 3 years	85	61	67	73	79	81	78	74	70
10 Children - 3 to 5 years	87	64	70	75	81	83	80	76	72

Notes:

- 1 If applicable, an adjustment to the above sound power levels of -6 dB could be applied in each age group for children involved in passive play.

The AAAC noise levels also note that an adjustment of -6 dB could be applied to children at passive play.

Calculations for other sources were based on the sound power levels used in the calculations are listed in Tables 5.1.

TABLE 5.1 – SOUND POWER LEVELS

Item	Sound Power Level, dB(A)
Car Moving in Car Park	79
Car Starting	85
Door Closing	87
Air conditioning condensing Unit	5 @ 72
Kitchen Exhaust	72

Notes:

- 1 Acoustic modelling of outdoor play noise was made, based on 104 children playing within the outdoor play areas at the one time, utilising the following groups of children:

2 group of 12 children 0 -2 years at 79 dB(A);
2 groups of 20 children 2 – 3 years at 88 dB(A); and
2 groups of 20 children 3 – 5 years at 80 dB(A).
- 2 The noise level for the air conditioning 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.
- 3 For this development, it is recommended that the air conditioning condensing units would be located, as shown on the attached plans.
- 4 The kitchen exhaust fan would only operate during the day period. The condensing units to be installed with night period “low noise” modes to reduce noise emission during the night period by at least 4 dB(A).
- 5 Noise modelling was based on the boundary fencing as shown on Figure 5.1.
- 6 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 (ie highest noise level), have been listed.

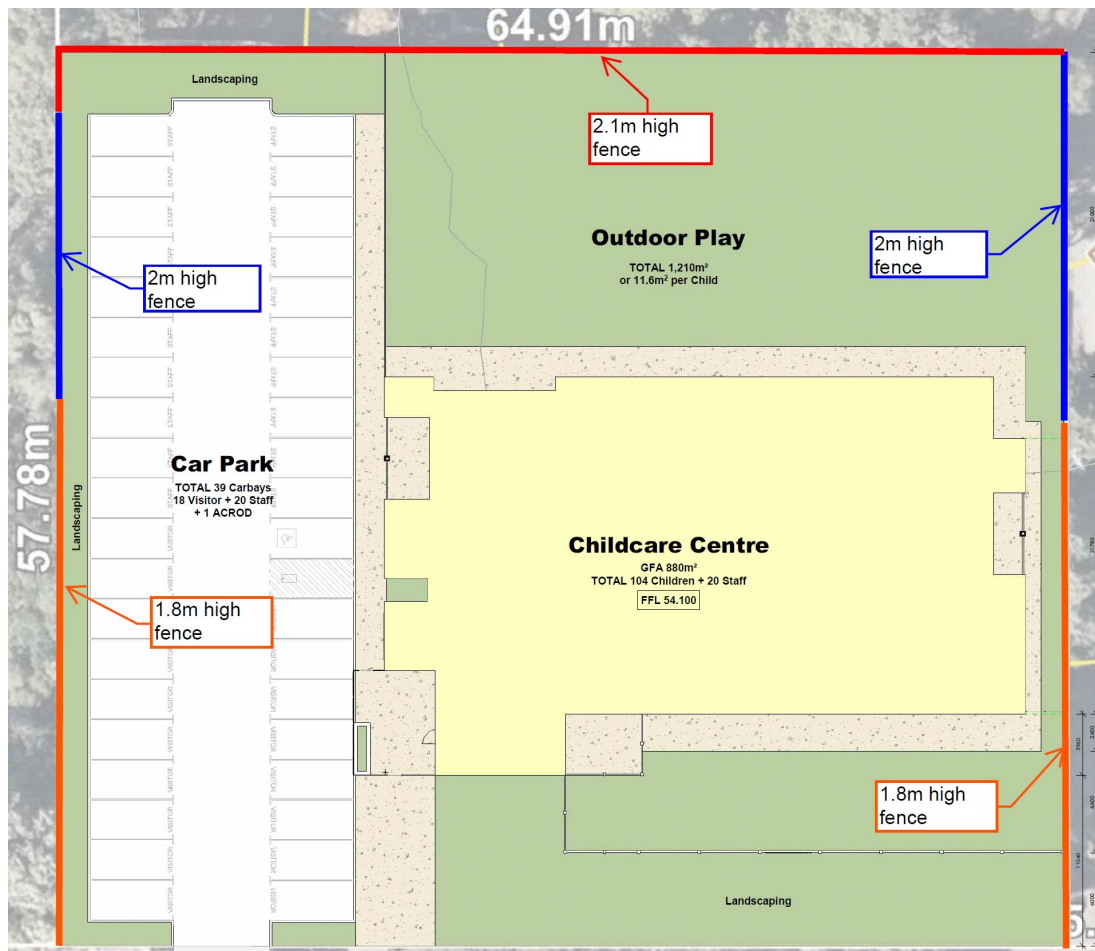


FIGURE 5.1 – BOUNDARY FENCING

5.1 OUTDOOR PLAY

With the above noise mitigations in place, noise received at the neighbouring premises from the outdoor play area would be as listed in Table 5.1.

TABLE 5.1 - ACOUSTIC MODELLING RESULTS FOR L_{A10} CRITERIA
OUTDOOR PLAY AREA

Neighbouring Premises	Calculated Noise Level (dB(A))
West	41
North	46
South East	46
South West	41

5.2 MECHANICAL SERVICES

Noise received at the neighbouring premises from the mechanical services would be as listed in Table 5.2.

**TABLE 5.2 - ACOUSTIC MODELLING RESULTS FOR L_{A10} CRITERIA
MECHANICAL SERVICES**

Neighbouring Premises	Calculated Noise Level (dB(A))	
	Day Period	Night Period
West	34 (39)	29 (34)
North	32 (37)	27 (32)
South East	25 (30)	10 (15)
South West	28 (33)	16 (21)

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

Note : Given the above calculated noise levels, noise emissions from the mechanical services could be tonal and a +5 dB(A) penalty would be applicable, as shown above in Table 5.2.

5.3 CAR DOORS CLOSING

With regards to noise associated with car doors closing within the parking area, resultant noise levels are tabulated in Table 5.3. It is noted that noise emissions from a doors closing being an L_{Amax} noise level.

**TABLE 5.3 - ACOUSTIC MODELLING RESULTS FOR L_{A10} CRITERIA
CAR DOOR**

Neighbouring Premises	Calculated Noise Level (dB(A))
West	41 [51]
North	42 [52]
South East	33 [43]
South West	47 [57]

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

Note : Based on the definitions of tonality, noise emissions from a car door closing, being an L_{Amax} , being present for less than 1% of the time, would not be considered tonal. However, noise emissions from car doors closing could be impulsive, hence the +10dB penalty has been included in the assessment.

For information, the noise received at the neighbouring residence from a car moving within the car park and a car starting are tabulated in Tables 5.4 and 5.5. 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 5.4 (Car Moving) and Table 5.5 (Car Starting).

**TABLE 5.4 - ACOUSTIC MODELLING RESULTS L_{A1} CRITERIA
CAR MOVING**

Neighbouring Premises	Calculated Noise Level (dB(A))
West	31
North	36
South East	28
South West	40

**TABLE 5.5 - ACOUSTIC MODELLING RESULTS L_{Amax} CRITERIA
CAR STARTING**

Neighbouring Premises	Calculated Noise Level (dB(A))
West	37
North	38
South East	32
South West	46

6. ASSESSMENT

Tables 6.1 to 6.6 summarise the applicable Assigned Noise Levels, and assessable noise level emissions for each identified noise, based on the results of the noise modelling shown in Table 5.1 to 5.5.

**TABLE 6.1 – 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
West	41	47	Complies
North	46	47	Complies
South East	46	47	Complies
South West	41	47	Complies

**TABLE 6.2 – ASSESSMENT OF L_{A10} DAY NOISE LEVEL EMISSIONS
MECHANICAL SERVICES**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
West	39	47	Complies
North	37	47	Complies
South East	30	47	Complies
South West	33	47	Complies

**TABLE 6.3 – ASSESSMENT OF L_{A10} NIGHT NOISE LEVEL EMISSIONS
MECHANICAL SERVICES**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
West	34	37	Complies
North	32	37	Complies
South East	15	37	Complies
South West	21	37	Complies

**TABLE 6.4 – ASSESSMENT OF L_{A1} NIGHT PERIOD NOISE LEVEL EMISSIONS
CAR MOVEMENTS**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
West	31	47	Complies
North	36	47	Complies
South East	28	47	Complies
South West	40	47	Complies

**TABLE 6.5 – ASSESSMENT OF L_{Amax} NIGHT PERIOD NOISE LEVEL EMISSIONS
CAR STARTING**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
West	37	57	Complies
North	38	57	Complies
South East	32	57	Complies
South West	46	57	Complies

**TABLE 6.6 – ASSESSMENT OF L_{Amax} NIGHT PERIOD NOISE LEVEL EMISSIONS
CAR DOOR**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
West	51	57	Complies
North	52	57	Complies
South East	43	57	Complies
South West	57	57	Complies

7. CONCLUSION

Noise received at the neighbouring residences from the outdoor play area would comply with day period assigned noise level with the boundary fencing as shown on Figure 5.1 in Section 5 - Modelling.

The air conditioning condensing units, being located as shown on the drawings attached in Appendix A, have also been assessed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times, with the air conditioning condensing units to be installed with “low” noise night time modes, which reduce noise levels during the night period by at least 4 dB(A).

It is noted that noise associated with cars movements and cars starting are exempt from complying with the Regulations. However, noise emissions from car doors are not strictly exempt from the Regulations. Noise received at the neighbouring residences from these noise sources would comply at all times.

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 Outdoor play to be limited to the day period (ie after 7am).
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- 3 The air conditioning condensing units to be installed “low noise” night time modes, which reduce noise levels during the night period by at least 4 dB(A).

APPENDIX A

PLANS



LOCATION : LOT 500 (HN 21) BERKSHIRE ROAD, FORRESTFIELD
FOR : BLOKK PROPERTY AUSTRALIA

SITE CRITERIA

1. Site Area	
a. Site Area	3,750m²
2. Landscaping	
a. Required 10% of Site Area	375m²
b. Provided	
Soft	1,558m ² (41.5%)
Hard	370m ²
Total	1,928m²
3. Floor Area (GFA)	
a. Childcare Centre	850m ²
b. Bin Store + External Store Rooms	30m ²
Total	880m²
4. Carparking	
i. Cars Required	
a. 1:1 Staff	20 Staff Cars
b. 1:8 Parent	<u>13 Visitors Cars</u>
Total Car required	33 Cars
ii. Cars Provided	39 Cars

CHILD CARE CRITERIA

1. Centre capacity a. Number of places	104 Places
2. Landscaping a. Required 7m ² : 1 child b. Provided	728m² <u>1,210m²</u> Total m² provided per child 11.6m²

Landscape

A. Soft Landscaping
Defined as vegetative landscaping.

Gross Floor Area (GFA)
All Floor Areas of a project are shown as GROSS FLOOR AREA.

B. Definition of Gross Floor Area is defined as:
i/ GROSS FLOOR AREA OF TENANCY
Gross Floor Area of an individual Tenancy is defined as the area contained between the centre line of common tenancy walls and the outside edge of external walls.
ii/ GROSS FLOOR AREA OF A BUILDING
Gross Floor Area of a Building is defined as the total area contained between the outside edge of external walls.

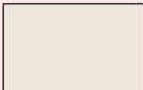
Nett Floor Area (NFA)
A. Nett Floor Area of a Tenancy on this plot is defined as the area between external or tenancy dividing walls.
B. This area is inclusive of toilets if the toilets are exclusive to the Tenancy.

SITE DESIGN CHECKLIST

- | | |
|--------------------------|---|
| ☐ | 1. SEWER MAINS LOCATION TO BE DETERMINED |
| ☐ | 2. FIRE MAINS PRESSURE TEST REQUIRED |
| ☐ | 3. FIRE TANKS OR PUMPS TO BE DETERMINED |
| ☐ | 4. WESTERN POWER TRANSFORMER LOCATION TO BE DETERMINED |
| ☐ | 5. CROSSOVER & ACCESS TO STREET TO BE DETERMINED BY LOCAL AUTHORITY |
| ☐ | 6. FULL FEATURE SITE SURVEY REQUIRED |
| ☐ | 7. DIAL BEFORE YOU DIG REQUIRED |
| ☐ | 8. BUSHFIRE ATTACK LEVEL (BAL) TO BE DETERMINED |
| ☐ | 9. STREET POWER POLES TO BE DETERMINED |
| ☐ | 10. SITE ZONING & USE TO BE DETERMINED |

NOTE: Any of the following items that do not have an 'X' in the provided square require determination.

LEGEND

	BUILDING FOOTPRINT - CHILDCARE FACILITY
	OUTDOOR PLAY AREA
	EXTENT OF PAVING
	EXTENT OF LANDSCAPING
	EXTENT OF BITUMEN PAVING

PRELIMINARY



GROUND FLOOR PLAN
SCALE: 1 : 100

PRELIMINARY