HERRING STORER ACOUSTICS

PROPOSED CHILD CARE CENTRE
1 ISLIP COURT AND 2A/2B BROADHURST CRESCENT
BATEMAN

ENVIRONMENTAL ACOUSTIC ASSESSMENT

NOVEMBER 2024

OUR REFERENCE: 33694-4-22306-02

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:
HERRING STORER ACOUSTICS
P.O. Box 219, Como, W.A. 6952
(08) 9367 6200
hsa@hsacoustics.com.au

DOCUMENT CONTROL PAGE

ENVIRONMENTAL ACOUSTIC ASSESSMENT

PROPOSED CHILD CARE CENTRE
BATEMAN

Job No: 22306-02

Document Reference: 33694-4-22306-02

FOR

MEYER SHIRCORE

DOCUMENT INFORMATION			
Author:	Tim Reynolds	**Checked By:**	Geoff Harris
Date of Issue:	14 November 2024		

REVISION HISTORY

Revision	Description	Date	Author	Checked
1	Correction to boundary fencing	28/11/2024	TR	N/A
2	Minor correction to fencing	02/12/2024	TR	N/A
3	Final plans	05/12/2014	TR	N/A

DOCUMENT DISTRIBUTION

Copy No.	Version No.	Destination	Hard Copy	Electronic Copy
1	4	Meyer Shircore Attn: Gianni Da Rui Email: gianni@meyershircore.com.au CC – Alessandro Stagno alessandro@apexplanning.com.au		✓

This report has been prepared in accordance with the scope of services and on the basis of information and documents provided to Herring Storer Acoustics by the client. To the extent that this report relies on data and measurements taken at or under the times and conditions specified within the report and any findings, conclusions or recommendations only apply to those circumstances and no greater reliance should be assumed. The client acknowledges and agrees that the reports or presentations are provided by Herring Storer Acoustics to assist the client to conduct its own independent assessment.

CONTENTS

APPENDICIES

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 1 Islip Court and 2A – 2B Broadhurst Crescent, Bateman.

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

The closest neighbouring residences would be located to the northeast, east and south. Noise received at these residences from the outdoor play areas would comply with the requirements of the Environmental Protections (Noise) Regulations 1997, with the fencing as shown on Figure 5.1 in Section 5 – Modelling; and 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. However, as the assessment has not been based on the mechanical services design, it is recommended that the mechanical services design be reviewed for compliance with the Regulatory requirements.

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 is not strictly exempt from the Regulations. Noting the under croft carpark, noise received at the neighbouring residences from these noise sources would easily comply with the Regulatory requirements, 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 Although the proposed facility would open before 7 am (ie 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 Fencing to be as shown on Figure 5.1 in Section 5 – Modelling. We note that for this development, colourbond and perspex (min 4mm) are acceptable fencing materials.

3 The air conditioning condensing units to be installed with "Low Noise" night period modes to reduce noise levels by a minimum of 4 dB(A). Additionally, noting that this assessment was based on the sound power level of the condensing units being 71 dB(A), only 2 condensing units can operate during the night period (ie before 7am).

4 The car park exhaust fan will require screening from the neighbours and / or silencers to the discharge side of the fan.

5 As the mechanical services have not been designed at this stage, a reviewed / assessed of the mechanical services design will be required to ensure compliance with the Environmental Protection (Noise) Regulations 1997 are achieved.

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 to the west and south, with future residence located to the north, west and south. It is noted that the premises to the east are commercial premises. An aerial showing the neighbouring premises are shown below on Figure 3.1.

FIGURE 3.1 – NEIGHBOURING LOTS

As the neighbouring residences are within 450 metre of Murdoch Drive, (major road, north of Sommerville Boulevard), the Influencing Factor for these residences has been determined to be +2 dB. Thus, the assigned noise levels would be as listed in Table 3.3.

TABLE 3.3 - 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 107 children: with the following breakdown:

Room 1 (Babies)	12 places
Room 2 (Toddlers)	15 places
Room 3 (Toddlers)	20 places
Room 4 (Kindy)	30 places
Room 5 (Kindy)	30 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).

Calculations were based on the sound power levels used in the calculations are listed in Table 5.1.

TABLE 5.1 – SOUND POWER LEVELS

Item	Sound Power Level, dB(A)
Children Playing	<2 years – 78 (per 10 children) >2 years - 83 (per 10 children)
Car Moving in Car Park	79
Car Starting	85
Door Closing	87
Air conditioning condensing Unit	4 @ 71
Kitchen Exhaust	72
Car Park Exhaust Fan	70

Notes:

1 It is noted that the noise emissions from children under the age of 2 years is relatively low compared to the other children. Thus, to be conservative, acoustic modelling of outdoor play noise was made, based on:

- 1 group of children under 24 months within babies outdoor play area 1.
- 10 groups of children over 24 months within the other outdoor play areas.

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 has been assumed that the air conditioning condensing units would be located within the dry court / mechanical compound and screened from the neighbouring residences.

4 The noise modelling has been based on fencing, as shown on Figure 5.1 in Section 5 – Modelling.

5 The under croft car park has been noted. We understand that this space with need to be mechanically ventilated. Thus, an assessment has been the car park exhaust system has been included in the assessment.

6 The air conditioning condensing units to be installed with “Low Noise” night period modes to reduce noise levels by a minimum of 4 dB(A). Additionally, noting that this assessment was based on the sound power level of the condensing units being 71 dB(A), only 2 condensing units can operate during the night period (ie before 7am).

7 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.

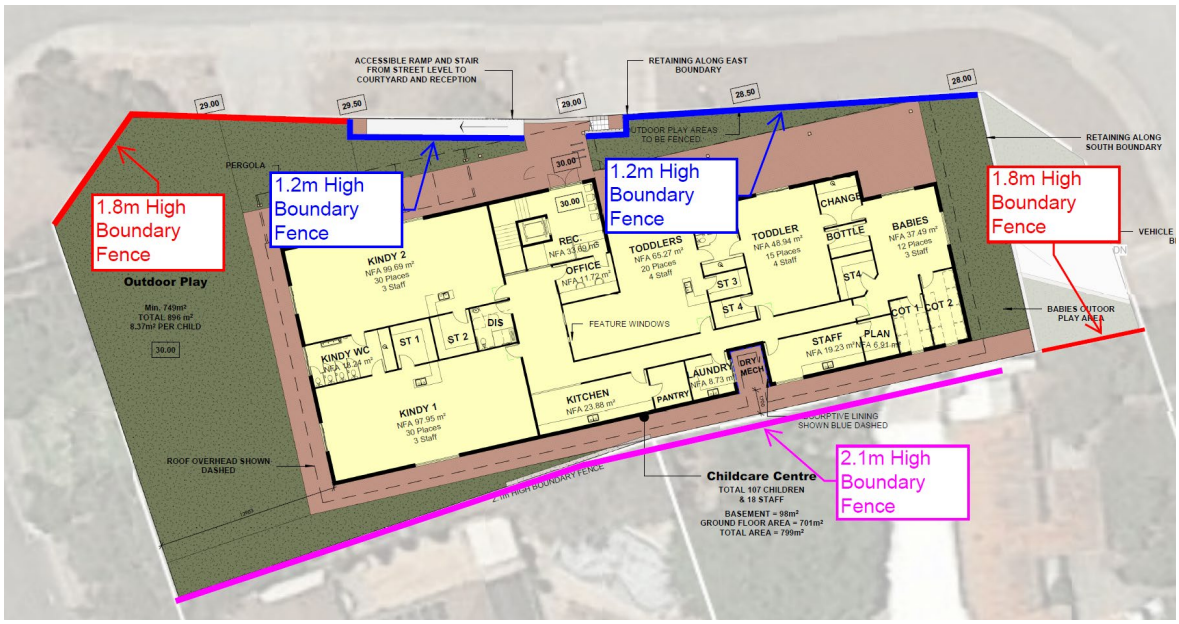

FIGURE 5.1 – BOUNDARY FENCING

6. ASSESSMENT

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

From previous measurements, noise emissions from children playing does not contain any annoying characteristics. Noise emissions from the mechanical services could be tonal and a +5 dB(A) penalty would be applicable, as shown in Table 6.1. Noise emissions from both outdoor play and the mechanical services 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 Services	
		Day period	Night Period
West	47	40 (45)	32 (37)
East	45	30 (35)	29 (34)
South	42	25 (30)	24 (29)

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

With regards to noise associated with cars within the parking area, resultant noise levels are tabulated in Tables 6.2 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 6.2 (Car Moving) and Table 6.3 (Car Starting). However, noise emissions from car doors closing could be impulsive, hence the +10dB penalty has been included in the assessment.

TABLE 6.2 - ACOUSTIC MODELLING RESULTS L_{A1} CRITERIA
CAR MOVING

Neighbouring Premises	Calculated Noise Level (dB(A))
West	40
East	37
South	38

TABLE 6.3 - ACOUSTIC MODELLING RESULTS L_{Amax} CRITERIA
CAR STARTING / DOOR CLOSING

Neighbouring Premises	Calculated Noise Level (dB(A))	
	Car Starting	Door Closing
West	36	38 [48]
East	38	40 [50]
South	40	41 [51]

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

Tables 6.4 to 6.09 summarise the applicable Assigned Noise Levels, and assessable noise level emissions for each identified noise.

TABLE 6.4 – 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	47	47	Complies
East	45	47	Complies
South	42	47	Complies

TABLE 6.5 – ASSESSMENT OF L_{A10} DAY PERIOD NOISE LEVEL EMISSIONS
AIR CONDITIONING

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
West	45	47	Complies
East	35	47	Complies
South	30	47	Complies

TABLE 6.6 – ASSESSMENT OF L_{A10} NIGHT PERIOD NOISE LEVEL EMISSIONS
AIR CONDITIONING

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
West	37	37	Complies
East	34	37	Complies
South	29	37	Complies

TABLE 6.7 – 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	40	47	Complies
East	37	47	Complies
South	38	47	Complies

TABLE 6.8 – 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	36	57	Complies
East	38	57	Complies
South	40	57	Complies

TABLE 6.9 – 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	48	57	Complies
East	50	57	Complies
South	51	57	Complies

7. CONCLUSION

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

The air conditioning condensing units have also been assessed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times.

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 with the Regulatory requirements, 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 Although the proposed facility would open before 7 am (ie 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 Fencing to be as shown on Figure 5.1 in Section 5 – Modelling. We note that for this development, colourbond and perspex (min. 4mm) are acceptable fencing materials.

3 The air conditioning condensing units to be installed with “Low Noise” night period modes to reduce noise levels by a minimum of 4 dB(A). Additionally, noting that this assessment was based on the sound power level of the condensing units being 71 dB(A), only 2 condensing units can operate during the night period (ie before 7am).

4 The car park exhaust fan will require screening from the neighbours and / or silencers to the discharge side of the fan.

5 As the mechanical services have not been designed at this stage, a reviewed / assessed of the mechanical services design will be required to ensure compliance with the Environmental Protection (Noise) Regulations 1997 are achieved.