PROPOSED CHILD CARE CENTRE
LOT 997 NANCARROW WAY,
RAVENSWOOD

ENVIRONMENTAL ACOUSTIC ASSESSMENT

FEBRUARY 2026

OUR REFERENCE: 36025-1-26049

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DOCUMENT CONTROL PAGE

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Job No: 26049

Document Reference: 36025-1-26049

FOR

IQ CONSTRUCTION

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APPENDICIES

1. INTRODUCTION

Herring Storer Acoustics were commissioned by IQ Construction to undertake an acoustic assessment of noise emissions associated with the proposed child care centre to be located at Lot 997 Nancarrow Way, Ravenswood.

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

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 areas would comply with the requirements of the *Environmental Protections (Noise) Regulations 1997*, provided outdoor play is limited to the day period (ie after 7am).

Noise from the mechanical services has also been assessed to comply with the relevant criteria when placed in the dryer court as shown on plans. 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.

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. Noise received at the existing neighbouring residences from these noise sources would comply with the Regulatory requirements, at all times given the conditions listed below.

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 0700 (ie during the night period), the outdoor play area would not be used until after 0700.

2 Mechanical plant has been allocated to drying court. Once mechanical selection is confirmed an additional assessment may be required to ensure compliance.

3 A 1800mm barrier surrounding the outdoor play area (as shown on the drawing attached in Appendix A).

4 The two car bays, as shown on the drawing attached in Appendix A would need to be restricted prior to 7AM.

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 neighbouring locations have been identified as:

- R1 – Residential to the South of Nancarrow Way
- R2 – Residential to the East of Jolly Ramble Boulevard
- R3 – Residential to the Southeast of both Nancarrow Way and Jolly Ramble Boulevard
- R4 – Ravenswood Community Centre.

Locations have an influencing factor of +0 dB.

TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	**Time of Day**	**Assigned Level (dB)**		
		L_{A10}	**L_{A1}**	**L_{Amax}**
R1 – R4	0700 - 1900 hours Monday to Saturday (Day)	45	55	65
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	40	50	65
	1900 - 2200 hours all days (Evening)	40	50	55
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	35	45	55

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 likely between 0700 and 1800 hours, Monday to Friday (closed on public holidays). It is understood that the proposed childcare centre will cater for 72 children broken up as follows

0-2 years	12 Children
2-3 years	20 Children
3-5 years	40 Children

It is noted that the outdoor play area would not be intended to be used until after 0700.

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 and contours provide 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)
Car Moving in Car Park	79
Car Starting	85
Door Closing	87
Childcare Air conditioning condensing Unit (4x)	71 each

Notes:

1 Acoustic modelling of outdoor play noise was made, based on 72 children within the outdoor play area (i.e. worst case scenario).

2 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.

3 For this child care centre, the mechanical plant units have been considered to be placed in the drying court of the development.

4 An updated noise assessment is to be undertaken once mechanical selection has been finalised.

5 For the outdoor play area, a 1800mm barrier surrounding the outdoor play area (as shown on the drawing attached in Appendix A) are required.

6 Otherwise, a 1800mm standard colourbond fence has been utilised where denoted on plans.

7 To determine the restriction to the parking, a point noise source was located in each car bay.

8 Modelling shows that noise received at the neighbouring residences from car doors closing would comply with the assigned noise level for the day time period periods.

9 To comply during the night time periods, the two bays, as shown in Appendix A would need to be restricted prior to 0700.

10 With only staff arriving before 0700, there would be no car starts before 0700.

11 Calculations were undertaken for the receivers at 1.5 metres above the ground level.

12 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 residences 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	45	30 (35)
R2 Residential	39	9 (14)
R3 Residential	43	18 (23)
R4 Community Centre	33	30 (35)

( ) 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))
R1 Residential	36
R2 Residential	34
R3 Residential	45
R4 Community Centre	37

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

Neighbouring Premises	Calculated Noise Level (dB(A))			
	Car Start		Car Door	
	Day Period	Night Period	Day Period	Night Period
R1 Residential	38	N/A	39 [49]	39 [49]
R2 Residential	28	N/A	31 [41]	31 [41]
R3 Residential	46	N/A	47 [57]	45 [55]
R4 Community Centre	40	N/A	41 [51]	41 [51]

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

Tables 6.4 to 6.9 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
R1 Residential	45	45	Complies
R2 Residential	39	45	Complies
R3 Residential	43	45	Complies
R4 Community Centre	33	45	Complies

TABLE 6.5 – ASSESSMENT OF L_{A10} NIGHT 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	35	35	Complies
R2 Residential	14	35	Complies
R3 Residential	23	35	Complies
R4 Community Centre	35	35	Complies

TABLE 6.6 – 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
R1 Residential	36	45	Complies
R2 Residential	34	45	Complies
R3 Residential	45	45	Complies
R4 Community Centre	37	45	Complies

TABLE 6.7 – ASSESSMENT OF L_{Amax} DAY PERIOD NOISE LEVEL EMISSIONS CAR STARTING

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
R1 Residential	38	65	Complies
R2 Residential	28	65	Complies
R3 Residential	46	65	Complies
R4 Community Centre	40	65	Complies

TABLE 6.8 – ASSESSMENT OF L_{Amax} DAY PERIOD NOISE LEVEL EMISSIONS CAR DOOR

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
R1 Residential	49	65	Complies
R2 Residential	41	65	Complies
R3 Residential	57	65	Complies
R4 Community Centre	51	65	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
R1 Residential	49	55	Complies
R2 Residential	41	55	Complies
R3 Residential	55	55	Complies
R4 Community Centre	51	55	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 (ie – after 0700) with an acoustic barrier as shown in Appendix A.

Noise received at the neighbouring residences from the mechanical plant would comply at all hours given placement in the drying court.

Noise received at the neighbouring residences from noise associated with vehicles would also comply at all hours, except for car doors outside of the day period. For compliance, car bays to the north would need to be restricted prior to 0700 as shown in Appendix A.

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, a 1800mm fence surrounding outdoor play area (as shown on the drawing attached in Appendix A) would be required. A limestone pier and infill with visually permeable fence is denoted on plans and as of such a Perspex (or similar solid) infill to meet the visually permeable requirement would be appropriate. For other locations a colorbond fence would be sufficient.

2 Mechanical plant have been placed in the drying court. Once mechanical selection has been finalised an updated acoustic report based upon selection would be required.

3 Car bays as shown in Appendix A would need to be restricted prior to 0700.

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

APPENDIX A

PLANS

Parking Schedule		
Type	Qty	Description
5400 x 2400 (Wheelstops	6	Standard Carpark Bay
5400 x 2400 (Wheelstops Disabled	1	Standard Carpark Bay
5400 x 2600 (Wheelstops	11	Standard Carpark Bay
	18	

External Playscape

BUILDER'S NOTES

- Builder to check all dimensions prior to commencing construction. Do not scale drawings.
- All site dimensions dependant on original and future surveys.
- These drawings are to be read in conjunction with all structural engineering drawings.
- All external steelwork including lintels and post stirrups to be hot dipped galvanised.
- All external fixings to be galvanised.
- All wood framing bearer sizes are nominal only and are to be checked by builder before construction.
- Select bricework with selected external render where specified externally.
- Timber studwork construction with select cladding externally.
- All timber sizes not nominated shall comply with the light timber framing code AS 1684.
- All roof framing to Australian Standards, including tie down bolts and triple grips.
- All cladding beam sizes and locations are nominal only and to be confirmed by builder prior to commencing.
- Termite treatment to local authority requirements and NCC Part 3.1.3, Part 3.1.1 and Part 3.8.7.
- Builder to liaise with plumbing contractor on site regarding all plumbing fixtures and fittings.
- All non-refundable windows where indicated on drawings to comply with Australian Standards.
- All scaffolding to comply with the occupational health, safety and welfare act.
- Electric hot water system to manufacturer's requirements.
- Electric cooktop to manufacturer's requirements.
- Electric oven to manufacturer requirements.

ENERGY RATING

- Climate zone 5, as per Building Codes of Australia.
- No floor insulation required for zone 5 areas.
- Batted ceiling insulation to house and attached garage.
- All top fittings other than bath outlets and garden taps to be a minimum 4 star WELS rated.
- All shower heads to be minimum 3 star WELS rated.
- All internal hot water outlets (taps, showers, washing machine water supplies) to be connected to a hot water system or to a recirculating hot water system with pipes installed and insulated in accordance with AS/NZ 3500:2003 plumbing and drainage, part 4 heated water service.
- Pipework from the hot water system or recirculating hot water system to the farthermost hot water outlet shall not exceed 20 metres in length or 2 litres of internal volume.
- All sanitary flushing systems to be a minimum 4 star rated dual flush systems.

BIN PAD

JOLLY RAMBLER BOULEVARD

37.99 m

NORTH

proposed signage location

2.42 m

4.81 m

4.80 m

CROSSOVER

pedestrian walkway

landscaping

6.80 m

1800mm Boundary Fence

7992 setback

3180 setback

pedestrian walkway

(20) 5400 x 2600

(19) 5400 x 2600

(18) 5400 x 2600

(17) 5400 x 2600

(16) 5400 x 2600

(15) 5400 x 2600

(14) 5400 x 2600

(13) 5400 x 2600

(12) 5400 x 2600

(11) 5400 x 2600

(10) 5400 x 2600

(09) 5400 x 2400

(08) 5400 x 2400

(07) 5400 x 2400

(06) 5400 x 2400

(05) 5400 x 2400

(04) 5400 x 2400

(03) 5400 x 2400

(02) 5400 x 2600

(01) 5400 x 2600

1800w x 1800h gate,lockable @1500h

1200w x 1800h gate,lockable @1500h

5400

2114

1200

Carbays Restricted Prior to 0700

Proposed Parking Lot

Proposed Childcare

RL 0

Portico

RL 0

External Playscape

NANGARROW WAY

JONES LANE

25.20 m

24.83 m

6766 setback

1780 setback

Bin Store/ service/Drycourt area

1800mm Boundary Fence

1800mm Boundary Fence

61.31 m

landscaping

landscaping

landscaping

Existing fences to remaining

3	21 dec. '25	Planning	WM	SV	
2	04 Dec. '25	Concept	WM		
1	02 Dec. '25	Concept	WM		
REV	DATE	DESCRIPTION	BY	CHK	

4 Browning Road
Armadale WA 6112
Phone: (08) 9399 6719
Fax: (08) 9399 8504

CONSTRUCTION

CLIENT: Ravenswood Childcare

ADDRESS: Lot 977 Nancarrow Way,Ravenswood

DRAWING: Proposed Site Plan

PROJECT NO: 0030

DRAWN: WM

CHECK: SV

DATE: 02 Dec. '25

PROJECT STAGE: PLANNING

SCALE: 1:100

DRAWING NO: P101

SHEET SIZE: A2