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Acoustic Report

For the Proposed Childcare Centre at

No. 691-695 Victoria Road, Ryde

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1.0 INTRODUCTION

Acoustic, Noise & Vibration Solutions (ANVS Pty Ltd) was commissioned to investigate the environmental noise impact of a proposed childcare centre at No.691-695 Victoria Road, Ryde (Figure 1 – Site Location).

This report has been prepared in accordance with the following:

- Architectural plans provided by CD Architects dated May, 2025
- Traffic Impact and Parking Assessment provided by Varga Traffic Planning Pty Ltd dated 13th May, 2025.

The operation of the proposed Childcare Centre to comply with the NSW Noise Policy for Industry 2017, the Association of Australasian Acoustical Consultants (AAAC) Guideline for Child Care Centre Acoustic Assessment (Version 3.0) dated September 2020, NSW Noise Guide for Local Government and Ryde Council requirements.

2.0 GENERAL DESCRIPTION AND ENVIRONMENT

The proposed site is located corner of Blaxland Rd and Victoria Rd in the suburb of Ryde (Figure 1 – Site Location). The childcare will be located on the ground floor of a proposed three blocks mixed-use development (Figure 2 – Proposed Childcare Centre Plan). As per CD Architects' architectural plans, the proposed mixed-use development will include three (3) levels of basement parking, one (1) level of visitor parking and the following tenancies:

- Proposed Childcare
- Residential Units
- Communal Open Spaces

The surrounding area contains a mixture of residential and commercial properties (Figure 3 – Surrounding Environment). The nearest residential and commercial receivers that have the potential to be affected by the operation of the proposed childcare centre are the tenancies located as follows :

Table 2.1 – Nearest Residential Receivers

Receiver	Address & Location	Dwelling Type
R1	No. 2 Hatton St, Ryde (west of site)	Residential Units.
R2	No. 4 Hatton St, Ryde (west of site)	Residential Units
R3	No. 6 Hatton St, Ryde (west of site)	Residential Units
R4	No. 8 Hatton St, Ryde (west of site)	Residential Units

R5	No. 691-695 Victoria Road, Ryde Units B101, B102, B103, B104	Residential Units on Level 1 within the proposed development
R6	No. 691-695 Victoria Road, Ryde Units B105, B106, B107	Residential Units on Level 1 within the proposed development

Figure 4 – Nearest Neighbouring Residential Receivers; Figure 5 – Nearest Residential Receivers inside the Development.

The proposed childcare centre will accommodate a total of hundred and eight (108) children between the ages of 0 and 5 years old, as well as twenty-one (21) staff members. Composition of the children will be as follows:

Table 2.2- Composition of Children

Age Group:	**No. of Children**
0-2 years old	28
2-3 years old	30
3-5 years old	50
Max Total:	**108**

The proposed childcare centre will have the following hours of operations:

- Monday to Friday: 6:00am to 6:00pm
- Saturday and Sunday: Closed

Children will mainly be dropped off in the morning between the hours of 6:00am – 9:00am and picked up in the afternoon between the hours of 4:00pm – 6:00pm.

The Basement 1 carpark will accommodate a total of twenty-three (23) car spaces designated for the childcare centre. (Figure 6– Proposed Basement 1 Car Park for Childcare).

The proposed childcare centre will include five (5) indoor play areas as well as two (2) outdoor play areas on the ground floor of Building B (Figure 7 – Proposed Indoor and Outdoor Play Areas). The children will be taken outside for outdoor play in different age groups at various times throughout the day. The childcare centre will also have a staff room, kitchen area, reception, and office.

Four major noise producing activities at the proposed childcare centre have been considered:

- Vehicles entering and exiting the car park,
- Children playing in the outdoor play area,
- Indoor activities, and,

- Noise from proposed mechanical plant and air-conditioning units.

3.0 NOISE SURVEY, INSTRUMENTATION & RESULTS

On October 24th, 2023, an engineer from this office went to the above address and carried out noise measurements at the proposed development. Unattended noise measurements were carried out near the proposed building line in direct line of sight of Victoria Road at Point A in order to determine traffic noise levels. Background noise readings were also carried out (away from the main road) at Point B near the northern boundary of the site in order to determine existing background noise levels (Figure 8 – Noise Reading Locations – Points A & B).

The unattended noise measurements at points A & B were carried out for a period of seven (7) days between the 24th of October 2023 and the 30th of October 2023. The noise survey was conducted to determine the $L_{(A90,\ 15\ minutes)}$ and $L_{(Aeq,\ 15\ minutes)}$ of the existing *background noise levels* during the Day (7:00-18:00), Evening (18:00-22:00) and Night (22:00-7:00).

All unattended sound level measurements and analysis performed throughout this project are carried out with a NSRTW_MK3 wireless sound level data logger (Serial No. Alv8DHWQUXU3grtCZwJZPD- Office Tag- machine 4 & logger (Serial No. CPp0Dd04c1c9iLtiSwBRPD- Office tag -machine 1-). The sound loggers specifications are as follows:

- Type 1 digital MEMS microphone
- Non-volatile 128 Mb recording memory
- Records L-max, L-min and Leq levels
- Log interval adjustable from 125 ms (8 points per second) up to hours
- A, C and Z weighting curves
- Oscilloscope and spectrum analyser features
- Observes and records 100% of the acoustic signal
- Software calculates global Leq according to ISO and OSHA methods
- WIFI connectivity to report measured levels remotely
- Weatherproof casing designed for indoor/outdoor applications
- Activity detection and logging.
- Long-term measurement and recording of acoustic levels for environmental impact studies.

The loggers are factory calibrated and calibration certificates dated 05/07/2022 and 14/08/2023 are in Figure 9 - Calibration Certificates.

The microphones were positioned 1.5m from ground level. The machines were calibrated prior and after reading using our Svantek SV 33A S/N: 90200 class 1 Calibrator with No significant drift recorded. Any noise readings affected by strong wind or rain have been disregarded [1]. A Summary of those readings are presented in the tables below:

Table 3.1 – Summary of Unattended Noise Measurements at Point A – October 24th, 2023 – October 30th, 2023-*

Location	*Time of Day*	*Leq 15 Minute dB(A)*	*L90 15 Minute dB(A)*	*RBL **
Point A – Southern Boundary of Site (Traffic Noise)	Day 7:00-18:00	69	57	55
	Evening 18:00-22:00	67	56	54
	Night 22:00-7:00	63	49	42

***Site is mainly affected by traffic noise from Victoria Rd**
****RBL is calculated as per Fact Sheet B of the NPfI (2017)**

Table 3.2- Day & Night Noise Readings at Point A - October 24th, 2023 – October 30th, 2023

Location	*$L_{Aeq,\ 15\ hr}$ -Day- dB(A) Logarithmic Average*	*$L_{Aeq,\ 9hr}$ -Night- dB(A) Logarithmic Average*
Point A	68 dB(A)	63 dB(A)

*Table 3.3 - Summary of Unattended Background Noise Readings at Point B- October 24th, 2023 – October 30th, 2023**

Measurement Location	*Time Period*	*LAeq 15min dB(A)*	*$LA90_{15min}$ dB(A)*	*Rating Background Level (RBL)** dB(A)*
Point B	*Day (7am-6pm)*	55	46	44
	Evening (6pm-10pm)	51	44	41
	Night (10pm-7am)	50	44	40

***RBL is calculated as per Fact Sheet B of the NPfI (2017)**

Note [1]: Noise data is validated using the weather zone websites addresses:
https://www.weatherzone.com.au/station/SITE/66212/observations/2023-10-24
https://www.weatherzone.com.au/station/SITE/66212/observations/2023-10-25
https://www.weatherzone.com.au/station/SITE/66212/observations/2023-10-26
https://www.weatherzone.com.au/station/SITE/66212/observations/2023-10-27
https://www.weatherzone.com.au/station/SITE/66212/observations/2023-10-28
https://www.weatherzone.com.au/station/SITE/66212/observations/2023-10-29
https://www.weatherzone.com.au/station/SITE/66212/observations/2023-10-30

The Full Average Statistical Noise Parameters L(Aeq, 15 minutes), L(A90, 15 minutes), L(A10, 15 minutes), L(A1, 15 minutes) .

PART 1: TRAFFIC NOISE ASSESSMENT (NOISE BREAK-IN)

4.0 ACCEPTABLE NOISE LEVELS (BREAK-IN)

The proposed childcare centre must be built to comply with the internal noise amenity levels stated in the NSW Department of Planning Document 'Development Near Rail Corridors And Busy Roads – Interim Guideline–' referred to in this report as " The Interim", AS 2107:2016 *'Acoustics – Recommended Design Sound Levels and Reverberation Times'*, and the AAAC Technical Guideline for Child Care Noise Assessments V3.0.

4.1 THE INTERIM GUIDELINE

Victoria Rd has an Annual Average Daily Traffic (AADT) > 40,000 vehicles and is classified as a busy Road. Since the proposed childcare centre is located approximately on Victoria Rd, according to Figure 3.4(a) of the Interim Guideline, an acoustic assessment is required for the proposed development in accordance with Table 3.1 of The Interim.

Table 3.1: Noise criteria

Residential Buildings		
Type of occupancy	Noise Level dBA	Applicable time period
Sleeping areas (bedroom)	35	Night 10 pm to 7 am
Other habitable rooms (excl. garages, kitchens, bathrooms & hallways)	40	At any time
Non-Residential Buildings		
Type of occupancy		Recommended Max Level dBA
Educational Institutions including child care centres		40
Places of Worship		40
Hospitals	- Wards	35
	- Other noise sensitive areas	45

Note: airborne noise is calculated as L_{eq} (9h) (night) and L_{eq} (15h)(day). Groundborne noise is calculated as L_{max} (slow) for 95% of rail pass-by events.

4.2 AUSTRALIAN/NEW ZEALAND STANDARD AS/NZS 2107:2016

It is usual practice, when we find it necessary to recommend internal sound levels in buildings to refer to Australian/New Zealand Standard AS/NZS 2107:2016 *"Acoustics – Recommended Design Sound Levels and Reverberations times for Building Interiors"*.

This standard provides recommended noise levels for steady state such as noise from building services and quasi-steady state sounds, such as traffic and rail noise. The noise levels recommended in AS/NZS 2107:2016 take into account the function of the area that applies to the sound level measured within the space unoccupied although ready for occupancy.

The standard recommends the following noise levels for educational developments.

TABLE 1
DESIGN SOUND LEVELS AND REVERBERATION TIMES FOR DIFFERENT AREAS OF OCCUPANCY IN BUILDINGS

Item	Type of occupancy/activity	Design sound level ($L_{Aeq,t}$) range	Design reverberation time (T) range, s
1	EDUCATIONAL BUILDINGS		
	Art/craft studios	40 to 45	< 0.8
	Assembly halls up to 250 seats	30 to 40	0.6 to 0.8
	Assembly halls over 250 seats	30 to 35	Curve 1*
	Audio-visual areas	35 to 45	0.6 to 0.8
	Computer rooms—		
	Teaching	40 to 45	0.4 to 0.6
	Laboratories	45 to 50	0.4 to 0.6
	Conference rooms	35 to 40	0.6 to 0.7
	Corridors and lobbies	< 50	< 0.8
	Drama studios	35 to 40	Curve 1*
	Engineering workshops—		
	Teaching	< 45	See Note 1
	Non-teaching	< 60	See Note 1
	Weight training/Fitness room	< 50	< 1.0
	Interview/counselling rooms	40 to 45	0.3 to 0.6
	Laboratories—		
	Teaching	35 to 45	0.5 to 0.8
	Working	40 to 50	0.5 to 0.8
	Lecture rooms up to 50 seats	30 to 35	Curve 3*
	Lecture theatres—		
	Without speech reinforcement	30 to 35	Curve 3*
	With speech reinforcement	30 to 40	Curve 3*
	Libraries—		
	General areas	40 to 50	< 0.6
	Reading areas	40 to 45	< 0.6
	Manual arts workshops	< 45	< 0.8
	Medical rooms (First Aid)	40 to 45	0.6 to 0.8
	Music practice rooms	40 to 45	0.7 to 0.9
	Music studios	30 to 35	Curve 2* (see Note 3)
	Office areas	40 to 45	0.4 to 0.7
	Professional and administrative offices	35 to 40	0.6 to 0.8
	Teaching spaces/single classroom—		
	Open plan teaching spaces	35 to 45	Curve 3* (see Note 1)
	Primary schools	35 to 45	Curve 3* (see Note 2)
	Secondary schools	35 to 45	Curve 3*

4.3 AAAC INTERNAL ACOUSTIC AMENITY (NOISE BREAK IN)

There are guidelines for internal acoustic amenity for childcare centres, as well as outdoor play areas. The AAAC Technical Guideline for Childcare Noise Assessments states the following:

- The $L_{eq,1hr}$ noise level from road traffic, rail or industry at any location within the indoor activity or sleeping areas of the Centre during the hours when the centre is operating shall be capable (i.e. with doors and/or windows closed) of achieving 40 dB(A) within indoor activity areas and 35 dB(A) in sleeping areas.
- The $L_{eq,1hr}$ intrusive noise level from road traffic, rail or industry at any location within the outdoor play or activity area of the Centre during the hours when the centre is operating shall not exceed 55 dB(A).

- The $L_{eq,1hr}$ intrusive noise level from aircraft at any location within the indoor activity or sleeping areas of the Centre during the hours when the centre is operating shall not exceed 50 dB(A) in accordance with Australian Standard AS 2021.

The Rw of the Façade of the childcare (wall types and glazing) is calculated as shown in the main building acoustic report section 6.0 Reference No: 2023-374- M Re.1. The childcare façade building components are summarised in Table 4.3.1 below:

Table 4.3.1 Childcare Façade specification

Building Component	Rw Rating Achieved
Windows & Sliding Doors of Childcare Centre facing Blaxland Rd, are to be 12.38 mm laminated type with full perimeter Schlegel Q-Lon acoustic seals (Ph: 8707-2000) in a heavy commercial frame section. (1) (2) (3)	37
All other Windows & Sliding Doors of Childcare Centre are to be 10.38 mm laminated type with full perimeter Schlegel Q-Lon acoustic seals (Ph: 8707-2000) in a heavy/semi commercial frame section. (1) (2) (3	35
External Walls are to be 270/250 mm double brick, brick veneer, hebel, dincel construction or any other method of wall construction with Rw of 50. (2)(3)	50

NB: This report is to be read in conjunction with the BASIX certificate and any other related building specification. (1). No Through weep holes in windows/sliders. (2). All gaps between window & door frames and the masonry walls are to be sealed using acoustic foam Hilti CP620 or similar. Glass wool batts can be applied prior to the application of the foam to seal larger gaps. (3). All gaps are to be acoustically sealed.

PART 2 - CHILD CARE CENTRE NOISE IMPACT ASSESSMENT

5.0 ACCEPTABLE NOISE LEVEL (NOISE BREAK OUT)

The predicted noise levels from the proposed childcare centre must comply with the noise criteria laid out in the following guidelines:

- NSW Policy for Industry NPfI (2017)
- AAAC Guideline for Childcare Acoustic Assessment
- NSW Road Noise Policy
- NSW Noise Guide for Local Government

5.1 NSW NOISE POLICY FOR INDUSTRY (2017)

The above policy seeks to promote environmental well-being through preventing and minimizing noise by providing a framework and process for deriving noise limits conditions for consent and licenses.

The Noise Policy for Industry 2017 (NPfI 2017) recommends two separate noise criteria to be considered, the Intrusive Noise Criteria and the Amenity Noise Criteria. A project noise trigger level being the lowest of the amenity and the intrusiveness noise level is then determined.
If the predicted noise level L_{Aeq} from the proposed project exceeds the noise trigger level, then noise mitigation is required. The extent of any 'reasonable and feasible' noise mitigation required whether at the source or along the noise path is to ensure that the predicted noise level L_{Aeq} from the project at the boundary of the most affected residential receiver is not greater than the noise trigger level.

Although the Noise Policy for Industry 2017 is intended to be used for large industrial developments, council bodies still seek to apply this policy (especially the rise of noise from mechanical plant and noise) to various proposed developments like this childcare. The Intrusive and Amenity Noise Criteria were developed predominantly to assess the noise impact from industrial and mechanical noise sources.

The NPfI 2017 should not be applied strictly in the case of noise emissions from a childcare centre for the following reasons:

- The sounds made by young children playing do not resemble typical industrial or mechanical noise sources and would be less likely to cause any adverse noise impact compared to machinery noise at the same noise level above the RBL.
- Outdoor play is a required part of childcare and the ability to reduce the noise emissions to these areas is limited.

- Outdoor play areas for children serve a similar function to other public outdoor recreational areas and sporting fields. They provide a necessary social and recreational facility for the children. For this reason, the EPA in assessing the noise from community and social based activities moderate their standard criteria. This is because these activities provide significant benefits to the community and have a congenial character of sound in comparison to industrial and mechanical noise.

5.1.1 AMENITY NOISE CRITERIA

The amenity noise levels presented for different residential categories are presented in Table 2.2 of the Noise Policy for Industry 2017. These levels are introduced as guidance for appropriate noise levels in residential areas surrounding industrial areas. For the proposed childcare centre at No. 691-695 Victoria Rd Ryde, the recommended amenity noise levels are presented in Table 5.1.1.1 below:

Table 5.1.1.1- Recommended Amenity Noise Levels

Type of Receiver	*Area*	*Time Period*	*Recommended Leq Noise Level, dB(A)*
Residence	Urban	Day	60
		Evening	50
		Night	45

Where a noise source contains certain characteristics such as tonality, impulsiveness, intermittency, irregularity or dominant low-frequency content, a correction is to be applied which is to be added to the measured or predicted noise levels at the receiver before comparison with the criteria. Shown below are the correction factors that are to be applied:

Table 5.1.1.2 – Modifying Factor Corrections as per Fact Sheet C (Noise Policy for Industry 2017)

Factor	*Correction*
Tonal Noise	+ 5 dB [1,2]
Low-Frequency Noise	+ 2 or 5 dB [1]
Intermittent Noise	+ 5 dB
Duration	+ 0 to 2 dB(A)
m Adjustment	Maximum correction of 10 dB(A)[1](excluding duration correction)

1. Where a source emits tonal and low-frequency noise, only one 5-dB correction should be applied if the tone is in the low-frequency range, that is, at or below 160 Hz.
2. Where narrow-band analysis using the reference method is required, as outlined in column 5, the correction will be determined by the ISO1996-2:2007 standard.

Correction for duration is to be applied where a single-event noise is continuous for a period of less than two and a half hours in any assessment period. The allowable exceedance of the $L_{Aeq,15min}$ equivalent noise criteria is depicted in Table 5.1.1.3 for the duration of the event. This adjustment

accounts for unusual and one-off events and does not apply to regular and/or routine high-noise level events.

Table 5.1.1.3 – Adjustment for Duration as per Fact Sheet C (Noise Policy for Industry 2017)

Allowable duration of noise (one event in any 24-hour period)	***Allowable exceedance of LAeq,15min equivalent project noise trigger level at receptor for the period of the noise event, dB(A)***	
	Daytime & evening (7 am–10 pm)	***Night-time (10 pm–7 am)***
1 to 2.5 hours	2	Nil
15 minutes to 1 hour	5	Nil
6 minutes to 15 minutes	7	2
1.5 minutes to 6 minutes	15	5
less than 1.5 minutes	20	10

According to Section 2.4 of the above policy, the project amenity noise level is determined as follows:

Project amenity noise level for industrial developments = recommended amenity noise level (Table 2.2) minus 5 dB(A)

To convert from a period level to a 15-minute level, a plus 3 is added as per Section 2.2 of the policy.
Therefore, the project amenity noise levels for the proposed childcare at No. 691-695 Victoria Rd Rydeis as follows:

- **Day period:** **60 – 5 + 3 = 58 dB(A)**
- **Evening period:** **50 – 5 + 3 = 48 dB(A)**
- **Night period:** **45 – 5 + 3 = 43 dB(A)**

5.1.2 INTRUSIVE NOISE CRITERIA

Section 2.3 of the Noise Policy for Industry 2017 summarizes the intrusive criteria as below:

$L_{Aeq,\,15\,minute} \leq$ rating background level plus 5

Therefore, the acceptable L_{eq} noise intrusive criteria for the proposed childcare centre at 691-695 Victoria Rd Ryde is as follows:

- **Day period:** **44 + 5 = 49 dB(A)**
- **Evening period:** **41 + 5 = 46 dB(A)**
- **Night period:** **40 + 5 = 45 dB(A)**

5.1.3 PROJECT NOISE TRIGGER LEVEL

A summary of intrusive and amenity noise levels as determined in Sections 5.1.1 and 5.1.2 are shown in Table 5.1.3.1 below:

Table 5.1.3.1 - Summary of Intrusiveness and Project Amenity Noise Levels

Period	*Intrusiveness Noise Level dB(A)*	*Project Amenity Noise level dB(A)*
Day Time (7:00am-6:00pm)	49	58
Evening Time (6:00pm-10:00pm)	46	48
Night & Early Morning (10:00pm – 7:00am)	45	43

The project noise trigger level is the lower (that is, the most stringent) value of the amenity and intrusiveness noise levels for the day, evening and night-time. Therefore, the project noise trigger levels for the proposed development are as shown below:

- **Day period $L_{Aeq,15\ min}$: 49 dB(A)**
- **Evening period $L_{Aeq,15\ min}$: 46 dB(A)**
- **Night period $L_{Aeq,15\ min}$: 43 dB(A)**

The proposed childcare centre will not exceed the project noise trigger level at the most sensitive locations, provided all noise control recommendations in Section 7 of this report are adhered to.

5.2 AAAC GUIDELINE FOR CHILDCARE ACOUSTIC ASSESSMENT

5.2.1 OUTDOOR PLAY AREAS

The AAAC Guideline sets out recommended noise levels from outdoor play areas of childcare centres. For most childcare centres, the duration of time that children can play outside is directly associated with the overall noise impact. The less amount of time a child is allowed to play outside, the less the overall noise impact is reduced. Therefore, it is reasonable to allow a higher level of noise impact for shorter duration of outdoor play.

Section 3.2.1 on Page 6 of the AAAC Technical Guideline for Child Care Noise Assessment allows an increase of ***10 dB above the background noise level*** for outdoor play time of up to ***four (4) hours per day (2 hours in the morning and 2 hours in the afternoon)*** and 5 dB above the background noise levels if outdoor play time *exceeds four (4) hours per day.*

As children will be in the outdoor play area for up to 4 hours per day *(during daytime hours only)*, the noise emission criterion from outdoor play times is:

- **Daytime:** **46 + 10 = 56 dB(A)**
- **Evening:** **N/A**
- **Night-time:** **N/A- No Children are allowed in the outplay area before 7:00 a.m**

5.2.2 INDOOR PLAY AREA, MECHANICAL PLANT AND PICK UP/DROP OFF

Section 3.2.2 of the AAAC Guideline for Child Care Centre Acoustic Assessment lists the following criteria for all other noise emission sources from a childcare centre including children playing in indoor play areas, operation of mechanical plant and parent pick up/drop off:

"The cumulative Leq,15min noise emission level resulting from the use and operation of the childcare centre, with the exception of noise emission from outdoor play discussed above, shall not exceed the background noise level by more than 5 dB at the assessment location".

Therefore, the cumulative noise emission criterion from indoor play, mechanical plant & pickup/drop off should not exceed:

- **Daytime:** **46 + 5 = 51 dB(A)**
- **Evening:** **N/A**
- **Night:** **44 + 5= 49 dB(A) – Period extending from 6:00 a.m to 7:00 a.m**

5.3 NSW ROAD NOISE POLICY - TRAFFIC NOISE CRITERIA

For the potential impact of additional traffic that may be generated by the development on nearby residential developments, the operation of the proposed childcare centre also needs to comply with the NSW Road Noise Policy criteria.

Table 3 in Section 2.3.1 of the NSW Road Noise Policy sets out traffic noise assessment criteria as follows:

Table 5.3.1 – NSW Road Noise Policy Traffic Noise Criteria

Road Category	Type of Project/Land Use	Assessment Criteria – dB(A)	
		Day (7am – 10pm)	Night (10pm – 7am)
Local Roads	Existing Residences Affected by Additional Traffic on Existing Local Roads Generated by Land Use Developments	$L_{Aeq\ (1\ hour)}$ 55 (external)	$L_{Aeq\ (1\ hour)}$ 50 (external)

5.4 NSW NOISE GUIDE FOR LOCAL GOVERNMENT

In order to minimize the potential of sleep disturbance due to transient noises from staff arriving during the early morning hours- if any- Section 2.2.4 of the Noise Guide For Local Government recommends that $L_{A1,1\text{-minute}}$ level of any noise outside a bedroom should not exceed the background noise level by more than 15dB. Therefore, the following criteria will apply at the outside window of the nearest residential receivers:

- **$L_{A1,\ 1\ minute}$ =< 40 + 15= 55 dB(A) at external window of Nearest Residential Receivers**

Similar text about sleep arousal is adopted in the Noise Policy for Industry 2017 as below:

Where the subject development/premises night-time noise levels at a residential location exceed:

• $L_{Aeq,15min}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or
• L_{AFmax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater,

a detailed maximum noise level event assessment should be undertaken.

Additionally, Section 5.4 of the NSW Road Noise Policy states the following:

Further studies by the enHealth Council (2004) and the guidelines published by the World Health Organisation (1999) were reviewed and analysed in terms of the guidance on noise exposure and sleep disturbance. The enHealth report states that:

'as a rule for planning for short-term or transient noise events, for good sleep over 8 hours the indoor sound pressure level measured as a maximum instantaneous value should not exceed approximately 45 dB(A) $L_{A,\ (Max)}$ more than 10 or 15 times per night'.
The above applies to the staff arriving at opening time of the childcare centre just before 7:00 a.m.

6.0 PREDICTED NOISE LEVELS FROM THE PROPOSED CHILDCARE

As stated in Section 2 of this report, noise levels from the childcare are classified into four main noise sources:

- Vehicles entering and exiting the basement car park as Parents and staff arrive and depart the premises,
- Indoor activities,
- Children playing in the outdoor playground,
- Noise from mechanical plant & air-conditioning.

6.1 NOISE FROM ADDITIONAL TRAFFIC GENERATION

Traffic Generation from the proposed development (including the childcare) has been addressed in Section 8.1 of the Acoustic Environmental Impact Assessment for the main building dated May 14th, 2025 Ref. 2023-273- M Rev.2. The predicted Noise levels due to additional traffic generation (Whole development) are summarised in Table 6.1.1 below:

Table 6.1.1 – Predicted Noise from Traffic Generation on Blaxland Rd at 1.0m from Facade of Nearest Receivers

Activity	Period	Expected $L_{eq\ 1hr}$ dB(A) from Additional Traffic at 1.0m from Façades on Blaxland Rd,	Complies with Traffic Noise Criteria- as per Section 5.3
Noise from Additional Traffic Generation	AM Peak Hour	**53 dB(A)**	Yes <55 dB(A) (Day & Evening)
	PM Peak Hour	**48 dB(A)**	Yes < 50 dB(A) (Night)

6.2 NOISE FROM CARS ENTERING/EXITING THE BASEMENT CARPARK

Noise from the proposed carpark has been addressed in Section 8.2 of the Environmental Impact Assessment for the main building dated May 14th, 2025 Ref. 2023-273- M Rev.2. The Predicted noise levels at the boundary of the nearest residential receiver No. 20 Blaxland Rd due to cars entering and exiting the basement car park are presented in Table 6.2.1 below.

Table 6.2.1 – Predicted Noise from Vehicles Entering and Exiting the Carpark at Boundary of No. 2 Hatton St – Most Critical

Activity	Period	Expected Leq dB(A)	Compliance with Noise Trigger Levels as per Section 5.1.3*
Vehicles Entering/Exiting the Basement Car Park	7.00am - 6.00pm (Day)	43 dB(A)	**Yes ✓** ≤ 49 dB(A)
	6:00pm – 10:00pm (Evening)	40 dB(A)	**Yes ✓** ≤ 46 dB(A)
	10:00pm – 7:00am (Night)	37 dB(A)	**Yes ✓** ≤ 43 dB(A)

Similarly, the L_{Amax} noise level from cars entering and exiting the basement as presented in Table 6.2.2 below in the late-night hours and early mornings complies with the Sleep disturbance criteria presented in section 5.4 of this report. This analysis accounts for staff vehicles arriving early in the morning to open up/setup the childcare.

Table 6.2.2 – Predicted L_{Amax} Noise from Vehicles Entering and Exiting the Carpark at Boundary of No. 2 Hatton St – Most Critical - LA 1 min.*

Activity	Period	Expected LA 1 min. dB(A) at External Window	Complies with Sleep Disturbance Criteria - as per Section 5.4*
Vehicles Entering/Exiting the Basement Car Park	10:00pm – 7:00am (Night)	49 dB(A)	Yes < L_{90} + 15 (59) dB(A) Yes- L_{AFmax} < 52 Yes - L_{AFmax} < RBL + 15 (55) dB(A).

6.3 NOISE BREAKOUT FROM INDOOR ACTIVITIES

The proposed childcare centre will cater to a total of one hundred and eight (108) children in the 0-5 age groups. The childcare centre will include indoor play areas (Figure 7 – Proposed Indoor and Outdoor Play Areas) that will cater to the different age groups as follows:

Table 6.3.1 - Composition of Children in GF Indoor Play Areas

Indoor Play Area Location	Age Group & No. of Children in Play Area	Total Number of Children in Play Area
Ground Floor	- 28 children from the 0-2 age group - 30 children from the 2-3 age group - 50 children from the 3-5 age group	108

The predicted noise levels with maximum children and staff inside the proposed childcare at the nearest residential receivers are shown in Table 6.2.2 below.

The sound loss through the façade of the childcare centre is calculated using Templeton/Saunders equation (A-Weighted):

$$L_{p2} = L_{p1} - R + 10Log_{10}(S) - 20Log_{10}(r) - 17 + DI \ \ dB$$

Where;

L_{p2} Noise level at location 2 from the source;
L_{p1} Noise level at the source;
R Weighted sound reduction index of the façade;
S Area of the façade;

r Distance in meters to location 2 from the source; and
DI Directivity associated with the source =3.

The predicted noise level results from inside the childcare are presented in Table 6.3.2 below.

Table 6.3.2 - Predicted Noise from Proposed Indoor Activities at Façades of Nearest Receivers*

Activity	Period	Expected $L_{eq,15\text{-}min}$ dB(A) at No. 2 Hatton St, Ryde (R1)**	Expected $L_{eq,15\text{-}min}$ dB(A) at No. 4 Hatton St, Ryde (R2)**	Expected $L_{eq,15\text{-}min}$ dB(A) at No. 6 Hatton St, Ryde (R3)**	Expected $L_{eq,15\text{-}min}$ dB(A) at No. 8 Hatton St, Ryde (R4)**	Expected $L_{eq,15\text{-}min}$ dB(A) at Within the Development (R5)	Expected $L_{eq,15\text{-}min}$ dB(A) at Within the Development (R6)	Complies with AAAC Criteria as Per Section 5.2.2
One Hundred-and Eight (108) Children and Twenty-One (21) Staff Members Indoors	6:00am – 6:00pm	**24**	**23**	**26**	**22**	**16**	**16**	Yes < 51/49 dB(A)

*Assumed masonry construction with Min. 200mm concrete slab; All recommendations of Section 7 are adhered to
** On Upper levels- Most Critical-

6.4 MECHANICAL PLANT NOISE EMISSION

A range of mechanical plant, equipment and ventilation will be installed at the proposed childcare centre. Air-conditioning might also be installed in the proposed development. As per Section 4.2 of the AAAC Guideline, the typical range of sound power levels for mechanical plant is listed in Table 6.4.1 below:

Table 6.4.1 – Typical Mechanical Plant Sound Power Levels

Small (single fan) condenser (outdoor unit)	65 dB
Medium (double fan) condenser (outdoor unit)	70 dB
Large (double fan) condenser (outdoor unit)	80 dB
Small Exhaust Fan (toilet, garbage room)	60 dB
Small Kitchen Exhaust Fan	70 dB
Carpark Exhaust Fan	85 dB

The proposed parking area is located below ground level which makes natural ventilation unachievable. Thus, a mechanical extract system should be used. The mechanical ventilation system will include the use of supply air fans/exhaust air fans to achieve all required air changes for exhaust fume and extract smoke clearance in accordance with Australian Standard AS 1668.2 *"The use of ventilation and air-conditioning in buildings Mechanical ventilation in buildings"*.

For the operation of the car park and basement garage door to meet the requirements of the NSW Noise Policy for Industry 2017, we recommend the following:

- Ensure maintenance and lubrication of motor bearings, door tracks and joints.
- The proposed security door fitted to the car parking area entrance must be independently mounted on rubber pads to prevent vibration noise transmission through the concrete walls and/or columns.

As the proposed development is still in the initial application stage, we recommend that further acoustic assessment is carried out when the development has been approved and Mechanical Services plans have been prepared for our review.

assessment of the mechanical plans once available will recommend proper silencer/(s) and duct lagging such that noise levels emitted from the mechanical plant servicing the childcare centre will meet the requirements of this report.

6.5 CUMULATIVE NOISE FROM INDOOR ACTIVITIES, MECHANICAL PLANT AND PICKUP/DROP OFF

Based on noise predictions for indoor activities, vehicles entering/exiting the basement (pick-up/drop-off) and operation of mechanical plant listed in Sections 6.1-6.4 above, the predicted cumulative noise from the above listed activities complies at all nearest residential receivers.

6.6 CHILDREN PLAYING IN THE OUTDOOR AREA

Children spend most of the day doing indoor activities. They are taken outside for external educational play activities that are supervised in accordance with the Department of Community Services' guidelines. The children will be taken outside for outdoor play in different age groups, at various times throughout the daytime only (6am – 6pm). Children will not be taken outside in the early morning (6am – 7am). The highest predicted noise source from the proposed childcare centre will be from children playing outside in the outdoor play area.

The proposed childcare centre will include an outdoor play area along the northern and eastern boundaries of the site (Figure 7 – Proposed Indoor and Outdoor Play Areas). The outdoor play areas will cater to different age groups as follows:

Table 6.6.1 - Composition of Children in GF Outdoor Play Areas

Outdoor Play Area Location	Age Group & No. of Children in Play Area	Total Number of Children in Play Area
Ground Floor	- 28 children from the 0-2 age group - 30 children from the 3-4 age group	58

Ground Floor	- 50 children from the 4-5 age group	50

Based on the sound data published in the AAAC's 'Guideline for Childcare Centre Acoustic Assessment' (September 2020 V3.0), the sound levels of the various age groups of 10 children playing are summarised in Table 6.6.2 below.

Table 6.6.2 – Sound Power Levels of 10 Children Playing in Different Age Groups

	Sound Power Level [dB] at Octave Band Centre Frequencies [Hz]								
Number of Children and Age Group	***63***	***125***	***250***	***500***	***1k***	***2k***	***4k***	***8k***	***dBA***
10 Children – 0 to 2 Years Old	54	60	66	72	74	71	67	64	**78**
10 Children – 2 to 3 Years Old	61	67	73	79	81	78	74	70	**85**
10 Children – 3 to 5 Years Old	64	70	75	81	83	80	76	72	**87**

The following heights of kids are assumed for the noise sources behind the barrier:

- 0-2 years old - 74 cm
- 2-3 years old – 90 cm.
- 3-5 years old- 100 cm.
- All kids are assumed to be talking in the direction of the receiver at the centre of the play area.

Table 6.6.3 below represents SoundPLAN 8.2 predictions for the noise levels outside any elevated window at neighbouring residential receivers. This assessment location is in accordance with the assessment locations described in Section 3.2.1 of the AAAC Guideline for Childcare Centre Acoustic Assessment. The noise levels contours generated from the outside play area whilst accounting for ground elevation and noise attenuation/reflection/reverberation are shown in Figures 10 - 11. All calculations performed are assuming noise mitigations presented in section 7.0 below are adhered to.

Table 6.6.3 – Predicted Noise from Children Playing in the Outdoor Play Areas at Nearest Receiver Windows

Activity	Period	Expected $L_{eq,15\text{-}min}$ dB(A) at No. 2 Hatton St, Ryde outside Elevated Window (R1)	Expected $L_{eq,15\text{-}min}$ dB(A) at No. 4 Hatton St, Ryde outside Elevated Window (R2)	Expected $L_{eq,15\text{-}min}$ dB(A) at No. 6 Hatton St, Ryde outside Elevated Window (R3)	Expected $L_{eq,15\text{-}min}$ dB(A) at No. 8 Hatton St, Ryde outside Elevated Window (R4)	Expected $L_{eq,15\text{-}min}$ dB(A) at Within the Development (R5)	Expected $L_{eq,15\text{-}min}$ dB(A) at Within the Development (R6)	Complies with AAAC Criteria as per Section 5.2.1*
Group 1 [28 children from the 0-2 age group 30 children from the 2-3 age group	Various times throughout the day **(up to 4 hours total /day Group 1 & Group 2)**	**30 dB(A) from Group 1**	**33 dB(A) from Group 1**	**26 dB(A) from Group 1**	**28 dB(A) from Group 1**	**52 dB(A) from Group 1**	**24 dB(A) from Group 1**	Yes ≤ 56 dB(A) [L90+10]
Group 2 [50 children from the 3-5 age group]		**40 dB(A) from Group 2**	**38 dB(A) from Group 2**	**27 dB(A) from Group 2**	**26 dB(A) from Group 2**	**24 dB(A) from Group 2**	**55 dB(A) from Group 2**	Yes ≤ 56 dB(A) [L90+10]

*Assuming all recommendations of Section 7 are adhered to

7 NOISE CONTROL RECOMMENDATIONS

7.1 OUTDOOR PLAY TIME

Children using the outdoors areas are to be taken outside in groups as below:

Activity	Period
Group 1 (Total 58) Outdoor Ground Floor Play Area [28 children from the 0-2 age group 30 children from the 2-3 age group]	Various times throughout the day **(Group 1 & 2 up to Total of 4 hours/day in total)**
Group 2 (Total 50) Outdoor Ground Floor Play Area [50 children from the 3-5 age group]	Various times throughout the day **(Group 1 & 2 up to Total of 4 hours/day in total)**

Groups 1 and 2 are to be taken out into the outdoor play areas for a combined total of 4 hours playtime.

In addition to the above, children are to be in the outdoor play areas during daytime hours only (7:00am – 6:00pm). **Children are not permitted to be in the outdoor play areas during the early morning hours (6:00am – 7:00am).**

7.2 PROPOSED WINDOWS AND DOORS OF CHILDCARE CENTRE

To comply with the AAAC internal acoustic amenity criteria as stated in Sections 4.2 and 4.3 of this report, and to limit the level of noise emission from the childcare, we recommend that all proposed windows & sliding doors at the front of the childcare are to be in accordance with Table 4.3.1 of this report.

External doors are to be Solid Core with acoustic seals fitted around the door. A drop seal is required at the base of the external door. The seals should be similar to the Raven RP47 for the top and sides and RP38at the base of the door.

We recommend that windows & doors of the proposed childcare be closed during hours of loud noise activities.

7.3 PLAY AREAS

Additionally, we recommend the following takes place with respect to play areas:

- Fixed play equipment should be plastic. If metal fixed play equipment is used, then hollow metal sections shall be filled with expanding foam or sand.
- Concrete or brick paved areas, if any, should be minimised and where practicable covered with synthetic grass carpet to minimise noise of play equipment on the hard surfaces.
- Children are to be separated into groups during outdoor play time as to not allow a large number of them to congregate in a single area at any one time.
- Line soffit of slab covering external playing with Acoustic absorption material with a minimum NRC of 0.8 (Example Absorb HD 50).

7.4 MUSIC

The following acoustic recommendations with regards to music being played at the proposed childcare centre are as follows:

1) Whilst music is being played inside the proposed childcare centre, the windows and doors of the areas that the music is played in are to be closed.

2) Music is not recommended to be played outdoors. If it is, then sound system volume controls should always be used to control the level of noise in the outdoor play area.

7.5 SIGNS

Signs reminding staff and parents to arrive and depart in a quiet and orderly manner at all times shall be installed at entry and exit points of the childcare centre.

7.6 SUPERVISION

Ensuring that children are supervised at all times will minimize the noise generated by the children. In instances where typically louder activities are to take place, smaller groups are to be taken outside at different intervals throughout the day and they are to be properly supervised.
Staff must be informed of the residential noise receivers and the importance of minimizing the outdoor noise produced by the children.

Additionally, childcare staffs are to be appropriately trained and are to keep the children occupied in educational and instructive play so as to keep them occupied less noisy. It is recommended that there be continuous monitoring of the activities within the outdoor areas to ensure casual-normal speech is used. The following table is indicative of children sound level of speech and the associated standard deviation.

Table 7.6.1 – Children Speech Sound Levels- *

Descriptor	Sound Pressure Level- -Anechoic Chamber-	Standard Deviation
Casual Speech	53 dB(A	± 5dB
Normal Speech	58 dB(A)	± 5dB
Raised Speech	65 dB(A)	± 7dB
Loud Speech	74 dB(A)	± 9dB
Shouting	82 dB(A)	± 9dB

*Pearson, Bennett & Fidell (1977).

Children taken out are to be supervised within the outdoor play area so as to not allow a large group to congregate in one area at any one time.

7.7 SOUND BARRIER FENCE

We recommend that a 2.1m high lapped & capped timber, colorbond or brick fence to be constructed on the western boundary of the outdoor play areas as per Figure 12 – Proposed Sound Barrier Location – Ground Floor (Childcare). Provide a Shade sail above outdoor play areas protecting the upper floor units on Level 1 and a 1.0m gap free solid balustrade is to be constructed

on balconies of units above outdoor play areas on Level 1. All barriers are to be in accordance with Figures 12 & 13 – Proposed Sound Barrier & Shade Sail Locations – Ground Floor & Level 1.

7.8 MECHANICAL PLANT RECOMMENDATIONS

Preliminary recommendations to comply with the criteria set out in Section 5 of this report is as follows:

- Airconditioning units are to be located approximately 3 metres from any boundaries of the site.
- The outdoor Sound Power Level of any air conditioning unit is not to exceed 65dB(A).
- Provide proper duct lagging and silencers on supply/exhaust basement mechanical ventilation fans.
- *As the proposed development is still in the initial application stage, we recommend that further acoustic assessment is carried out when the development has been approved and Mechanical Services plans have been prepared for our review.*

7.9 NOISE MANAGEMENT PLAN

A Noise Management Plan should be implemented and should include the following:

- Install a contact number at the front of the *Childcare Centre* so that complaints regarding the operation can be made.
- Implement a complaint handling procedure. If a noise complaint is received the complaint should be recorded on a Complaint Form. The Complaint Form should contain the following:

    - Name and Address of the Complainant
    - Time and Date the Complaint was received
    - The nature of the complaint and the time/date the noise was heard
    - The name of the employee that received the complaint
    - Actions taken to investigate the complaint and the summary of the results of the investigation
    - Indication of what was occurring at the time the noise was happening (if applicable)
    - Required remedial action (if applicable)
    - Validation of the remedial action
    - Summary of feedback to the complainant
    -

Additionally, a permanent register of complaints should be held on the premises, which shall be reviewed monthly by staff to ensure all complaints are being responded to. All complaints received shall be reported to management with initial action/investigation commencing within 7 days. The complainant should also be notified of the results and actions arising from the investigation.

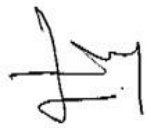
8 NOISE IMPACT STATEMENT

Acoustic, Noise & Vibration Solutions (ANAVS) Pty Ltd have taken background noise level measurements at the most noise sensitive locations near the proposed Childcare Centre located at No. 691-695 Victoria Rd, Ryde. The levels of noise emission from the Childcare Centre have been calculated and quantified using reliable test data.

Provided the noise controls as recommended in Section 7.0 of this report are fully implemented the noise emission levels will be controlled and not exceed the various criteria outlined in this report, including City of Ryde Council requirements, the AAAC Childcare Guideline, the NSW Noise Policy for Industry, NSW Road Noise Policy, and the NSW Noise Guide for Local Government.

Should you require further explanations, please do not hesitate to contact us.

Yours Sincerely,



M. Zaioor
M.S. Eng'g Sci. (UNSW).
M.I.E.(Aust), CPEng
Australian Acoustical Society (Member)

9 APPENDIX

Figure 1 – Site Location

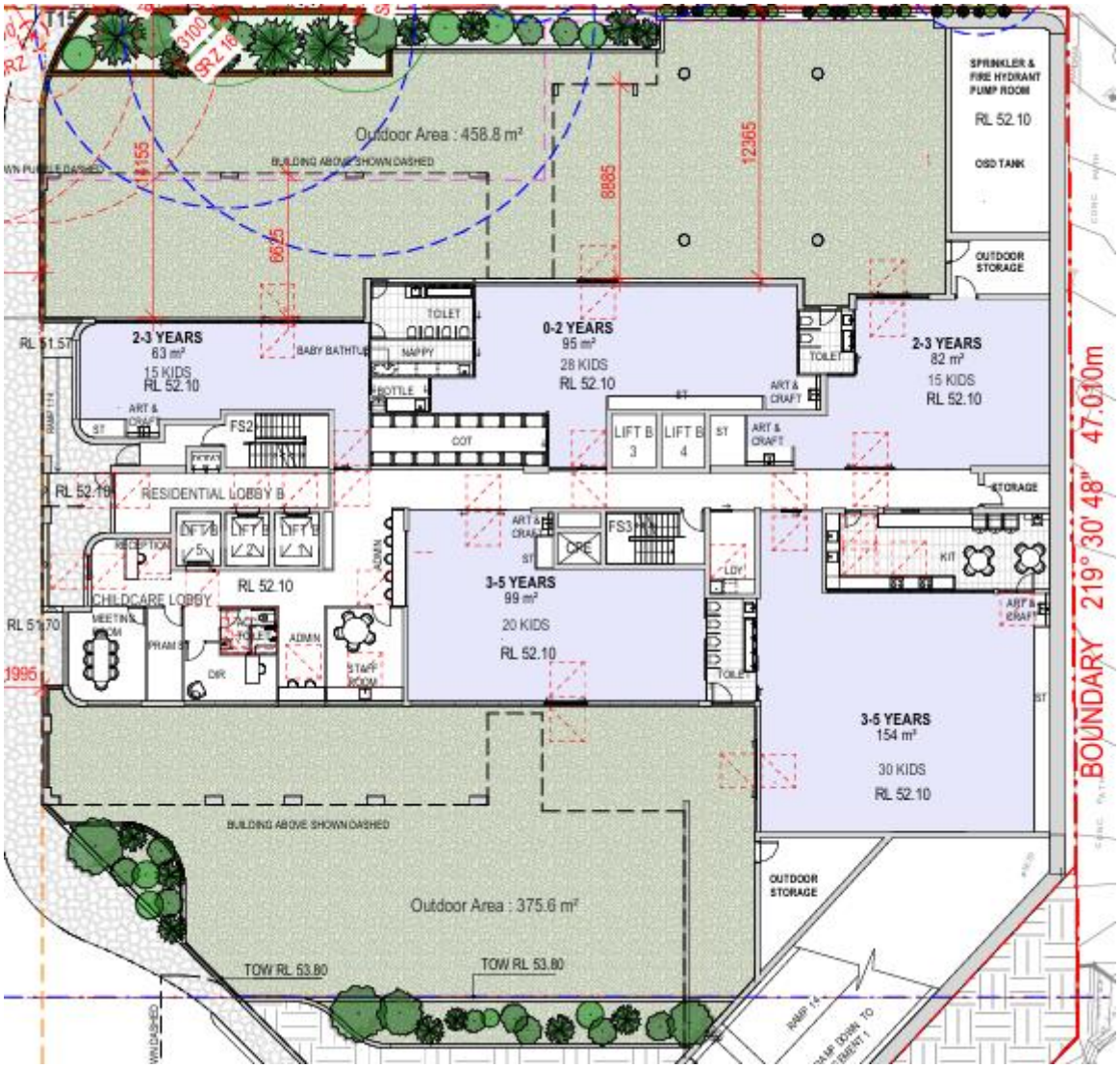


Figure 2 – Proposed Childcare Centre Plan

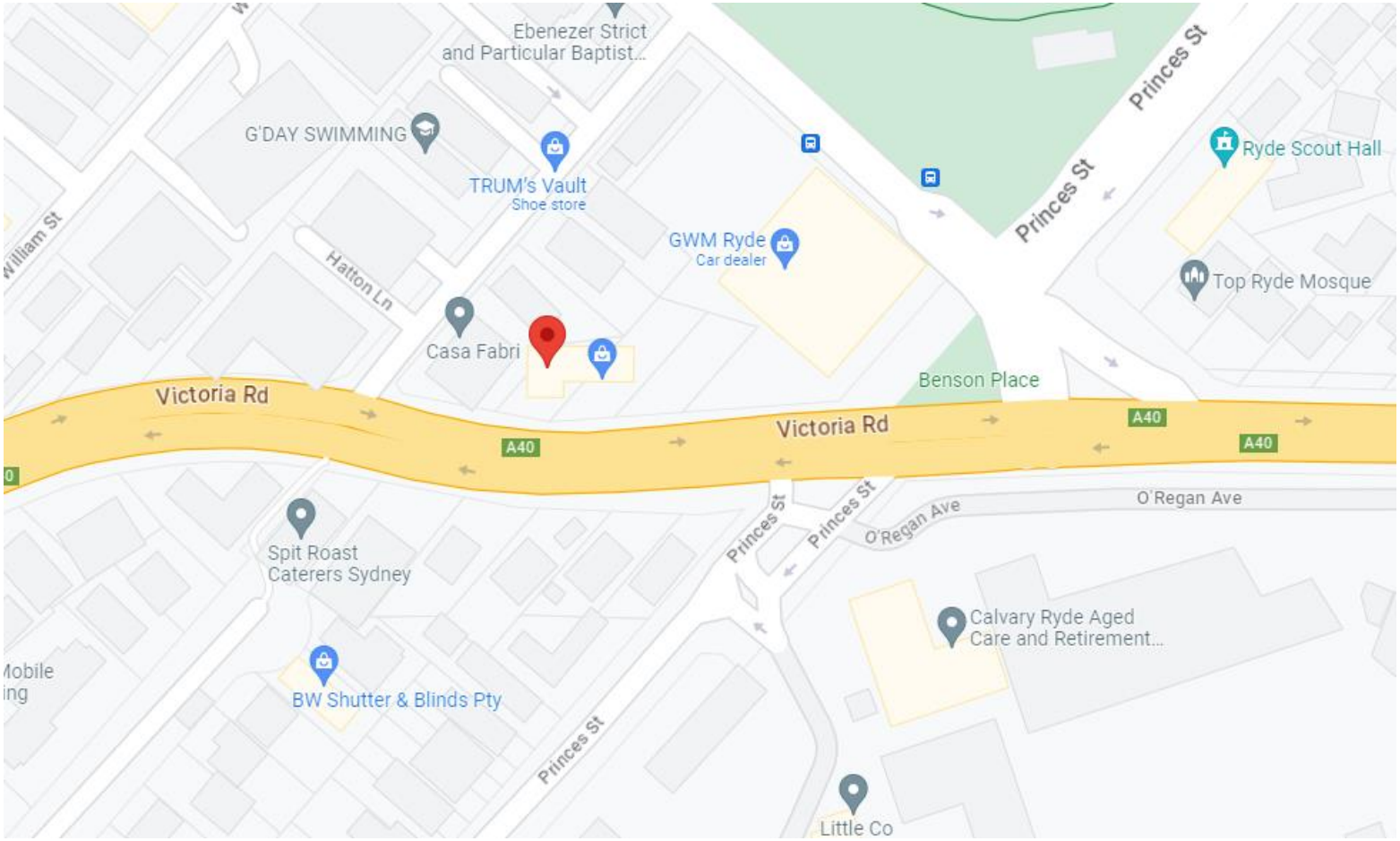


Figure 3 - Surrounding Environment

Figure 4 – Nearest Neighbouring Residential Receivers

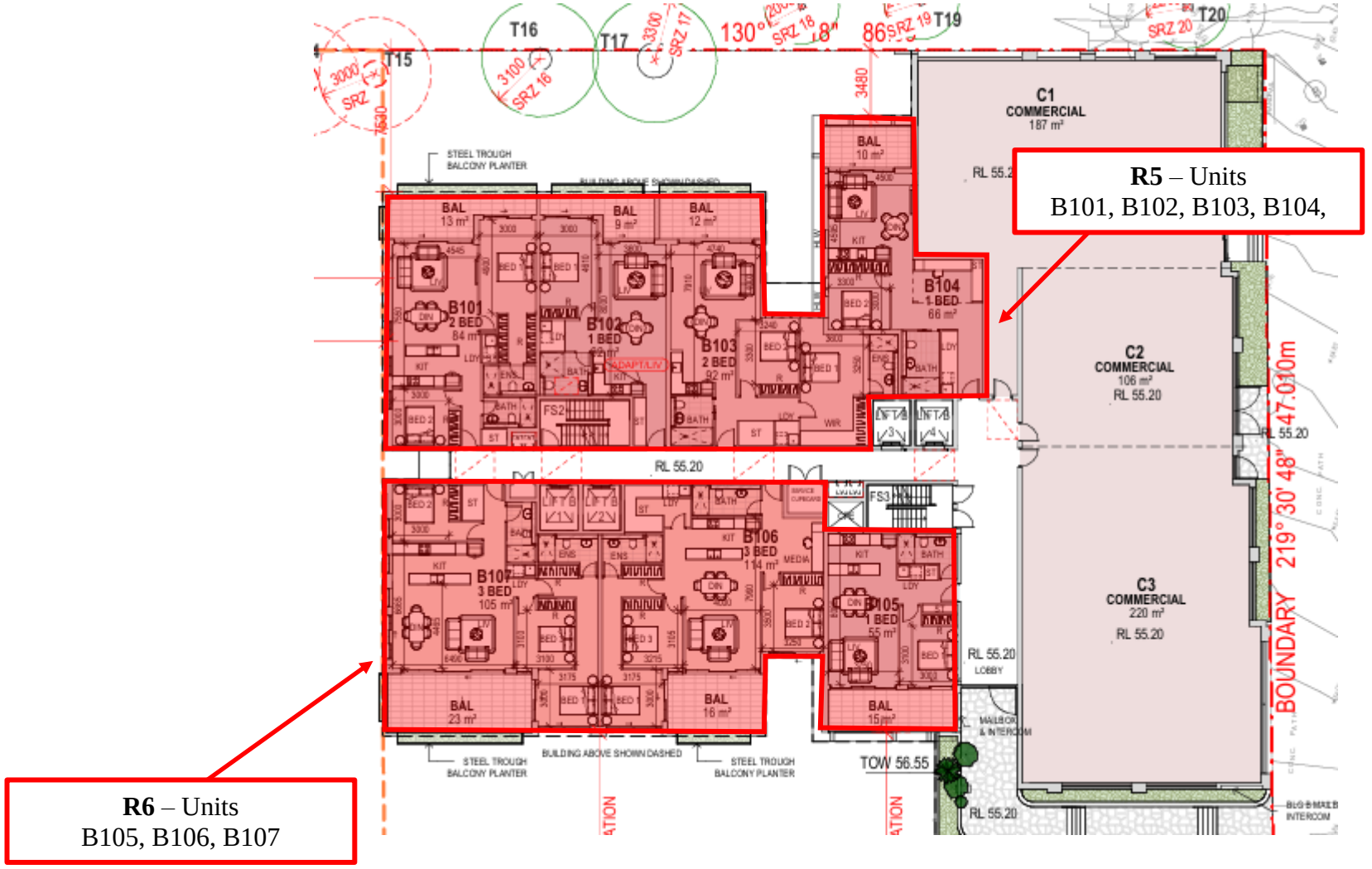


Figure 5 - Nearest Residential Receivers Inside the Development

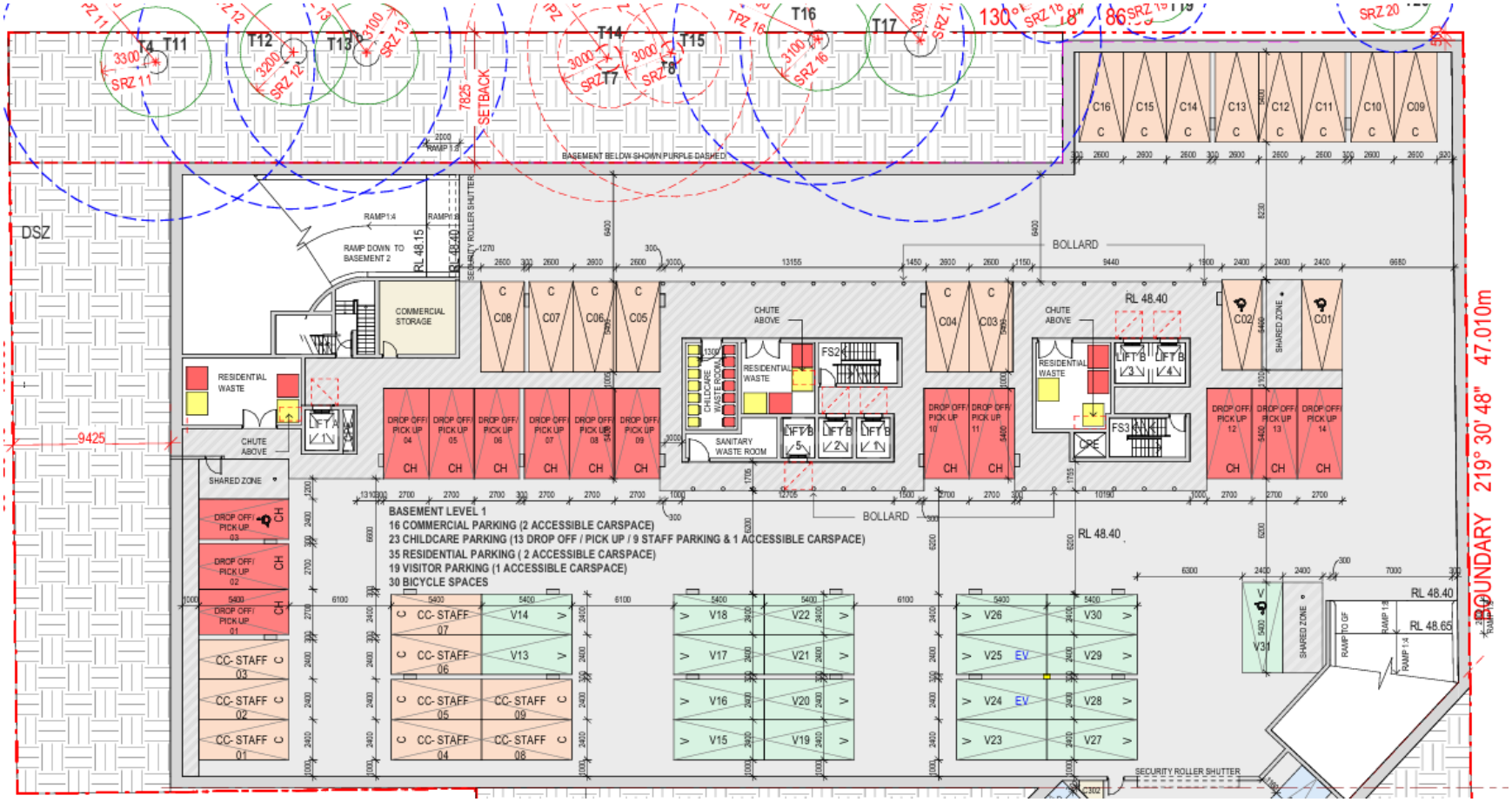
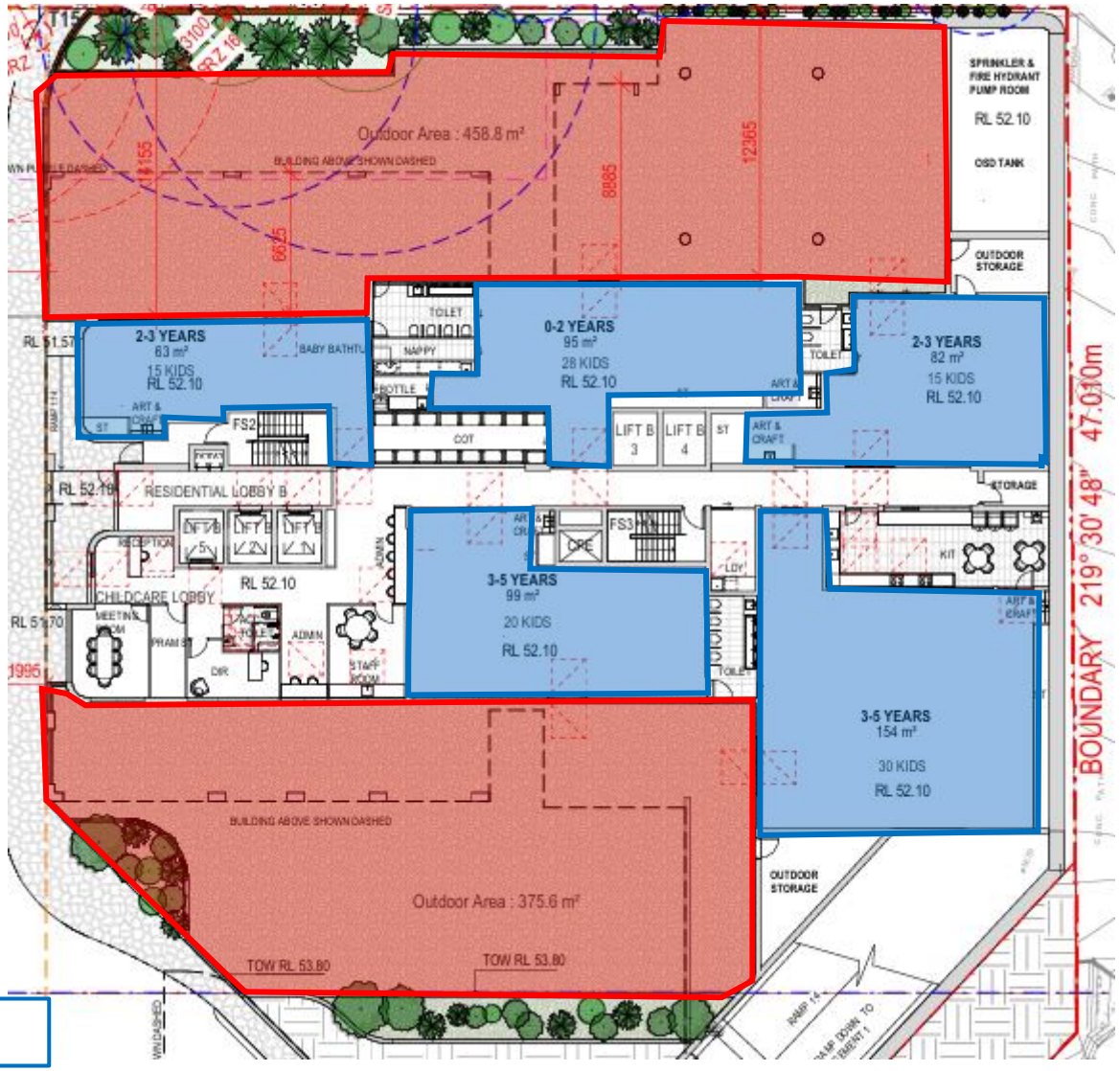


Figure 6 - Proposed Basement 1 Car Park for Childcare

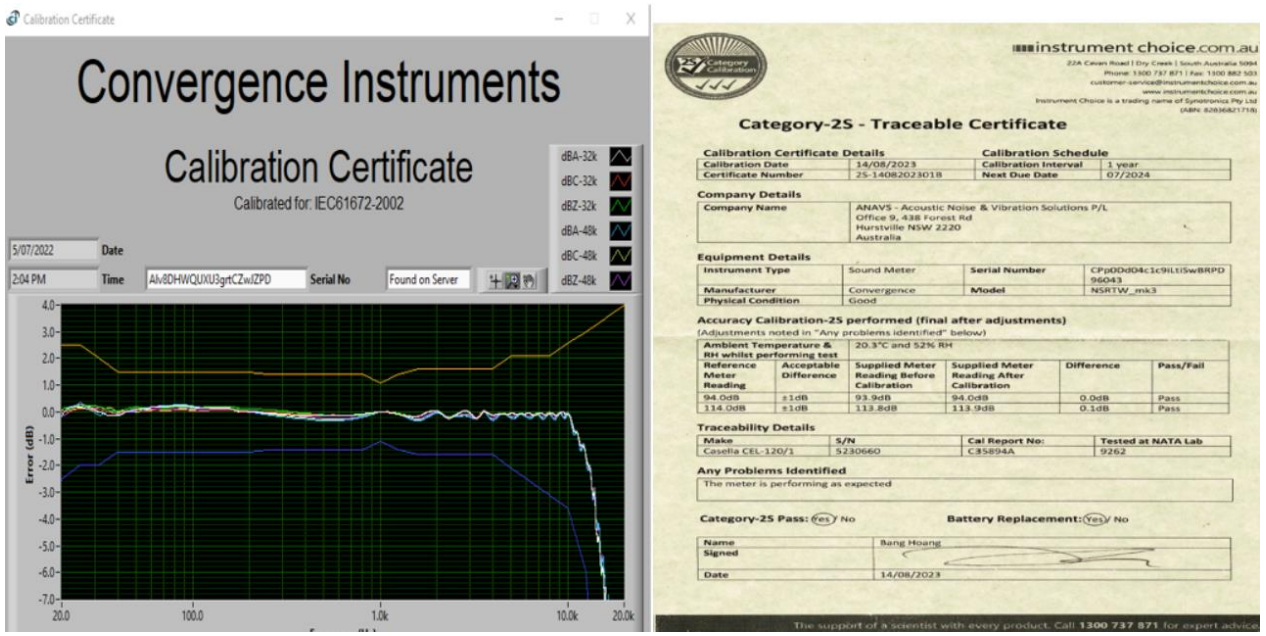


Indoor Play Area

Outdoor Play Area

Figure 7 - Proposed Indoor and Outdoor Play Areas

Figure 8 - Noise Reading Locations – Points A & B



Calibration Certificate

Convergence Instruments

Calibration Certificate

Calibrated for: IEC61672-2002

5/07/2022 Date

2:04 PM Time

Alv8DHWQUXU3grtCZwIZPD Serial No

Found on Server

dBA-32k
dBC-32k
dBZ-32k
dBA-48k
dBC-48k
dBZ-48k

Error (dB)

4.0 3.0 2.0 1.0 0.0 -1.0 -2.0 -3.0 -4.0 -5.0 -6.0 -7.0

20.0 100.0 1.0k 10.0k 20.0k

instrument choice.com.au

22A Cavan Road | Dry Creek | South Australia 5094
Phone: 1300 737 871 | Fax: 1300 882 503
customer-service@instrumentchoice.com.au
www.instrumentchoice.com.au
Instrument Choice is a trading name of Synotronics Pty Ltd
(ABN: 82836821718)

Category-2S - Traceable Certificate

Calibration Certificate Details		Calibration Schedule	
Calibration Date	14/08/2023	Calibration Interval	1 year
Certificate Number	2S-1408202301B	Next Due Date	07/2024

Company Details

Company Name	ANAVS - Acoustic Noise & Vibration Solutions P/L Office 9, 438 Forest Rd Hurstville NSW 2220 Australia

Equipment Details

Instrument Type	Sound Meter	Serial Number	CPp0DdO4c1c9lLtiSwBRPD 96043
Manufacturer	Convergence	Model	NSRTW_mk3
Physical Condition	Good		

Accuracy Calibration-2S performed (final after adjustments)

(Adjustments noted in "Any problems identified" below)

Ambient Temperature & RH whilst performing test		20.3°C and 52% RH			
Reference Meter Reading	Acceptable Difference	Supplied Meter Reading Before Calibration	Supplied Meter Reading After Calibration	Difference	Pass/Fail
94.0dB	±1dB	93.9dB	94.0dB	0.0dB	Pass
114.0dB	±1dB	113.8dB	113.9dB	0.1dB	Pass

Traceability Details

Make	S/N	Cal Report No:	Tested at NATA Lab
Casella CEL-120/1	5230660	C85894A	9262

Any Problems Identified

The meter is performing as expected

Category-2S Pass: (Yes) / No

Battery Replacement: (Yes) / No

Name	Bang Hoang
Signed	
Date	14/08/2023

The support of a scientist with every product. Call 1300 737 871 for expert advice

Figure 9 - Calibration Certificates

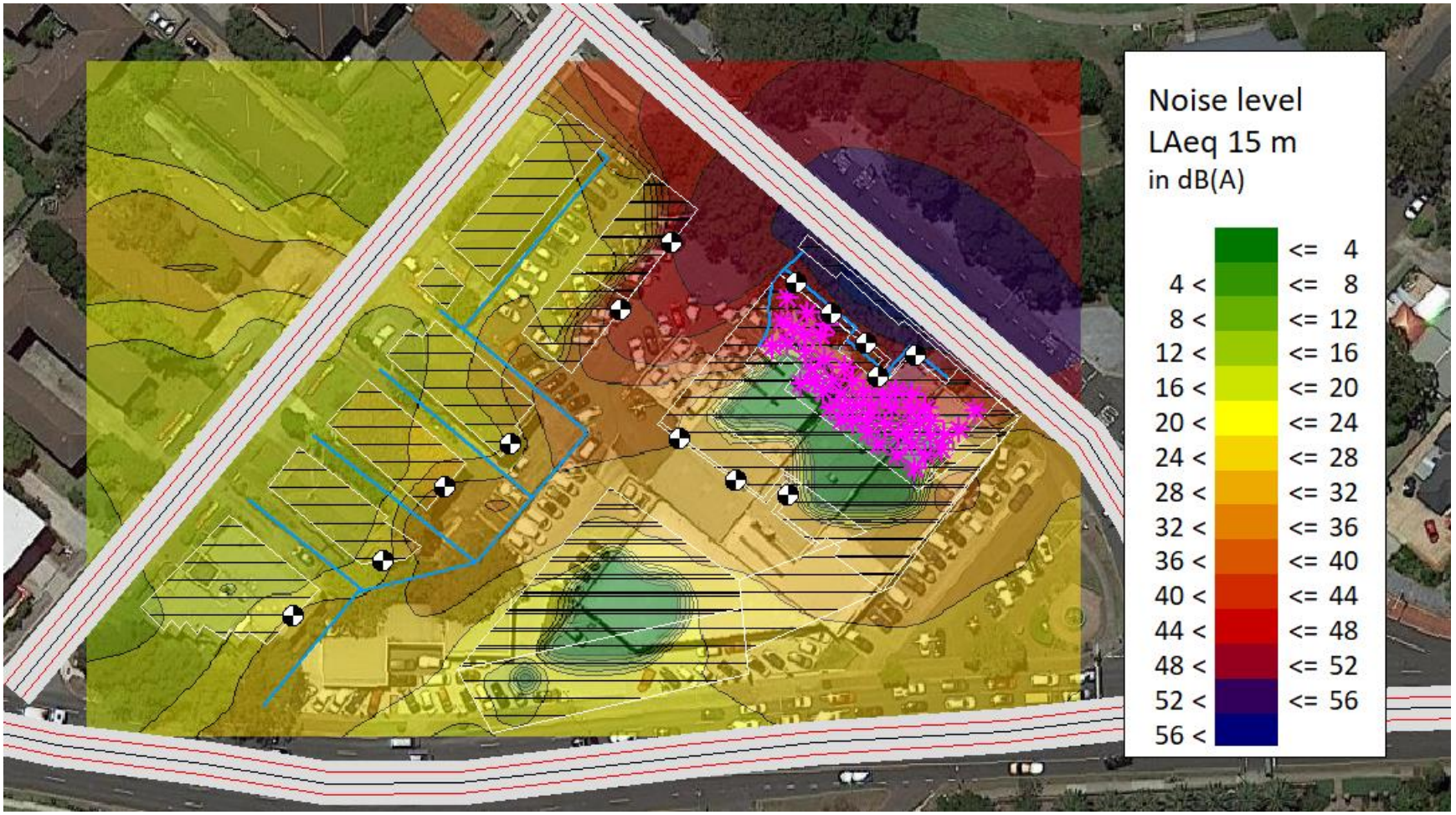


Figure 10 – Outdoor Play Area Noise Contours – Group 1

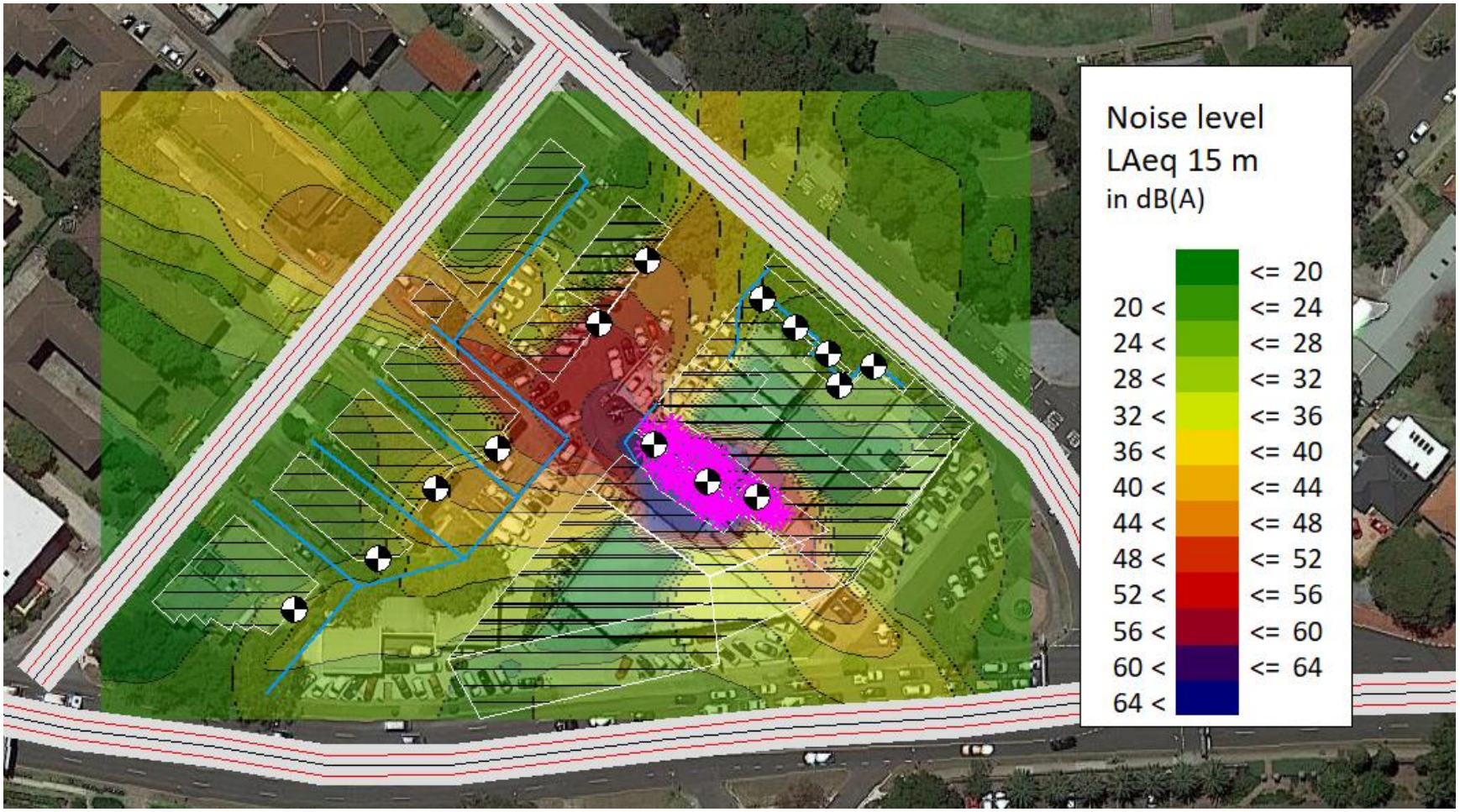


Figure 11 - Outdoor Play Area Noise Contours – Group 2

Figure 12 - Proposed Sound Barrier Locations – Ground Floor (Childcare)

Figure 13 - Proposed Sound Barrier & Shade Sail Location - Level 1