ACOUSTIC ASSESSMENT REPORT

S4.56 CAPACITY INCREASE AMENDMENT CHILD CARE CENTRE

725 Warringah Road Forestville NSW

Prepared By:

NG Child & Associates

26 April 2024

DOCUMENT CONTROL REGISTER

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TABLE OF CONTENTS

APPENDICES

LIST OF DIAGRAMS

LIST OF TABLES

1 INTRODUCTION

NAPLA Forestville Pty Ltd is the owner of a 146-place child care facility at 725 Warringah Road Forestville, NSW.

The site is within the Northern Beaches Council local government area, and Northern Beaches Council is the local government consent authority at interest.

NG Child & Associates has been engaged to undertake an acoustic assessment of a proposed S4.55 application seeking an increase of six, from 146 to 152, in the number of approved places at the centre.

This document describes that assessment and presents its findings and recommendations.

2 BACKGROUND

2.1 SITE LOCATION

Figure 2.1 below provides a road map identifying the site location, which is marked in blue at the approximate centre of the diagram.

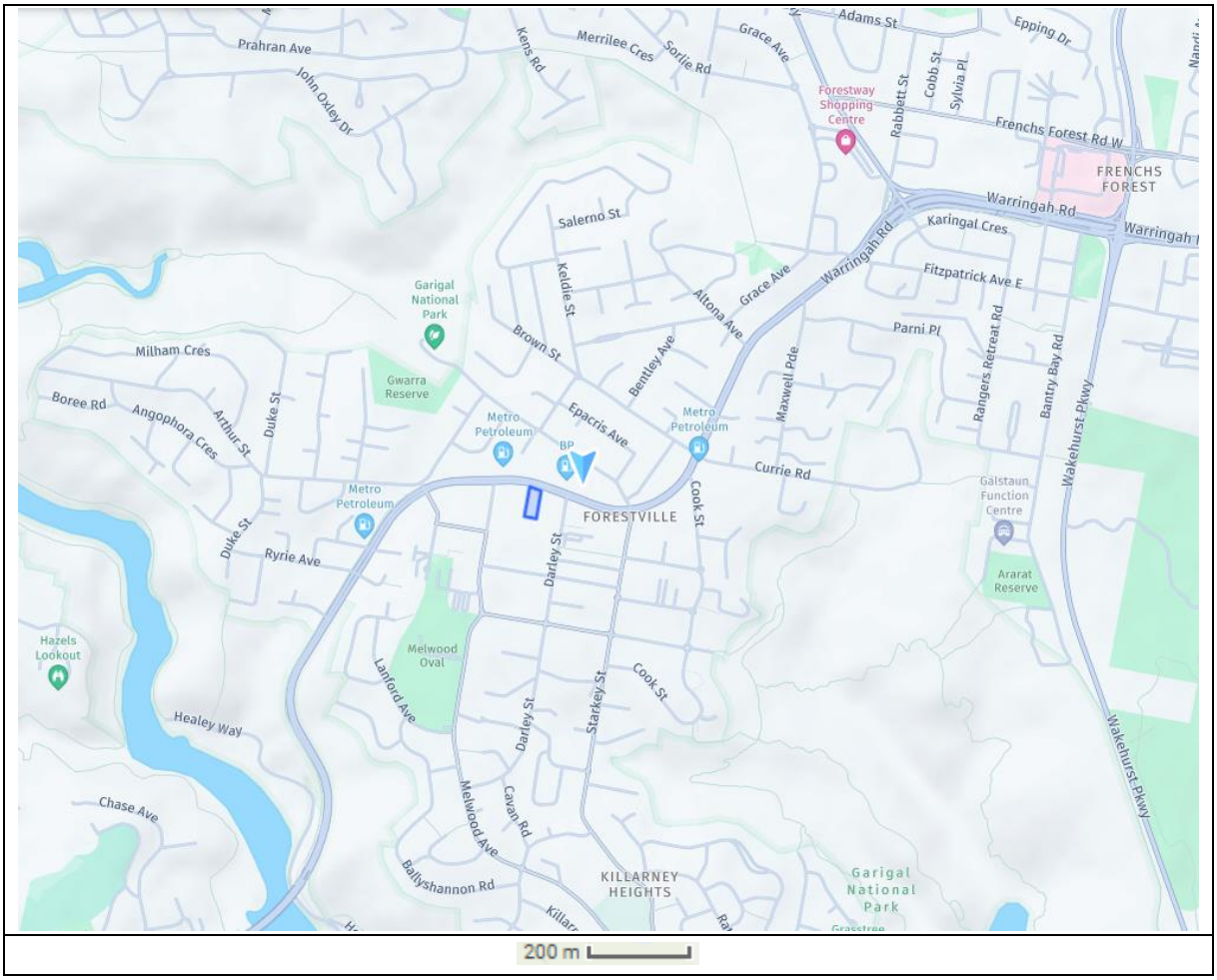

Figure 2.1 – Location of the Proposed Child Care Centre

The direction of north is towards the top of the diagram, and a scale has been included below. The prospective development site is 725 Warringah Road Forestville, NSW.

A recent (March 12th, 2024) satellite photograph of the site is provided in Figure 2.2, on the following page.

Once again, the direction of north is towards the top of the diagram; a scale has been included below, and the site area is shown shaded in blue.

Figure 2.2 – Satellite Photograph of Site Location (March 12th, 2024)

2.2 LOCAL GOVERNMENT CONSENT AUTHORITY & ZONING

The site falls within the Northern Beaches Council local government area.

Relevant local government consents and approvals regarding the site and the proposed development reside with that Council.

The site area is zoned R2 (“Low Density Residential”) and is shown at the lower centre of Figure 2.3 below, on the southern side of Warringah Road.

Surrounding land uses are also zoned R2, except for the Warringah Road corridor, which is zoned SP2 “Infrastructure – Road”.

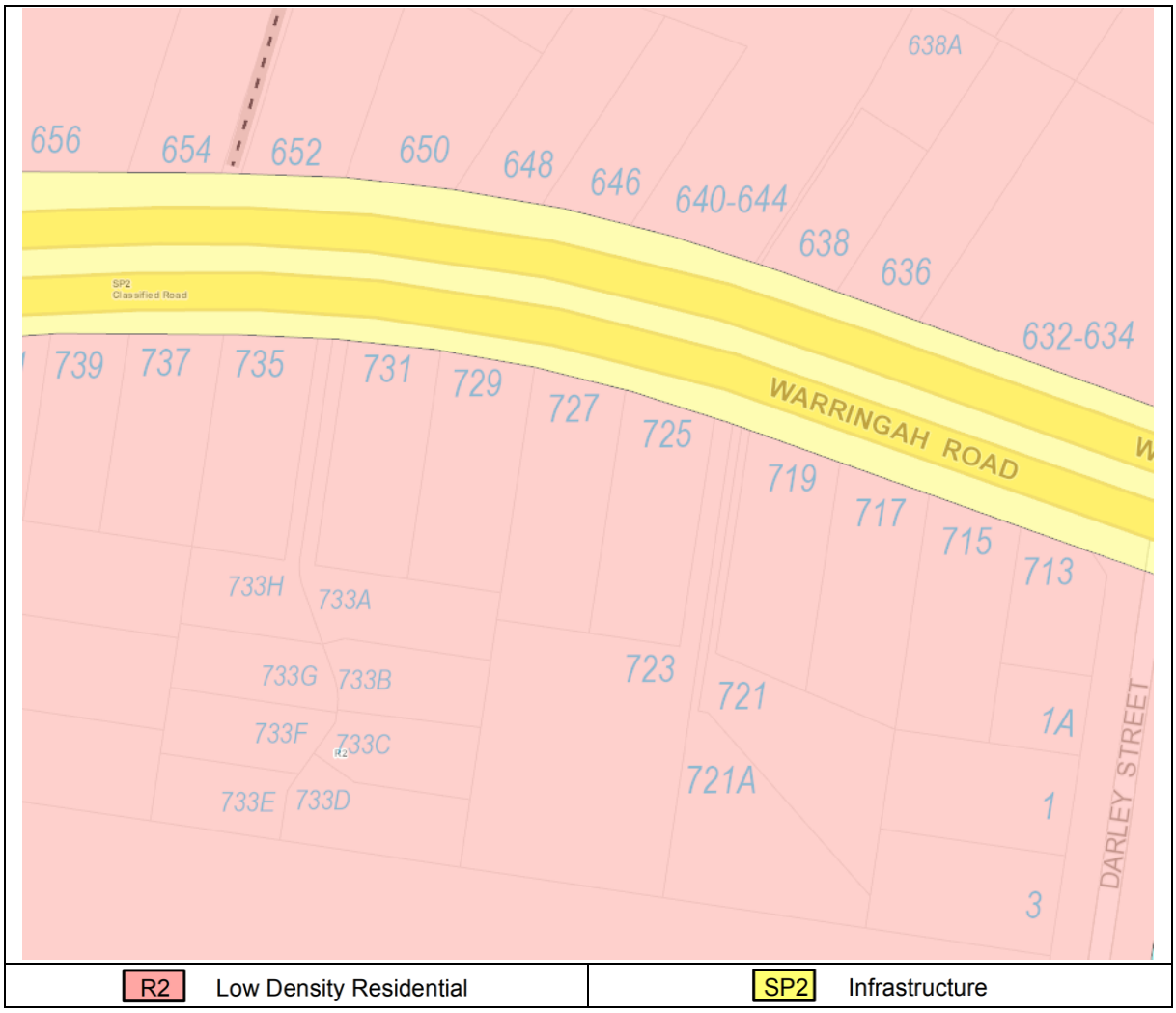

Figure 2.3 – Zoning Details

The proposed development site comprises 777723, 725 and 727 Warringah Road Forestville, which are formally identified as:

727 Warringah Road	Lot 1 DP 25050
725 Warringah Road	Lot 2 DP 25050
723 Warringah Road	Lot 3 DP 25050

3 THE VARIATION

Variations in the design and layout of the centre associated with the proposed increase of six in the number of places for children attending the centre are shown in the plans and drawings included for reference in Figures 3.1 to 3.3 on subsequent pages, as follows:

Figure 3.1 Ground Floor

Figure 3.2 Level 1

Figure 3.3 Level 2

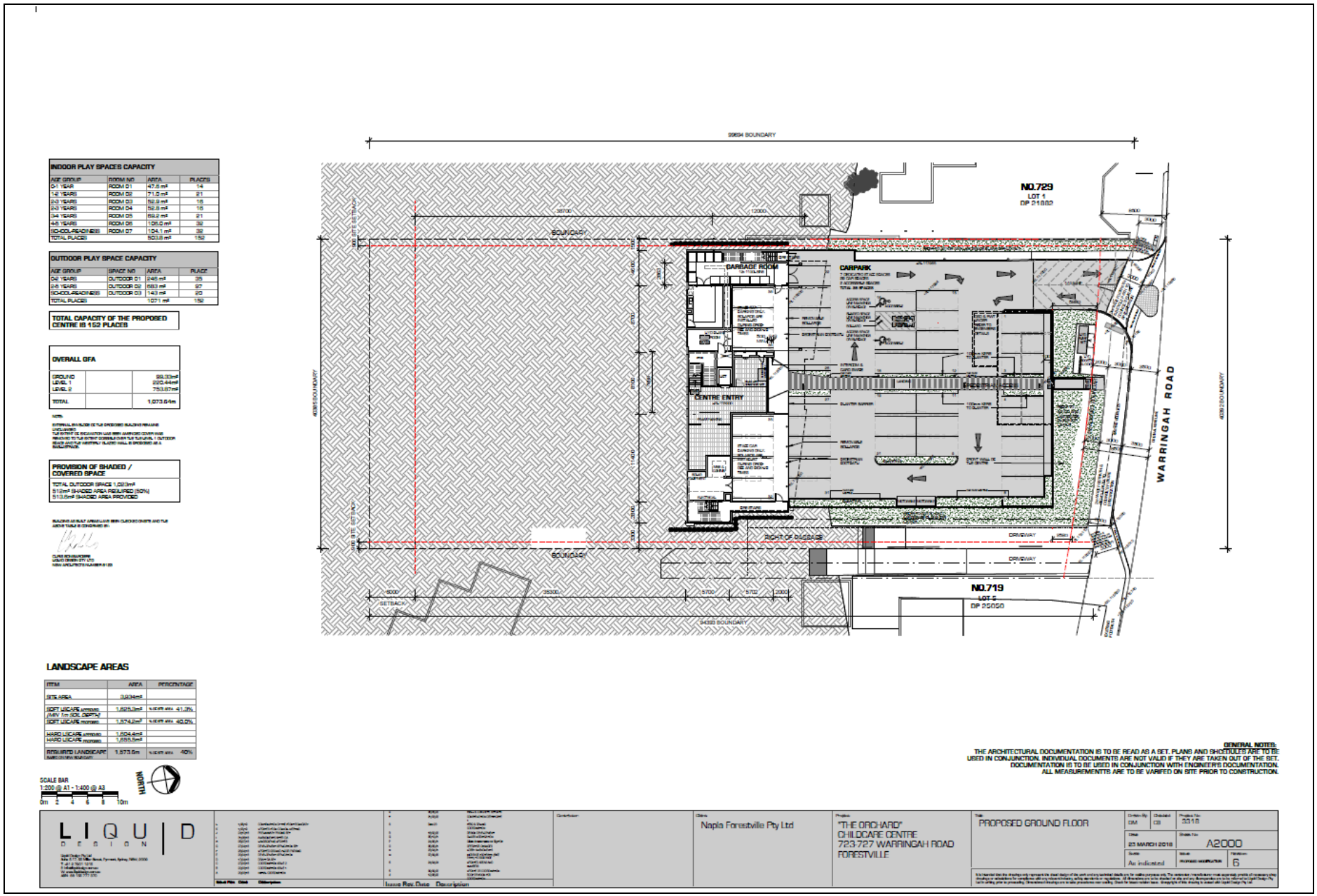

Figure 3.1 – Proposed Ground Floor Modification

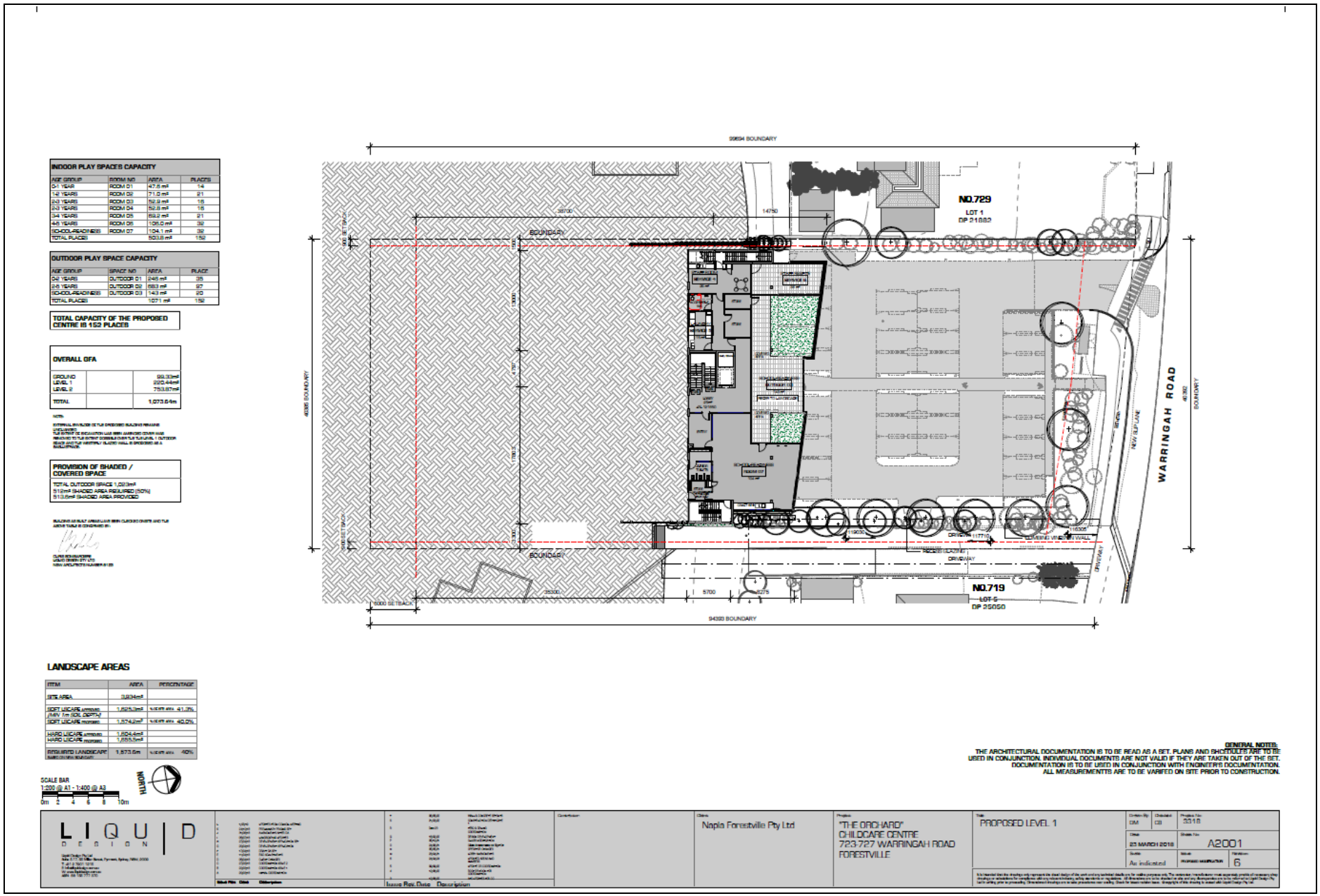

Figure 3.2 – Proposed Level 1 Modification

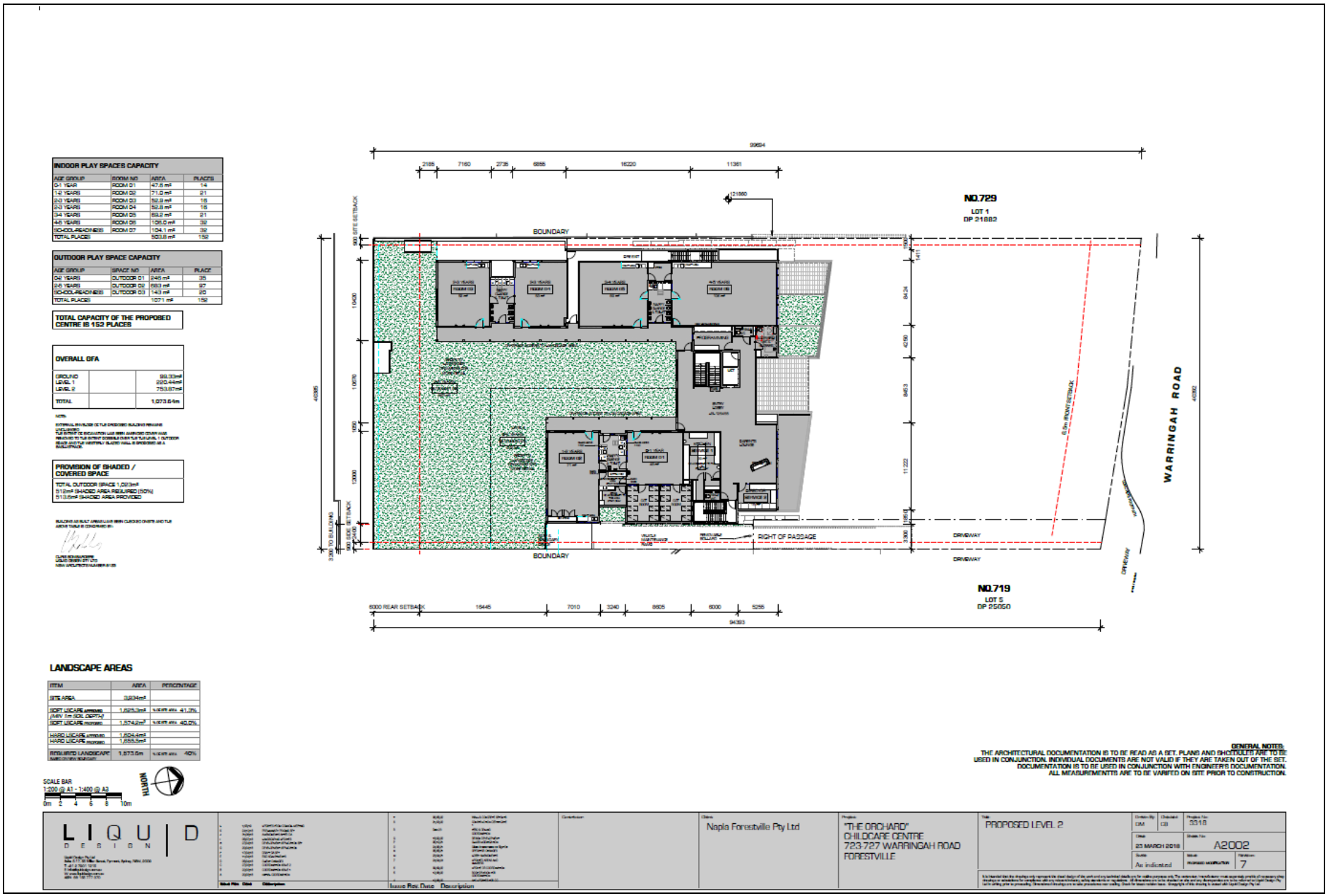

Figure 3.3 – Proposed Level 2 Modification

4 ACOUSTIC ASSESSMENT REQUIREMENTS

4.1 ACOUSTIC ASSESSMENT REQUIREMENTS

The purpose of this investigation has been to provide an assessment of the acoustic impacts associated with the proposed increase of six, that is from 146 to 152 places, in the overall number of children approved to attend the 725 Warringah Road childcare centre, and to either:

- Demonstrate that the acoustic impacts associated with the proposed capacity increase comply with relevant guidelines and regulations; or
- Identify any additional acoustic controls required in order to ensure that acoustic impacts associated with the proposed capacity increase do comply with all relevant acoustic guidelines and regulations.

4.2 PREVIOUS REPORTS

Previous acoustic assessments and investigations regarding the 725 Warringah Road Forestville childcare development include the follwing:

- Acoustic Assessment Report Proposed Child Care Centre 723/727 Warringah Road Forestville NSW (NG Child & Associates; Version 2; April 30th, 2018); and
- OC Acoustic Compliance Certification Report: Childcare Centre 723/727 Warringah Road Forestville NSW (Ref: CA/23/09-6508; November 24th, 2023; NG Child & Associates; Version 1; November 24th, 2023

These reports address the acoustic performance and compliance of the development in respect of relevant acoustic guidelines, standards and criteria, and have been taken into account in this assessment.

4.3 ACOUSTIC ASSESSMENT GUIDELINES

The previous reports described above have included details of the various acoustic guidelines and requirements applicable to the 725 Warringah Road childcare centre.

These requirements are summarised below:

The effect of noise from external sources on the child care centre development:

Type of Occupancy	Noise Level dBA	Applicable Time Period
General Internal Areas of the Child Care Centre	40 (max)	At any time
Sleep & rest Rooms within the Child Care Centre	35 (max)	At any time
Outdoor Play Areas of the Child Care Centre	55 – 60	Generally

The effect of noise from the child care centre development on nearby receivers:

Type of Receiver	Noise Level dBA	Applicable Time Period
Site Boundaries	+ 5 dBA (max) versus RBL [1]	During Operating Hours
Nearby Residential Properties	+ 5dBA (max) versus RBL [1]	During Operating Hours
Nearby Commercial Properties	65 dBA max [2]	During Operating Hours

1 RBL = Rated Background Sound Level
2 NSW Industrial Noise Policy

The requirement in relation to the impact of noise associated with the proposed childcare centre on nearby residential properties is that such noise is not permitted to result in an increase of more than 5 dBA above existing sound levels measured at the boundary between the childcare centre development and the nearest residential boundary.

In this case, the incremental noise associated with the six additional places proposed has been considered.

The requirement in relation to nearby industrial and commercial premises will not apply in this case, as no such premises are present in the near vicinity of the proposed development.

5 S4.55 ACOUSTIC ASSESSMENT

5.1 INTRODUCTION

The purpose of this assessment has been to consider the proposed increase from 146 to 152 in the number of places approved for the existing childcare centre at 725 Warringah Road Forestville NSW, and either:

- Demonstrate that the acoustic impacts associated with the proposed capacity increase comply with relevant guidelines and regulations; or
- Identify any additional acoustic controls required in order to ensure that acoustic impacts associated with the proposed capacity increase do comply with all relevant acoustic guidelines and regulations.

5.2 EXISTING & PROPOSED CENTRE CAPACITY

The existing and proposed capacities of the childcare centre, based on areas, are summarised in Table 5.1, below:

Table 5.1 – Existing and Proposed Capacities

Age Groups	Room	Approved		Proposed	
Indoor					
		Area (m^2)	Places	Area (m^2)	Places
0-1 YEAR	1	49.0	15.0	47.6	14.0
1-2 YEARS	2	66.0	20.0	71.0	21.0
2-3 YEARS	3	49.0	15.0	52.9	16.0
2-3 YEARS	4	49.0	15.0	52.8	16.0
3-4 YEARS	5	65.0	20.0	69.2	21.0
4-5 YEARS	6	98.0	30.0	106.0	32.0
School-Readiness	7	98.0	30.0	104.1	32.0
Total		**474.0**	**145.0** [1]	**503.8**	**152.0**
Outdoor					
		Area (m^2)	Places	Area (m^2)	Places
0-2 YEARS	1	208.0	30.0	246.0	35.0
3-5 YEARS	2	676.0	97.0	683.0	97.0
SCHOOL-READINESS	3	141.0	20.0	143.0	20.0
Total		**1,025.0**	**147.0** [1]	**1,071.0**	**152.0**

Note 1: Based on area calculation – 146 places approved

The currently approved capacity of the centre is 146 places.

The proposed S4.56 amendment will seek an increase of six places to 152 places overall.

5.3 ACOUSTIC BACKGROUND

The acoustic background at the 725 Warringah Road childcare centre has been defined in the previous reports listed above, and is as follows:

Table 5.2 – Adopted Background Noise Levels

Period	RBL (L_{A90})	L_{Aeq}
Day (7:00 am to 6:00 pm)	54	67

5.4 NOISE EMISSIONS FROM INDOOR ACTIVITIES

5.4.1 Proposed Variation

The proposed S4.55 variation involves an increase of six in the total number of children attending the centre.

5.4.2 Noise Emissions from Indoor Activities (Current)

Noise emissions from currently approved indoor numbers and play are reported in the adopted DA acoustic report (Acoustic Assessment Report Proposed Child Care Centre 723/727 Warringah Road Forestville NSW (NG Child & Associates; Version 2; April 30th, 2018) as follows:

> **Noise Emissions from Indoor Activities**
>
> Noise generated within the centre itself will be reduced or attenuated by the internal and external structural elements of the building.
>
> Table 6.3 above indicates a conservative minimum noise reduction or attenuation of 30 dBA applies to outside noise passing through the building façade to the general interior spaces of the building. This process also applies in reverse.
>
> Noise generated by activities within the centre is also attenuated or reduced by the building structure by 30 dBA in terms of impact outside the building.
>
> Assuming maximum typical noise levels in the range 70 – 75 dBA during periods of play within the indoor play areas at the centre, (this is conservative – and represents perceived noise levels between two and three times that of typical adult conversation) the maximum acoustic impact of internal noise immediately outside the centre, and at adjoining property boundaries, is indicated in Table 6.6, below.
>
> **Table 6.6 – Effect of Internally Generated Noise outside the Centre**
>
> | Detail | Projected Noise Level |
> |---|---|
> | Worst Case Noise due to Activities within the Centre | 70 - 75 dBA |
> | Less 20 dBA Attenuation due to Structure (Conservative) | -30 dBA |
> | Projected Acoustic Impact Outside the Centre | 40 - 45 dBA |
>
> This projected noise impact of 40 - 45 dBA due to internal activity within the centre is less than the measured external background sound level (LA90) of dBA (refer Table 5.4), and readily complies with the strictest applicable requirement, that is that noise associated with the centre should not result in an increase of greater than 5 dBA over existing background sound levels at any affected residential boundary.

Even allowing for an increase of 10 dBA in the projected internal noise level, or a reduction in attenuation effect of the building structure, the impact of noise generated by children within the centre would not exceed the existing measured Rated Background Sound Level (RBL) of LA_{90} 53 - 62 dBA immediately outside the building.

Review of AAAC Guidelines

Chapter 5 of the AAAC (2013) guideline requires that noise emissions from indoor activities at the site shall not exceed the background noise level by more than 5 dB at the assessment location.

Compliance with that requirement has been demonstrated above in relation to indoor play areas and activities.

5.4.3 Details of Proposed S4.55 Variation

The proposed variation will involve changes in the number of children in each indoor play or activity area as summarised in Table 5.3, below.

Table 5.3 – Proposed Variation by Indoor Play Room

Age Groups	Room	Approved	Proposed
Indoor			
		Places	Places
0-1 YEAR	1	15.0	14.0
1-2 YEARS	2	20.0	21.0
2-3 YEARS	3	15.0	16.0
2-3 YEARS	4	15.0	16.0
3-4 YEARS	5	20.0	21.0
4-5 YEARS	6	30.0	32.0
School-Readiness	7	30.0	32.0
Total		**145.0** [1]	**152.0**

Note 1: Based on area calculation – 146 places approved

5.4.4 Assessment of Acoustic Impacts

The acoustic impacts of the proposed variation have been assessed on the following basis:

1. External acoustic impacts from the changes to the capacities shown in Table 5.3;
2. Changes to cumulative external impacts from the total facility; and
3. Changes to the internal acoustic environment within the indoor play room.

5.4.5 Assessment Results

The acoustic impacts at each property boundary have been assessed on the basis of the changes in numbers summarised in Table 5.3 above.

Boundary acoustic impacts were found to be unchanged compared to the boundary impacts originally assessed , as summarised in Table 5.4, below.

Table 5.4 – Effect of Internally Generated Noise outside the Centre

Detail	Projected Noise Level
Worst Case Noise due to Activities within the Centre	70 - 75 dBA
Less 20 dBA Attenuation due to Structure (Conservative)	-30 dBA
Projected Acoustic Impact Outside the Centre	40 - 45 dBA
Compliance Requirement (RBL + 5dBA)	67 dBA
Comply	Yes

5.4.6 Implications of Results

The implications of the results summarised in Table 5.3 and 5.4 are as follows:

- Acoustic impacts taking into account the proposed variation in numbers remain as calculated in the original acoustic assessment report;
- This outcome is nor unexpected because:
  - The centre building, including external walls and glazing, was designed with “spare acoustic capacity” to very comfortably accommodate the originally proposed numbers of children; and
  - The basis for the original design calculations was conservative.
- The results indicate that acoustic compliance will be maintained at the centre with the proposed seven additional children present.

5.5 NOISE EMISSIONS FROM OUTDOOR ACTIVITIES

5.5.1 Proposed Variation

The proposed S4.55 variation involves an increase of seven in the total number of children attending the centre.

5.5.2 Noise Emissions from Outdoor Activities (Current)

Noise emissions from currently approved outdoor numbers and play are reported in the adopted DA acoustic report (Acoustic Assessment Report Proposed Child Care Centre 723/727 Warringah Road Forestville NSW (NG Child & Associates; Version 2; April 30th, 2018) as follows:

> **Acoustic Impact from Outdoor Play Areas**
>
> Details regarding outdoor play areas associated with the proposed centre is described in the plans and drawings provided in Section 2.
>
> An indication of the level 2 layout is shown in Figure 6.1, on the following page.
>
> In terms of acoustic impacts from the [proposed centre on external receivers, the key limiting requirement is that the existing background LA90 RBL at any adjoining residential receiver should not be exceeded by more than 5 dBA as a result of noise emissions from the child care centre.
>
> The outdoor play areas will be situated in the rear or southern portion of the site, more than 50 metres from the Warringah Road frontage.

In this area of the site, back ground the LA90 background has been shown to be 54 dBA (refer Table 5.4), and the “allowable” noise impact is therefore 54 + 5 = 59 dBA at the residential boundaries to the east and west of the proposed centre.

It is noted that the rear or southern boundary of the centre adjoins the Forestville Public school, and the residential acoustic requirement does not apply.

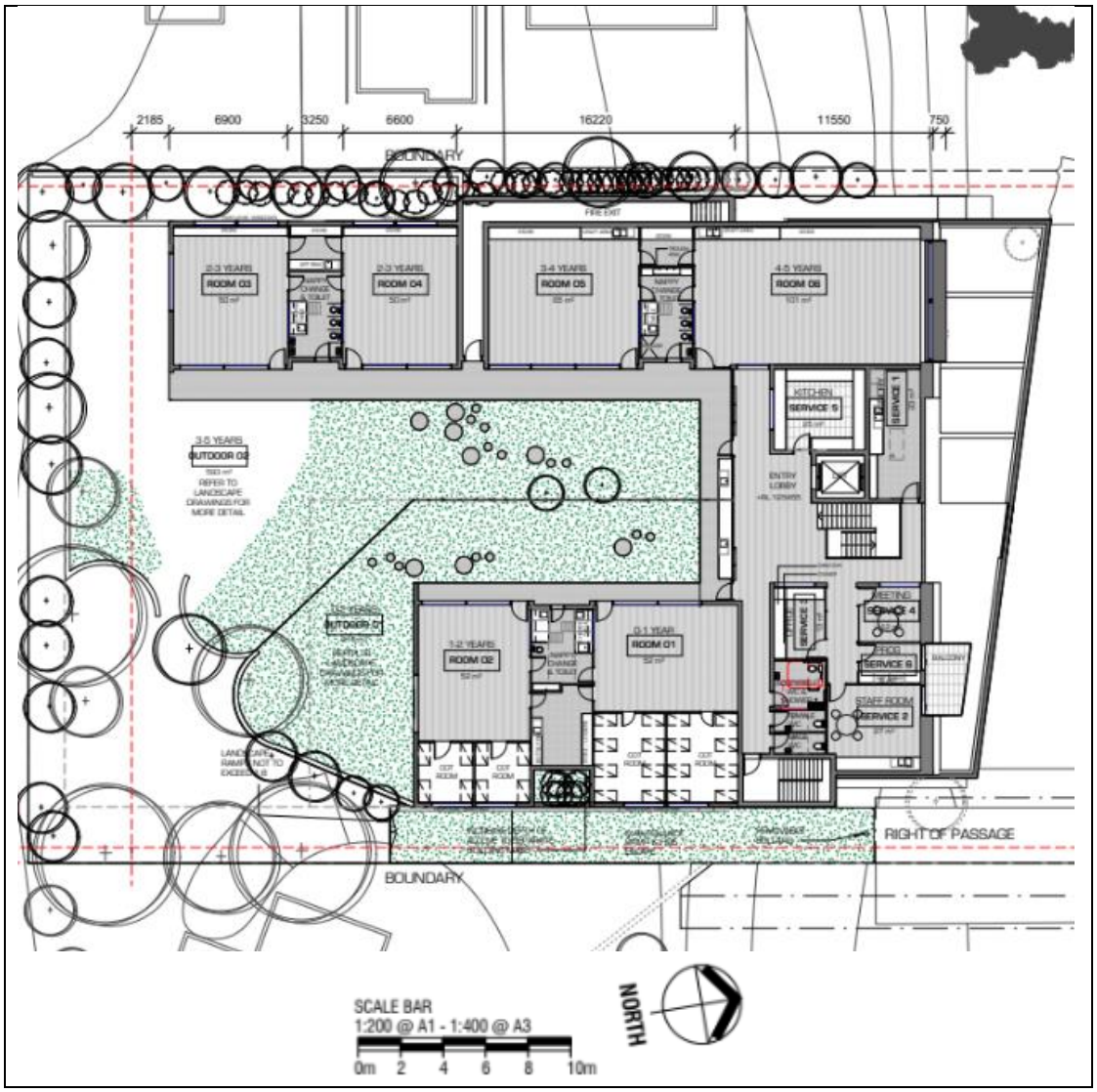

Figure 6.1 – Outdoor Play Areas

Typical maximum noise levels generated within play areas have been assessed as being 70-75 dBA (refer Section 6.3.1 above), and on this basis overall acoustic “protection” or ”shielding” of (70 – 75) – 59 dBA, or 11 – 16 dBA, needs to be achieved to ensure compliance with the noise impact allowed at adjoining residential boundaries.

This is a relatively modest requirement. In addition to the sound reduction provided by the sound absorbing effect of floor and wall treatments (including rubber based soft fall materials) acoustic protection is provided by the types of external barriers and fences around the play areas themselves, which can include solid panel acoustic fences; laminated glass fences; lapped timber fences; louvered timber privacy/acoustic screens, and metal mesh privacy/acoustic screens.

The acoustic impact of noise generated within the outdoor play areas will be further attenuated or reduced by appropriate acoustic fencing around the external boundaries of the child care centre property.

It is noted that for other regulatory reasons, acoustic fencing around child care centres, and play areas associated with child care centres, is required to be at least 1800 mm high.

Table 6.7 below identifies the acoustic qualities associated with the various acoustic fencing options.

Table 6.7 – Acoustic Qualities of Boundary Structural Elements

Material/Structural Element	Sound Reduction
1800 mm Laminated Glass Acoustic Fence/Barrier (10.38 mmm Glass)	20 – 25 dBA
1800 mmm Double Lapped & Capped Timber Fence	20 - 25 dBA [3]
1800 mm Timber or Metal Framed Solid Panel Acoustic Fence	25 – 30 dBA

Sources & References:
1 Knauff Australia, as example
2 Screenwood Australia, as example
3 ExMesh Architectural (UK), as example
4 Fencescape Fencing Australia, as example
5 Minimum attenuation to closest adjoining residential receivers
6 Calculated on additive basis (refer Section 3)

In this case, as discussed above, residential receivers adjoin the child care centre site to the immediate east and west, and the total noise reduction required to be provided by boundary fencing is identified in Table 6.8, below.

Table 6.8 – Minimum Sound Reduction Required for Outdoor Play Areas

Noise Level	LA90 RBL + 5	Attenuation Required
70 – 75 dBA	59 dBA	11 - 16 dBA

In our professional opinion, the minimum acoustic protection required to ensure that external activities associated with the proposed centre will not unduly impact on surrounding and adjoin receivers, in particular residential receivers, will involve the following measures:

- Boundary fencing along the rear eastern and western property boundaries comprising 1800 mm double lapped & capped timber fencing (or minimum acoustic equivalent); and

- Use of appropriate soft fall and other acoustic floor treatments in the play areas as feasible; and

The acoustic protection provided by this combination of design and construction elements is summarised in Table 6.9, below.

Table 6.9 – Sound Reduction due to Outdoor Area Structural Elements

Outdoor Area & Structural Element		Sound Reduction
Level 1 Outdoor Play Area		
	Sound Absorbent Floor Treatments	5 - 10 dBA [1]
	Perimeter Lapped & Capped Timber Fence	20 - 25 dBA [4]
	Aggregate Effect	**25 – 35 dBA [5, 6]**

Sources & References:
1 Knauff Australia, as example
2 Screenwood Australia, as example
3 ExMesh Architectural (UK), as example
4 Fencescape Fencing Australia, as example
5 Minimum attenuation to closest adjoining residential receivers
6 Calculated on additive basis (refer Section 3)

Acoustic performance due to activities within the outdoor play areas, taking into account the aggregate effects of the treatments described above, is summarised in Table 6.10, below.

Table 6.10 – Acoustic Impact of External Play Areas at Adjoining Residential Boundaries

Outdoor Area	Noise Level (dBA)	Attenuation due to Structures (dBA)	Impact at Boundary (dBA)	Allowable Impact (RBL + 5 dBA)	Comply
Level 2					
Outdoor Play Areas	70 - 75	25 - 35	45 - 50	59	YES

It is noted that this assessment is conservative and allows for variations in noise emission levels that might arise.

6.3.3 Residential Receivers

The position of the child care centre site in relation to residential and other neighbours is shown in Figure 6.2, below.

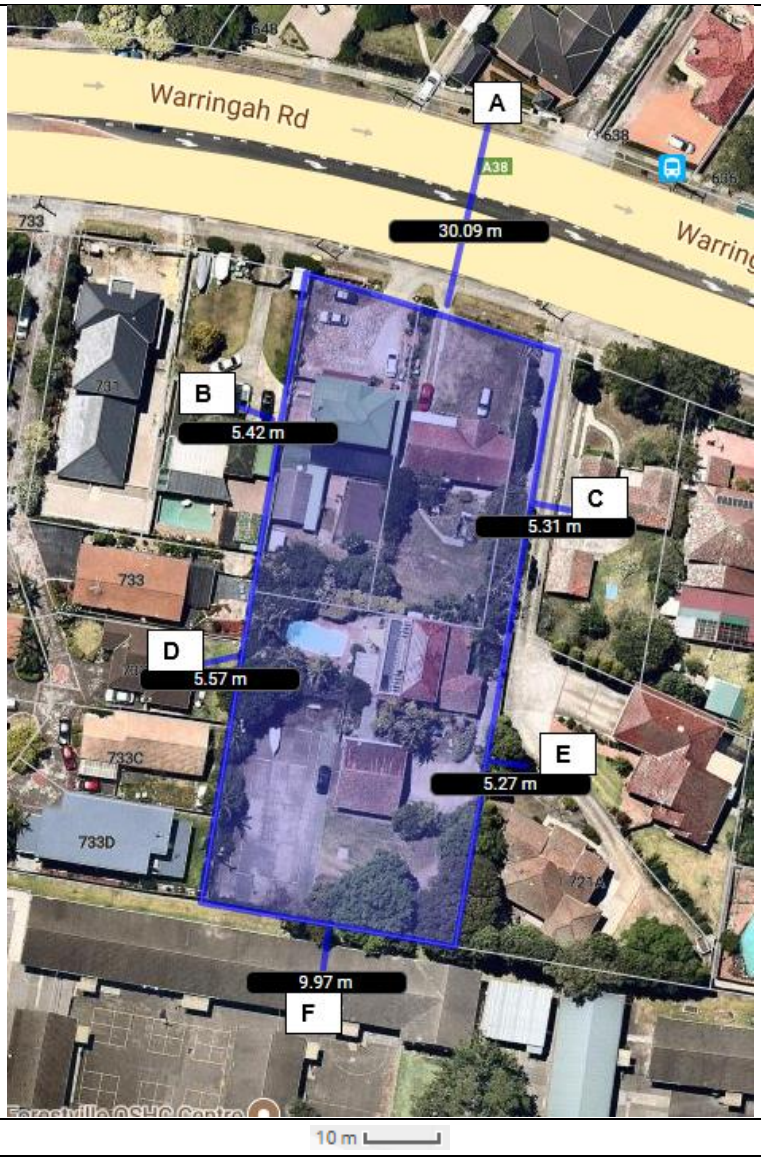

Figure 6.2 – Location of Residential & Other Receivers

As previously discussed, residential receivers are present to the immediate east and west of the site (Locations B, C, D & E), and on the opposite side of Warringah Road (Location A).

Forestville Public school adjoins the site to the immediate south (Location F).

Compliance with boundary acoustic requirements is demonstrated in 6.3.2, subject to the use of appropriate acoustic boundary fencing.

5.5.3 Details of Proposed S4.55 Variation

The proposed variation will involve changes in the number of children in each outdoor play or activity area as summarised in Table 5.5, below.

Table 5.5 – Proposed Variation by Outdoor Play Area

Age Groups	Play Area	Approved	Proposed
Outdoor			
		Places	Places
0-2 YEARS	1	30.0	35.0
3-5 YEARS	2	97.0	97.0
SCHOOL-READINESS	3	20.0	20.0
Total		**147.0** [1]	**152.0**

Note 1: Based on area calculation – 146 places approved

5.5.4 Assessment of Acoustic Impacts

The acoustic impacts of the proposed variation have been assessed on the following basis:

5.5.5 Assessment Results

The acoustic impacts at each property boundary have been assessed on the basis of the changes in numbers summarised in Table 5.5 above.

Boundary acoustic impacts were found to be unchanged compared to the boundary impacts originally assessed , as summarised in Table 5.6, below.

Table 5.6– Acoustic Impact of External Play Areas at Adjoining Residential Boundaries

Outdoor Area	Noise Level (dBA)	Attenuation due to Structures (dBA)	Impact at Boundary (dBA)	Allowable Impact (RBL + 5 dBA)	Comply
Level 2					
Outdoor Play Areas	70 - 75	25 - 35	45 - 50	59	YES

5.5.6 Implications of Results

The implications of the results summarised in Table 5.3 and 5.5 are as follows:

- Acoustic impacts taking into account the proposed variation in numbers remain as calculated in the original acoustic assessment report;
- The basis for the original design calculations was conservative.

The results indicate that acoustic compliance will be maintained at the centre with the proposed seven additional children present.

5.6 MOTOR VEHICLE NOISE

The findings of the original and adopted acoustic report in relation to motor vehicle noise for the development were as follows:

> Noise associated with the drop off and pick up of children from the centre, subject to reasonably expected vehicle operation, is assessed as being consistent with or less than existing background sound levels and is not expected to impose a noise burden of greater than 5 dBA above the measured LA90 RBL background level of 54 dBA at any potentially affected residential boundary.

The proposed S4.55 variation involves an increase of six in the total number of children attending the centre.

Traffic related noise impacts have been checked based, taking into account the minor number of changes in vehicle movements and associated noise emissions associated with these changes.

It was found that the finding of the original assessment continues to apply to acoustic impacts taking into account motor vehicle activity adjusted to reflect the additional seven children proposed.

5.7 OTHER NOISE

Noise from other sources, such as plant and equipment, is not affected by the proposed increase of six places at the centre, as no variation in any of these other noise sources is proposed.

Accordingly, noise from other sources will continue to comply with relevant acoustic guidelines, as demonstrated in the original and adopted acoustic report for the project.

6 KEY FINDINGS

NAPLA is involved in the operation an existing 146-place childcare centre at 725 Warringah Road Forestville NSW.

NAPLA now intends to lodge an S4.56 amendment application, seeking an increase in the number of places approved for the centre by six, thereby increasing the overall capacity of the centre from 146 to 152 places.

The assessment presented in this report indicates that the proposed increase from 146 to 152 in the maximum number of children at the centre will have no significant impact on the acoustic performance or impact of the centre, and that the proposed variation will result in no adverse or non-compliant acoustic impacts.

Accordingly, the proposed variation is supported in acoustic terms.

7 AUTHORISATION & LIMITATIONS

NG Child & Associates has based this acoustic assessment on the data, methods and sources described herein.

The information presented in this document has been prepared by NG Child & Associates exclusively for the use of NAPLA, and for submission to Northern Beaches Council, the Principal Certifying Authority at interest, and to others at direct interest in relation to the Section S4.55 variation proposed and described in this report.

This document should not be used for any purposes other than those of NAPLA, and for submission to Northern Beaches Council, the Principal Certifying Authority at interest, and to others at direct interest in relation the childcare centre in question, and the Section S4.55 variation described in this report.

Noel Child BSc (Hons) ME PhD
Visiting Fellow, Engineering
University of Technology, Sydney
Principal, NG Child & Associates

26 April 2024

APPENDIX A

Noel Child
Summary of Qualifications, Capability & Experience

1 PERSONAL DETAILS

Full Name: Noel George CHILD
Profession: Consultant in Environmental Science & Engineering
Date of Birth: 6th December 1946
Nationality: Australian
Experience: > 30 Years
Address: 22 Britannia Road, Castle Hill, NSW, 2154
Contact: **Phone**: 61 2 9899 1968 **Mobile:** 0409 393024

2 SHORT BIO

Noel Child is a successful and experienced commercial and technical professional with over 40 years' experience in a variety of senior level appointments and assignments, within both the corporate and private sectors, with a particular focus on strategic, infrastructure and environmental applications.

Noel's experience includes senior management at both the State and National levels in the Australian petroleum industry, and a number of senior consultancies for both government and corporate clients. His record reflects the ability to develop and achieve positive commercial outcomes through effective planning and communication; critical and objective analysis; and quality task completion and delivery at both the personal and team level.

His management responsibilities have included transport, environmental, marketing, safety, and general operational activities at a national level, while his formal professional training includes strategic management, environmental, engineering and business disciplines. He has successfully undertaken a number of senior corporate appointments and been successfully involved in the ownership and operation of a major petroleum distribution and marketing company in regional Australia. More recently he has applied his knowledge and experience in the areas of strategic management, infrastructure development, energy and the environment on a consultancy and contractual basis to a number of private and public-sector clients.

Noel has had graduate and post-graduate training in several technical and commercial disciplines. He has experience in a number of aspects of environmental management, assessment and performance. He has also been recognised as an independent expert on several environmental issues by the Land and Environment Court of NSW.

Noel has a detailed understanding of environmental engineering and associated processes and has specific experience and expertise in the fields of acoustics, air quality, electromagnetic field assessment, electrolysis and stray current assessment, contaminated site assessment, and liquid and solid waste management. He has provided post graduate teaching input on environmental engineering issues to post graduate courses at the University of Technology, Sydney, and La Trobe and Monash Universities in Melbourne.

3 EDUCATION, QUALIFICATIONS AND AFFILIATIONS

- Graduate qualifications in science and engineering, including an honours degree in environmental science;
- Post graduate training in engineering and commerce,
- Affiliation with relevant professional associations.

4 CORPORATE EXPERIENCE

- Senior management positions in the petroleum industry, including state and national operational and marketing management roles for Exxon and Caltex (1970's & 1980's).
- Successful ownership, operation and management of a large private fuel distributorship (Western Fuel Distributors) based in western New South Wales. (1980's & 1990's)
- Operation and management of the environmental consultancy NG Child & Associates (1990's to present).

5 RECENT ACOUSTIC CONSULTANCY WORK

Recent acoustic consultancy projects include:

- **Trumen Corp Constructions:** Acoustic assessments of a number of major commercial developments involving warehouse and self-storage facilities at Lane Cove, Thornleigh, Revesby, Homebush and Mortdale.
- **The Bathla & Universal Property Groups:** Environmental assessment and management, including noise management plans, a large number of residential developments throughout southwestern, western and north-western Sydney.
- **Archidrome Architects:** Provision of a range of acoustic services and advice services in relation to a variety of commercial, residential and childcare projects throughout the Sydney metropolitan area.
- **Art Made Architects:** Provision of a range of acoustic services and advice services in relation to a variety of commercial, residential and childcare projects throughout the Sydney metropolitan area.
- **Montessori Australia:** Specialist advice as required in relation to the development of a range of educational facilities by the Montessori Group in Australia.
- **The Mostyn Copper Group:** Environmental assessments, including electromagnetic field and acoustic assessment, of a variety of child care, residential and commercial developments throughout the Sydney area.
- **Whitestone Group:** Acoustic assessment, certification and validation of a number of Subdivision & Residential Development and residential developments throughout the Sydney metropolitan area.

6 PERSONAL & PROFESSIONAL REFERENCES

- The Hon Peter Nixon AO, Former Federal Transport Minister
- John Black, Professor Emeritus of Civil & Transport Engineering, University of NSW
- The Hon Frank Sartor, former Lord Mayor of Sydney; Former NSW Government Minister.
- Mr Brent Rae, Development Director, Trumen Corporation, Sydney.
- Mr Michael Bell, Principal, Michael Bell Architects, Sydney.
- Alex Mitchell, Journalist

Noel G Child
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