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PROPOSED LEARN & PLAY CHILDCARE CENTRE

4-10 INMAN ROAD, CROMER

DEVELOPMENT APPLICATION ACOUSTIC REPORT

8 August 2023

ABN: 18626172361

Doc. Rev. 2

Dear Michael,

Re: Proposed Learn & Play Childcare Centre DA Acoustic Report

Thank you for organising the acoustic logging on site between Tuesday 25th July 2023 and Tuesday 1st August 2023, as well as the detailed site survey and hand-held analysis performed on site.

This report presents the acoustic logging and hand-held measurements results, our acoustic assessment of the adjacent properties and existing noise levels, and provides a discussion and recommendations regarding compliance with the project criteria and applicable acoustics regulations.

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Yours faithfully,

Claudiu Pop
Director Australasia
BEng (Struct), MSc (Acoustics), PhD Cand. (Architecture)

Document Control Sheet

Title	**DEVELOPMENT APPLICATION ACOUSTIC REPORT**
Project	**PROPOSED LEARN & PLAY CHILDCARE CENTRE** **4-10 INMAN ROAD, CROMER**
Description	Acoustic assessment and noise impact study
Key Contact	Dr.Riduan Osman B.E.(Hons.)(NSWIT), PhD(Syd)

Prepared By

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Revision History

Issued To	Revision and Date		
Michael Hala	**REV**	1	2
ID Fitouts	**DATE**	03/08/2023	08/08/2023

1. Introduction

Norrebro have been engaged by ID Fitouts to prepare the acoustic design and documentation for the development application for proposed child care centre at 4-10 Inman Road, Cromer, NSW.

This report quantifies the existing noise environment and provides the noise criteria for the proposed development and at the boundaries of potential neighbouring properties that could be impacted by the proposed development in accordance with the Northern Beaches Council requirements. This plan has been prepared by a suitably qualified person, who possesses qualifications to render them eligible for membership of the Australian Acoustic Society and Institution of Engineers Australia.

The proposed development relates to an office building that is being retained within a larger approved industrial development at 4-10 Inman Road Cromer, known as former Roche Industries site. The proposed child care centre is to be located in Office C and the proposed works entail internal and external alterations.

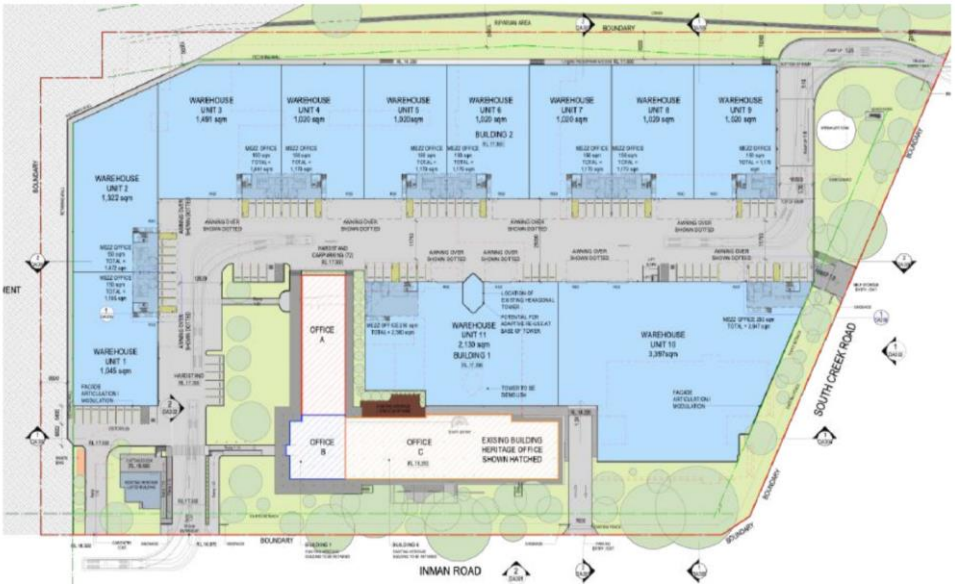

Figure 1: Extract from approved site plan (DA2019/1346), not the modification drawings) showing the location of "Office C" *(Courtesy of Concise Planning)*

2. Site Location

The site is within the Cromer industrial area and is adjacent to educational and recreational areas.

To the north, there is a vacant property that is the subject of planning for its future potential for industrial development. To the east of the subject site is 100 South Creek Road which contains warehouse buildings and is the subject of future planning for industrial redevelopment.

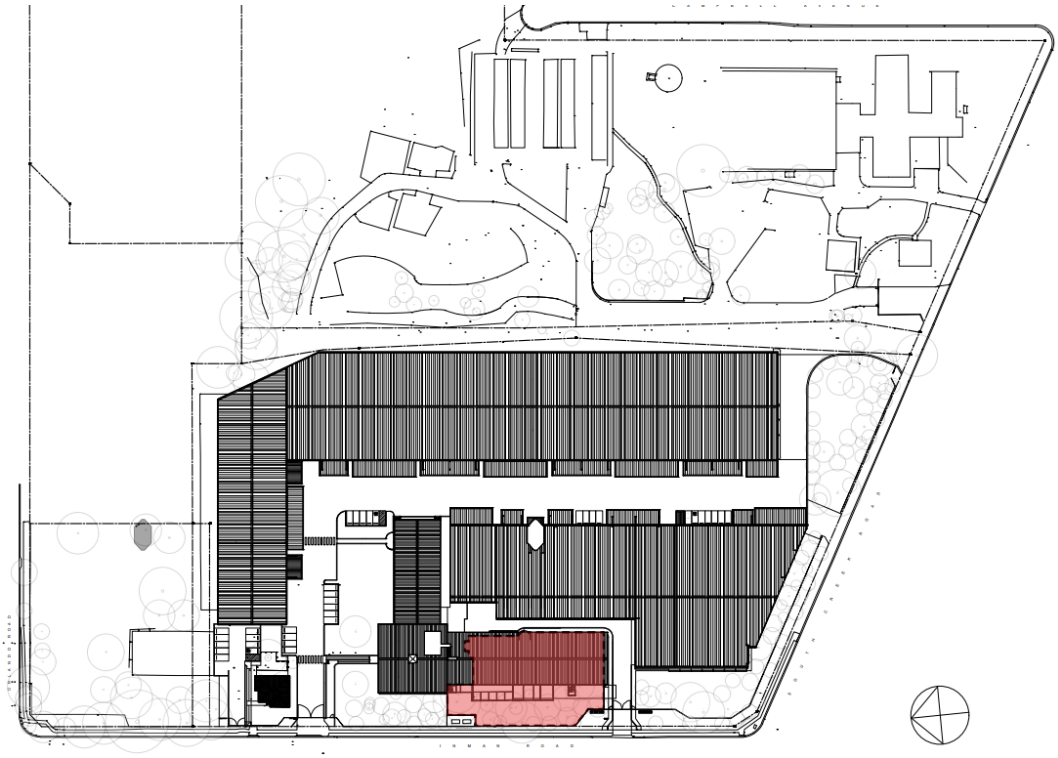

Figure 2: Extract from key plan showing the location of the proposed child care centre
(Courtesy of ID Fitouts)

On the opposite side of Inman Road to the subject site is an open area, fenced off from the road, that is part of the Northern Beaches Secondary College Cromer Campus. The site is also in the vicinity of Cromer Park, containing a sporting field and stadium for football, being on the southern side of South Creek Road.

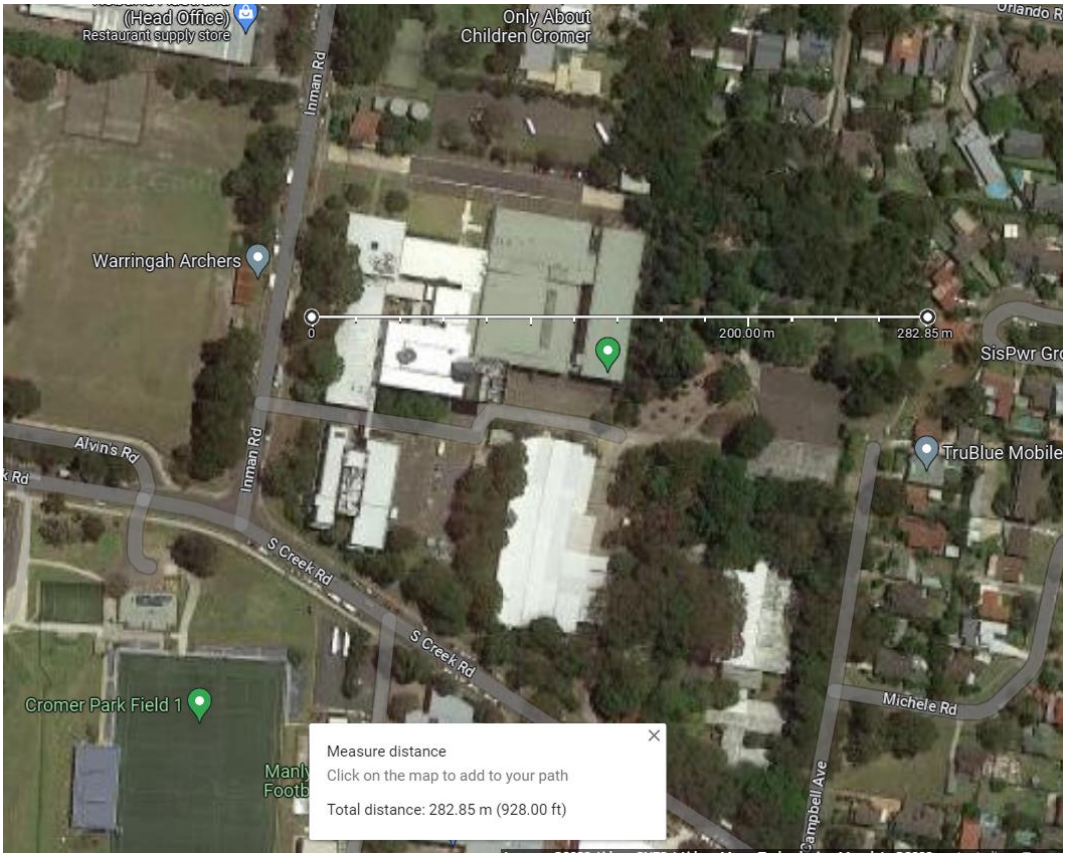

Figure 3: Location of the proposed child care centre relative to adjacent receivers *(Sourced from Google Maps)*

The nearest residential receivers are located at approximately 282m behind existing and proposed industrial buildings. Due to the large distance and shielding effect of the structures, as well as masking from higher localised noise levels, there is no acoustic impact on any residential receivers from the typical expected child care centre sound output.

The nearest affected tenancy, located one level above the centre, in the same building, in accordance with the NSW INP amenity criteria shall have a noise level not exceeding 65 dB(A).

When the proposed development is in operation, the noise emitted from the centre will not have an adverse impact on the amenity of the surrounding residences and the children's play and sleep areas in the centre are not subjected to excessive traffic noise, or other external noises.

2. Project Acoustic Criteria

Noise emissions from the project site will be assessed against the requirements of the following:

• Northern Beaches Council – 'Warringah Development Control Plan 2011

• Northern Beaches Council – 'Warringah Local Environment Plan 2011

• Association of Australasian Acoustical Consultants (AAAC) – 'Guideline for Childcare Centre Acoustic Assessment 2020

• NSW EPA – 'Noise Policy for Industry (NPfI) 2017

2.1. Development Control Plans

A review of the Warringah Development Control Plan (DCP) 2011 was conducted and the references to the acoustic requirements and relevant noise criteria are reproduced below:

D3 Noise

Applies to Land

This control applies to land to which Warringah Local Environmental Plan 2011 applies.

Objectives

• To encourage innovative design solutions to improve the urban environment.

• To ensure that noise emission does not unreasonably diminish the amenity of the area or result in noise intrusion which would be unreasonable for occupants, users or visitors.

Requirements

1. Noise from combined operation of all mechanical plant and equipment must not generate noise levels that exceed the ambient background noise by more than 5dB(A) when measured in accordance with the NSW Industrial Noise Policy at the receiving boundary of residential and other noise sensitive land uses. See also NSW Industrial Noise Policy Appendices.

2. Development near existing noise generating activities, such as industry and roads, is to be designed to mitigate the effect of that noise.

3. Waste collection and delivery vehicles are not to operate in the vicinity of residential uses between 10pm and 6am.

4. Where possible, locate noise sensitive rooms such as bedrooms and private open space away from noise sources. For example, locate kitchens or service areas closer to busy road frontages and bedrooms away from road frontages.

5. Where possible, locate noise sources away from the bedroom areas of adjoining dwellings/properties to minimise impact.

2.2. Association of Australasian Acoustical Consultants (AAAC) *'GUIDELINE FOR CHILDCARE CENTRE ACOUSTIC ASSESSMENT 2020'*

The Association of Australasian Acoustic Consultants 2020 specifies the following for noise emission criteria for childcare facilities play areas:

"Background Greater than 40 dB(A) – The contributed Leq,15min noise level emitted from an outdoor play and internal activity areas shall not exceed the background noise level by more than 5 or 10 dB at the assessment location, depending on the usage of the outdoor play area. AAAC members regard that a total time limit of approximately 2 hours outdoor play per morning and afternoon period should allow for an emergence above the background of 10 dB (i.e. background +10 dB if outdoor play is limited to 2 hours in the morning and 2 hours in the afternoon…

Commercial Receptors – The cumulative Leq,15min noise level emitted from the use and operation of the child care centre shall not exceed 65 dB(A) from all activities (including outdoor play), when assessed at the most affected point on or within any commercial boundary."

2.3. EPA Noise Policy for Industry (NPfI)

The EPA NPfI provides guidelines for assessing noise impacts from developments. The recommended assessment objectives vary depending on the potentially affected receivers, the time of day, and the type of noise source. The NPfI has two requirements which must both be complied with, namely an amenity criterion and an intrusiveness criterion.

2.3.1 Intrusiveness Criterion: The guideline is intended to limit the audibility of noise emissions at residential receivers and requires that noise emissions measured using the Leq descriptor not exceed the background noise level by more than 5 dB(A). This criterion is not applicable for the office receivers.

2.3.2 Amenity Criterion:

The guideline is intended to limit the absolute noise level from all noise sources to a level that is consistent with the general environment (e.g. cumulative noise from project site and other developments). The EPA's NPI sets out acceptable noise levels for different residential areas, being rural, suburban and urban. When determining types of residential receiver, the NPI considers the land zoning, existing noise levels and environmental noise characteristics of the area being assessed. Based on the measured noise levels and environmental noise characteristics, the 'Suburban' classification is most appropriate and has been selected. The NPI requires project amenity noise levels to be calculated in the following manner;

Project Amenity Noise Level dB(A) Leq(15min) = Recommended Amenity Noise Level – 5 dB(A) + 3 dB(A)

Receiver	Time of Day	Recommended Amenity Noise Level dB(A)Leq(15min)	Project Amenity Noise Level dB(A)Leq(15min)
Commercial Receivers (offices above)	When in use	65	63

Table 1: NPfI Project Amenity Criteria

2.3.3 Sleep Disturbance Criterion:

The NPfI sleep disturbance criterion does not apply to the offices above, as it is intended for residential receivers.

2.4. Summarised Noise Emission Criteria

Receiver	Time of Day	AAAC Guideline for Childcare Assessment	Project Intrusiveness dB(A)Leq(15 min)	Project Amenity dB(A)Leq(15 min)	Sleep Disturbance
Commercial Receivers (offices above)	When in use	65	N/A	63	N/A

The project noise trigger levels have been selected (and bolded above) as the lower out of the intrusiveness and amenity criteria.

Table 2: Summary of Noise Emissions Criteria

3. Site Acoustic Survey, Identification of Noise Sensitive Receivers and Noise Logging Details

3.1. Noise Sensitive Receivers Locations Relative to the Site

The commercial most affected receivers are located above the proposed child care centre as marked below:

Figure 4: Most affected receivers *(Mark-up on image taken from photomontage of "Building 6 – Office C")*

The office space above the proposed child care centre is located in the heritage listed building to be retained.

Figure 5: Most affected office receivers in the heritage building above the proposed child care centre

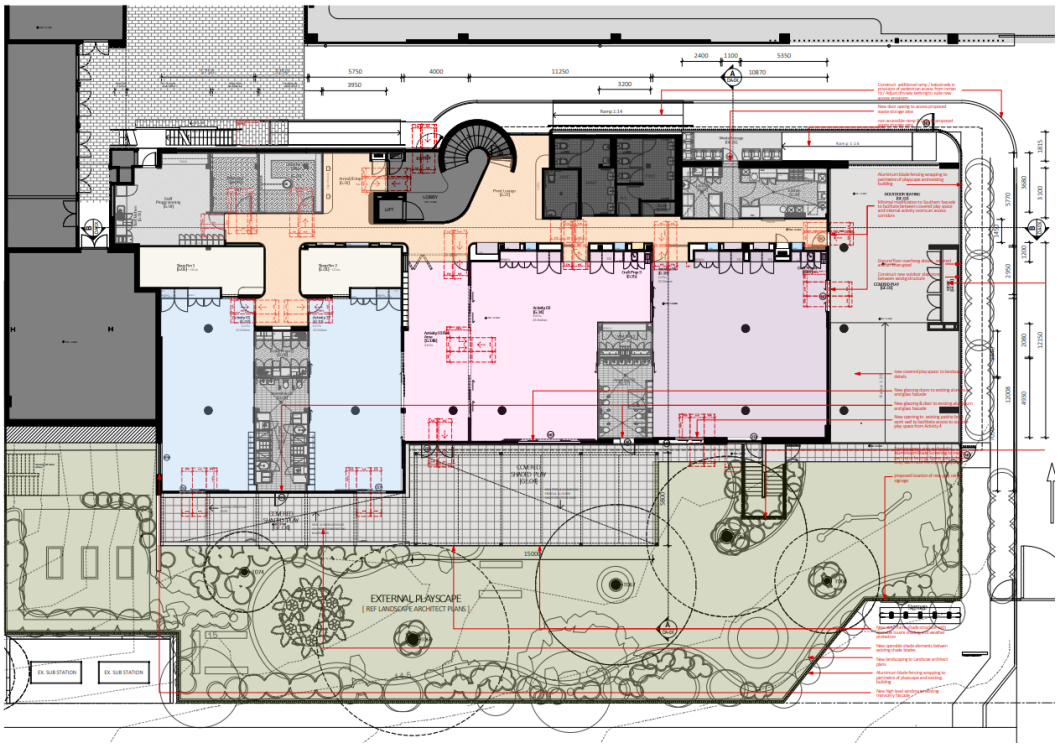

Figure 6: Childcare set out/area zone plan

The sound generation areas are the outdoor areas, marked above with green for external playscape, and grey for covered shaded play. Acoustic logging and operator attended measurements have been performed to document the exiting background noise levels at the locations below:

Figure 7: Measurement locations *(Mark-up on image courtesy of Google Maps)*

3.2. Documented Existing Noise Levels at Receivers

The existing noise levels were measured at the identified nearest receivers.

The survey was conducted with the following instruments:

Equipment	Make	Model No.
Type 1 Sound Calibrator	Bruel & Kjaer - Denmark	4231
Hand Held Analyser	Bruel & Kjaer- Denmark	2250

Table 3: Equipment Used in the Survey

The equipment was calibrated before and after the measurements and no deviations were recorded. The following figures illustrate the measurement locations and a full 1/3 octave analysis of the measurements at each location to identify the spectral component of the typical traffic (i.e., passenger car traffic, trucks, busses and other sources).

Figure 8: Measurement location 2 – operator attended

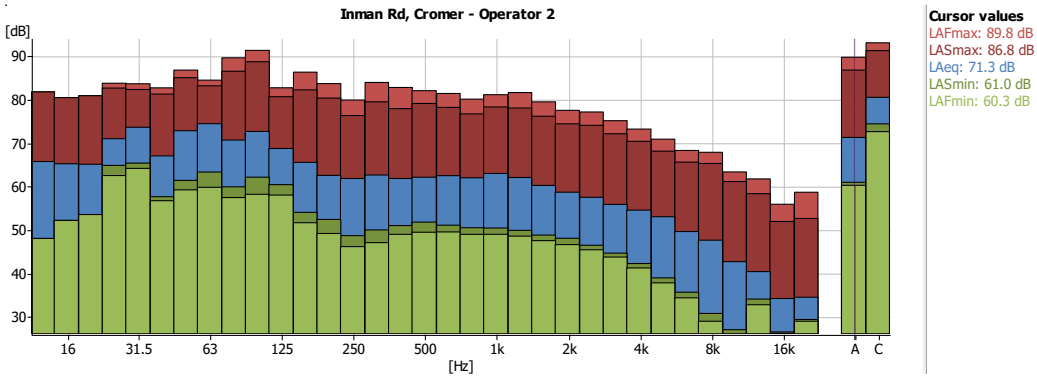

Figure 9: Measurement location 2 results

Figure 10: Measurement location 3 – operator attended

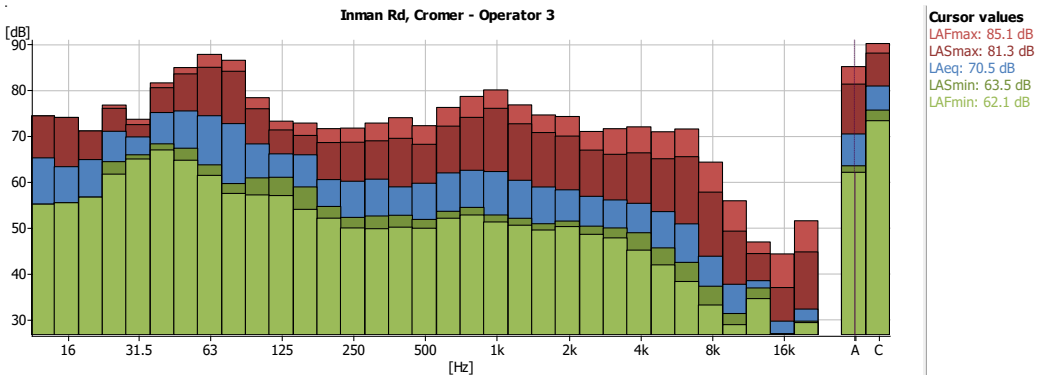

Figure 11: Measurement location 3 results

The results of the measurements are tabulated below:

Measurement location and time	LAeq (dBA) 15min	L90 (dBA) 15min	Remarks
Location 2 12PM-12:15PM	71.3	61.9	Noise dominated by traffic on Inman Road and construction noise from the site.
Location 3 12:15PM-12:30PM	70.5	64.5	Noise dominated by traffic on Inman Road and construction noise from the site. Some school field sounds.

Table 4: Hand Held Measurements Results

The results indicate that the acoustic environment was generally dominated by passing traffic on Inman Road, as well as some components from the construction site, which could not be avoided during operator attended measurements.

3.3. Long term monitoring results

Automated noise logging measurements to document the existing acoustic environment were performed on site with Rion NL-52 noise logging kit. The measurements were conducted between Tuesday 25th July 2023 and Tuesday 1 August 2022 at Location 1. The sound logger was calibrated before and after the measurements using a Bruel & Kjaer Acoustic Calibrator. No calibration deviations were recorded.

Sound Pressure Level LA_{eq} is the "equivalent noise level" is the summation of noise events integrated over a selected period of time. This noise metric is commonly used to correlate noise exposure and human annoyance. LA_{eq} is measured in dB(A) (A weighted sound pressure level) due to the fact that the ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched in is denoted as dB(A). Practically all noise is measured using the A weighting.

The sound monitoring location is presented below:

Figure 12: Measurement location 1 – sound logger

Rainfall events and windspeeds >5m/s were excluded from the data set, as required by the NSW EPA, based upon data obtained from the Bureau of Meteorology Weather Data.

The summary of the logger measurements is tabulated below:

Location & Survey Period	LAeq Ambient Noise Levels			LA90 Rating Background Level		
	Day	Evening	Night	Day	Evening	Night
Office above proposed child care centre 25/7/23 - 1/8/23	59 dBA	52 dBA	44dBA	52 dBA	44dBA	39dBA

The detailed statistical plots are presented below:

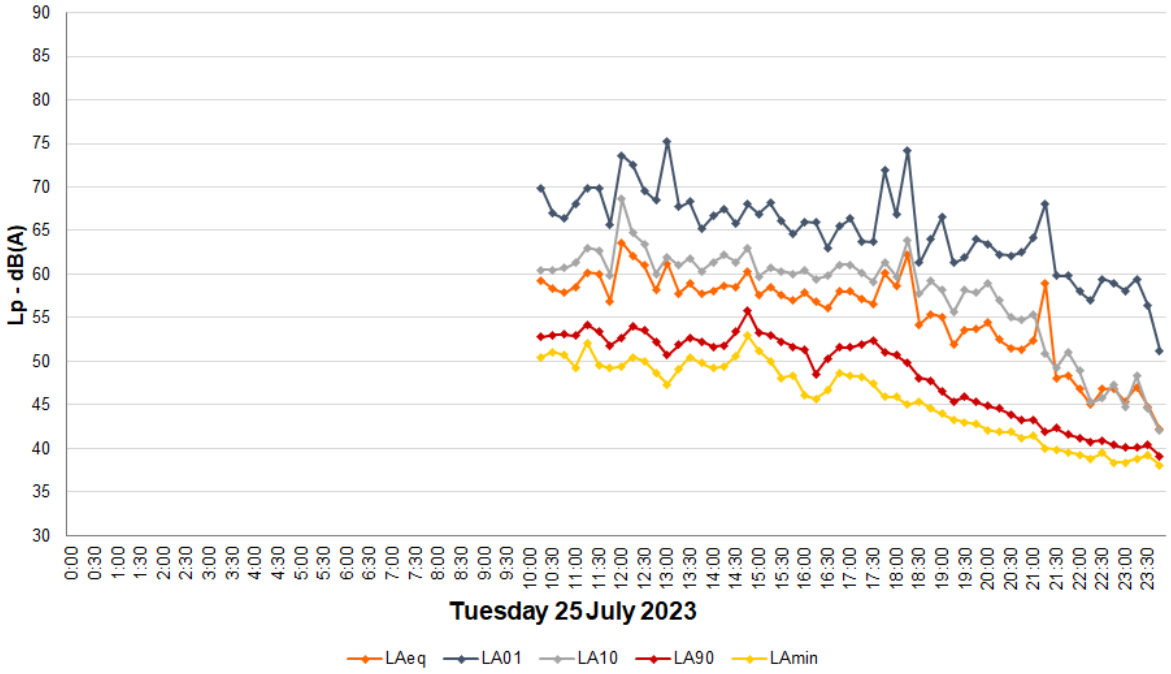

Figure 13: Logger day 1 data

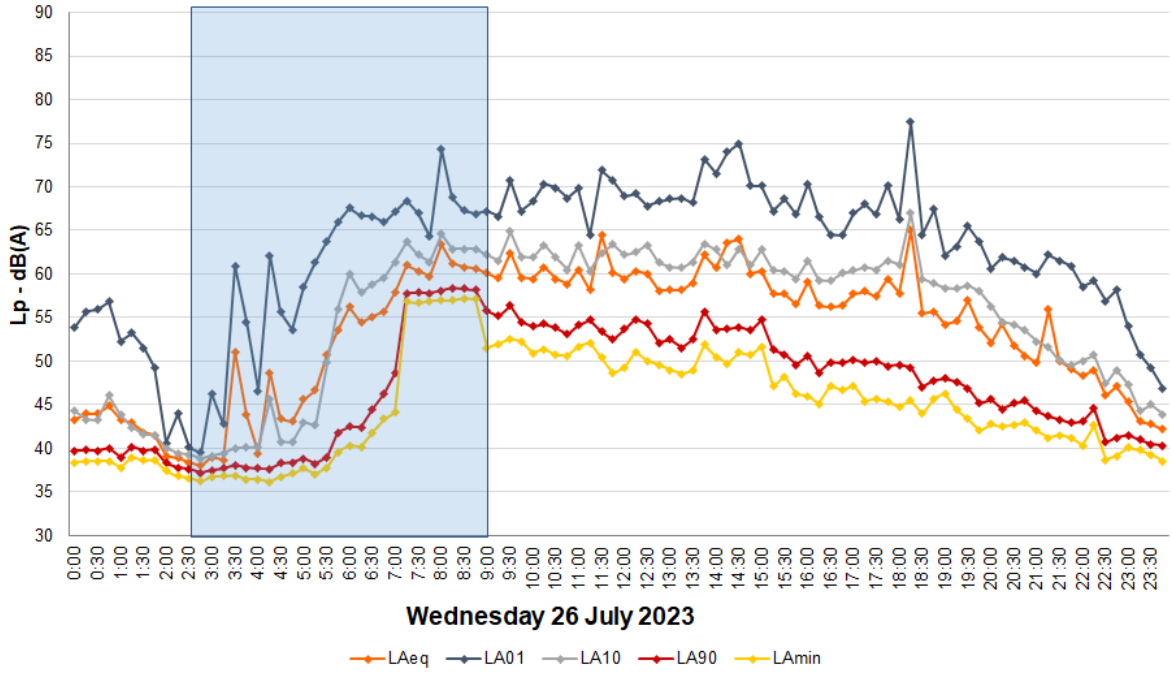

Figure 14: Logger day 2 data

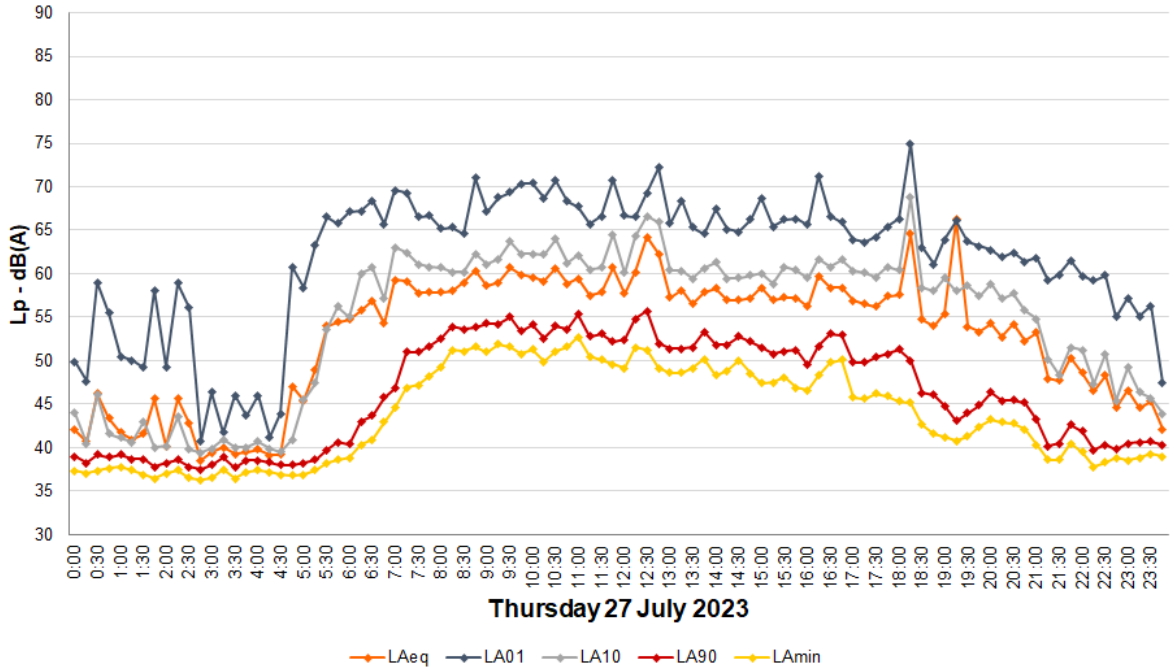

Figure 15: Logger day 3 data

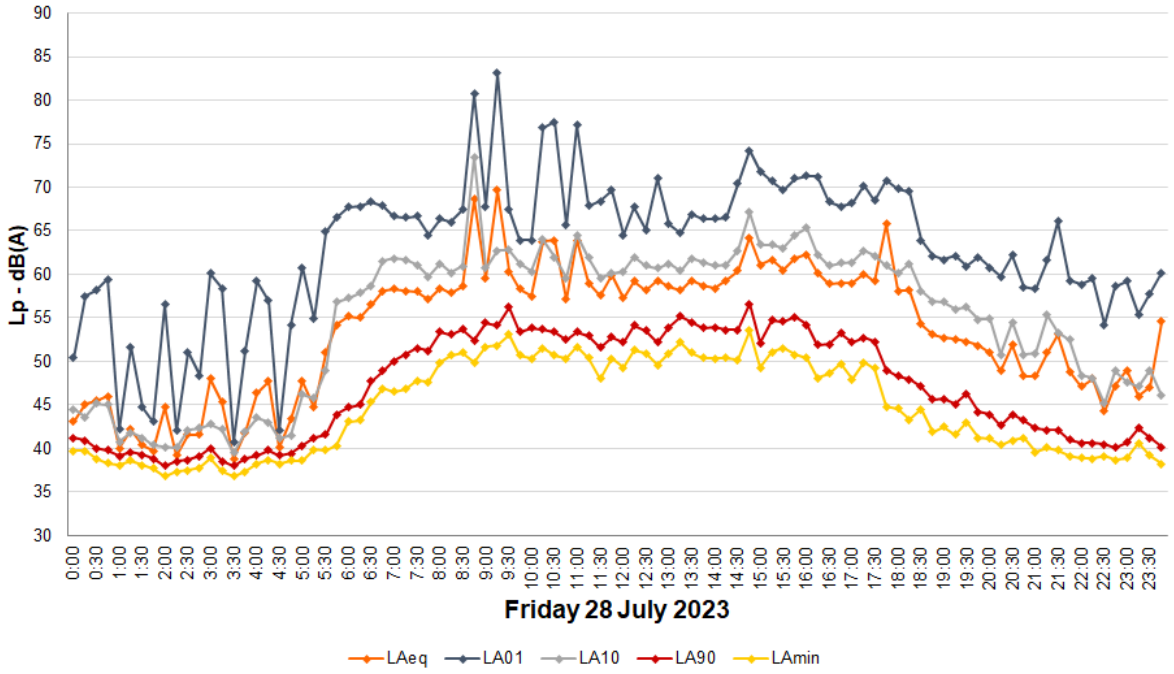

Figure 16: Logger day 4 data

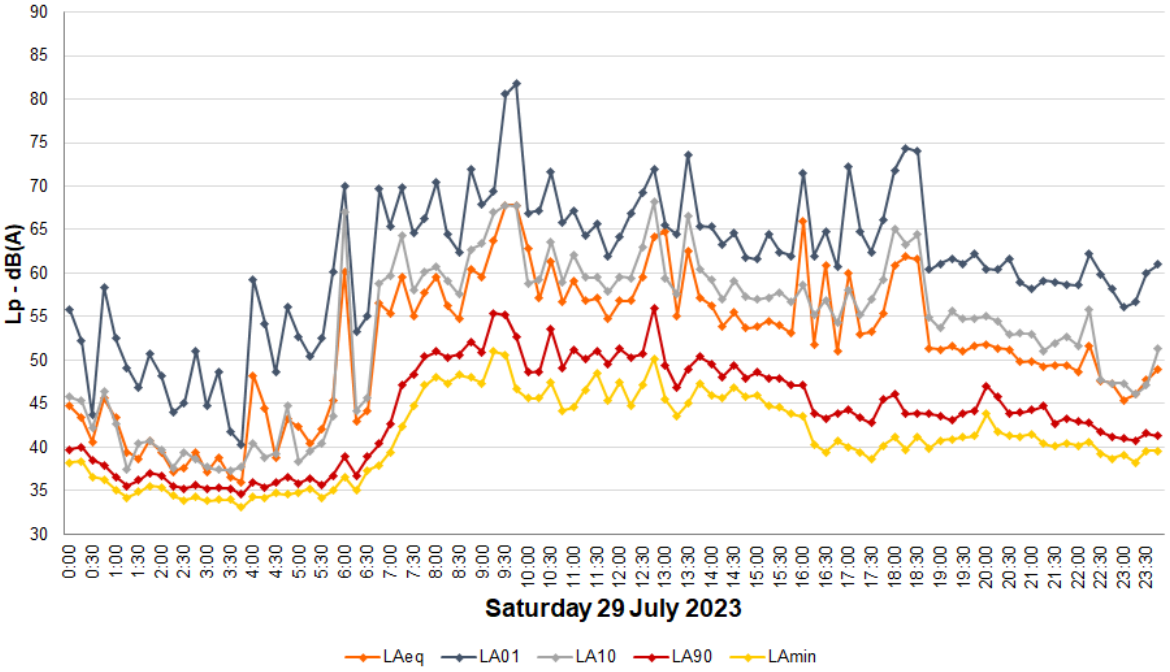

Figure 17: Logger day 5 data

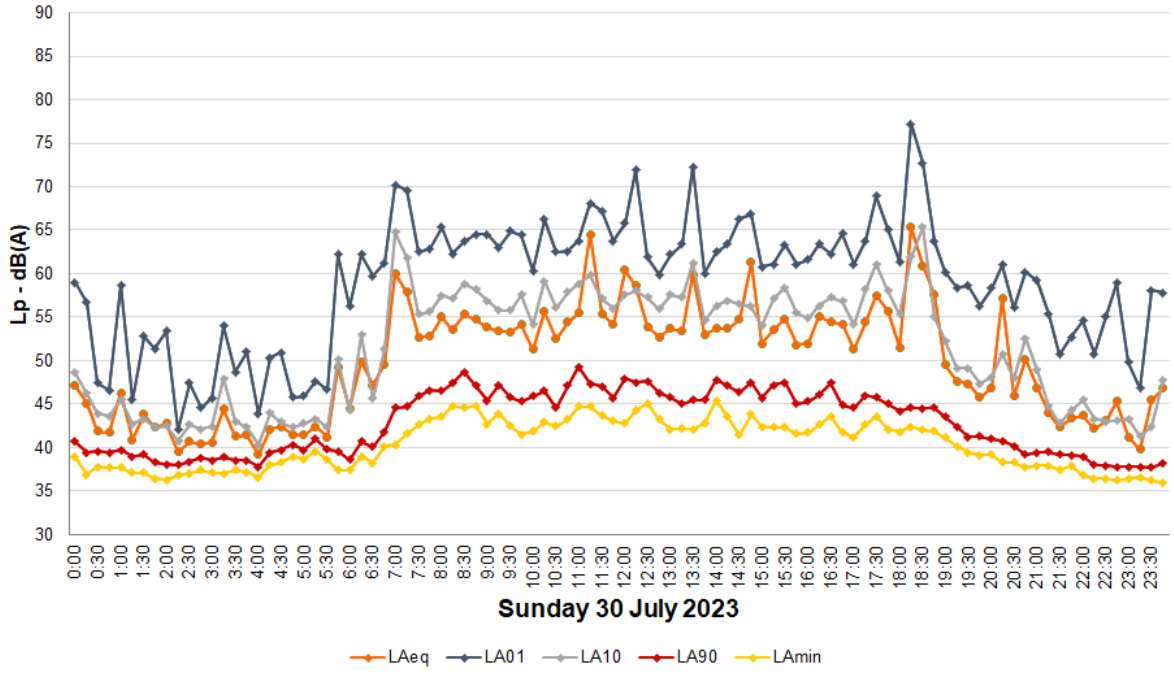

Figure 18: Logger day 6 data

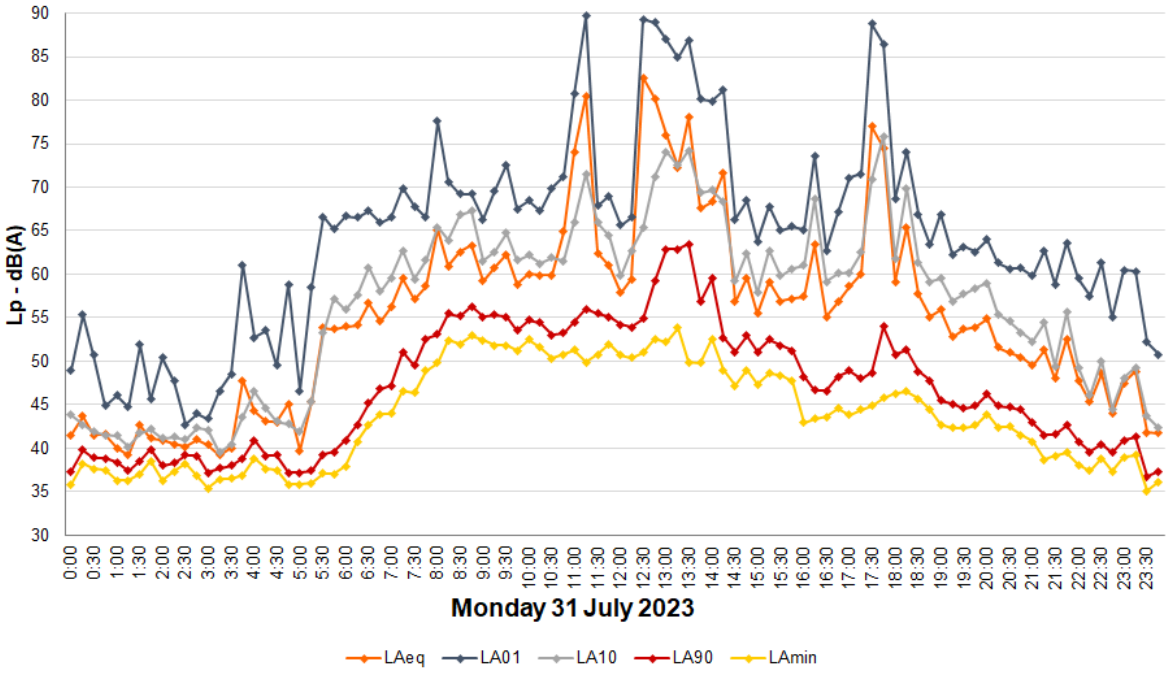

Figure 19: Logger day 7 data

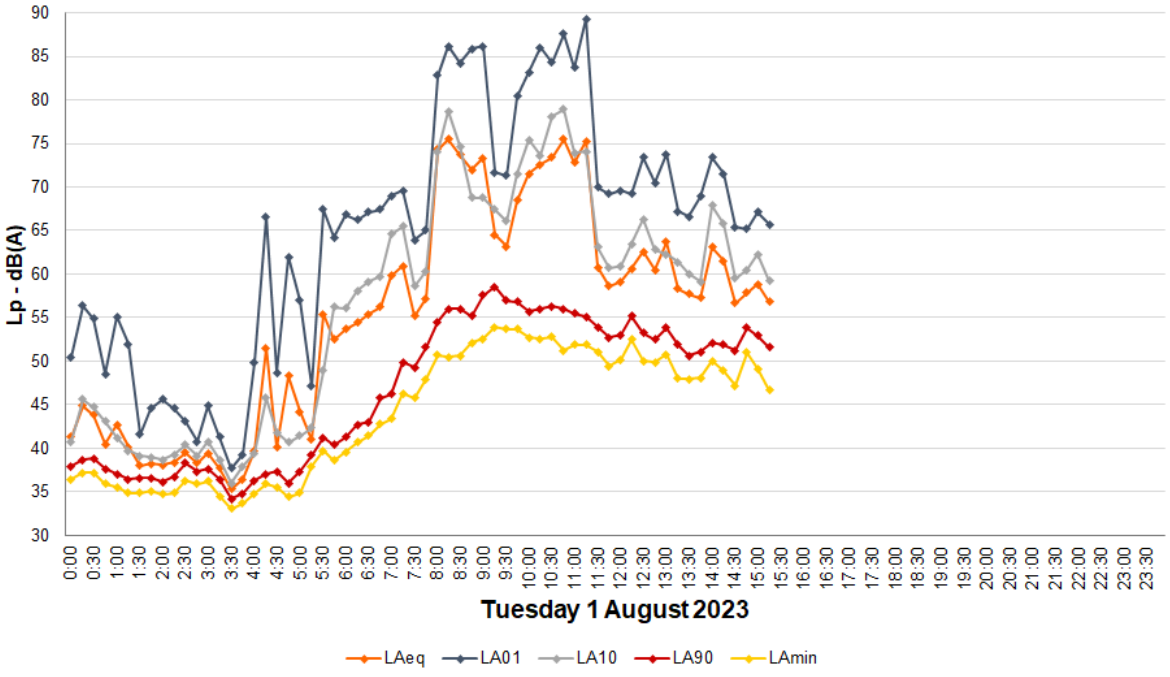

Figure 20: Logger day 8 data

4. Child Care Centre Operational Noise Emissions Analysis

Calculations were undertaken taking into account the location of measurements, orientation of windows, barrier effects (where applicable), proposed childcare covered areas and distance sound attenuation from the outdoor play areas.

Noise emissions from the operation of the proposed child care have been predicted based on the following assumptions and information available to this office:

4.1. Child Care Centre Assumptions

Section 4 of the AAAC 'Guideline for Childcare Centre Acoustic Assessment 2020' provides the following typical range of effective sound power levels for groups of 10 children playing, summarised below.

Age range	Number of children	Sound Power Levels
0 to 2	10	78 dB(A)
2 to 3		85 dB(A)
3 to 6		87 dB(A)

Table 5: Effective Sound Power Levels for Groups of 10 Children Playing

• The sound power level for outdoor play area assessments will be the equivalent to the sound power levels as represented within the table above.

• The operational hours of the Childcare Centre are 7:30am to 6:00pm, Monday to Friday, 8:30am to 3:30pm on Saturday and closed on Sunday, and these hours will be used within this assessment.

• Norrebro assumes an operational capacity of 35 children aged 0-2 years old, 35 children of the ages 2-3 and 50 children of ages 3-6 within the Childcare on an operating day, to a total of 120 children, which is conservative for this type of development in the experience of this office.

• For the sake of a conservative assessment, it is assumed that all children will be playing outside at one given time, with the outdoor play area facing towards the offices.

4.2. Predicted Maximum Office Façade External Noise Levels

The following table presents the maximum façade external noise levels for the commercial development (office above) based upon the assumed operations presented above.

Assessment location	Time period	Predicted Maximum External Noise Level dB(A) Leq(15min)	Project Trigger Noise Level dB(A) Leq(15min)	Complies
1 (logger location near the affected office)	When in use	61 dB(A)	63 dB(A)	**Yes**

Table 6: Predicted External Noise Levels

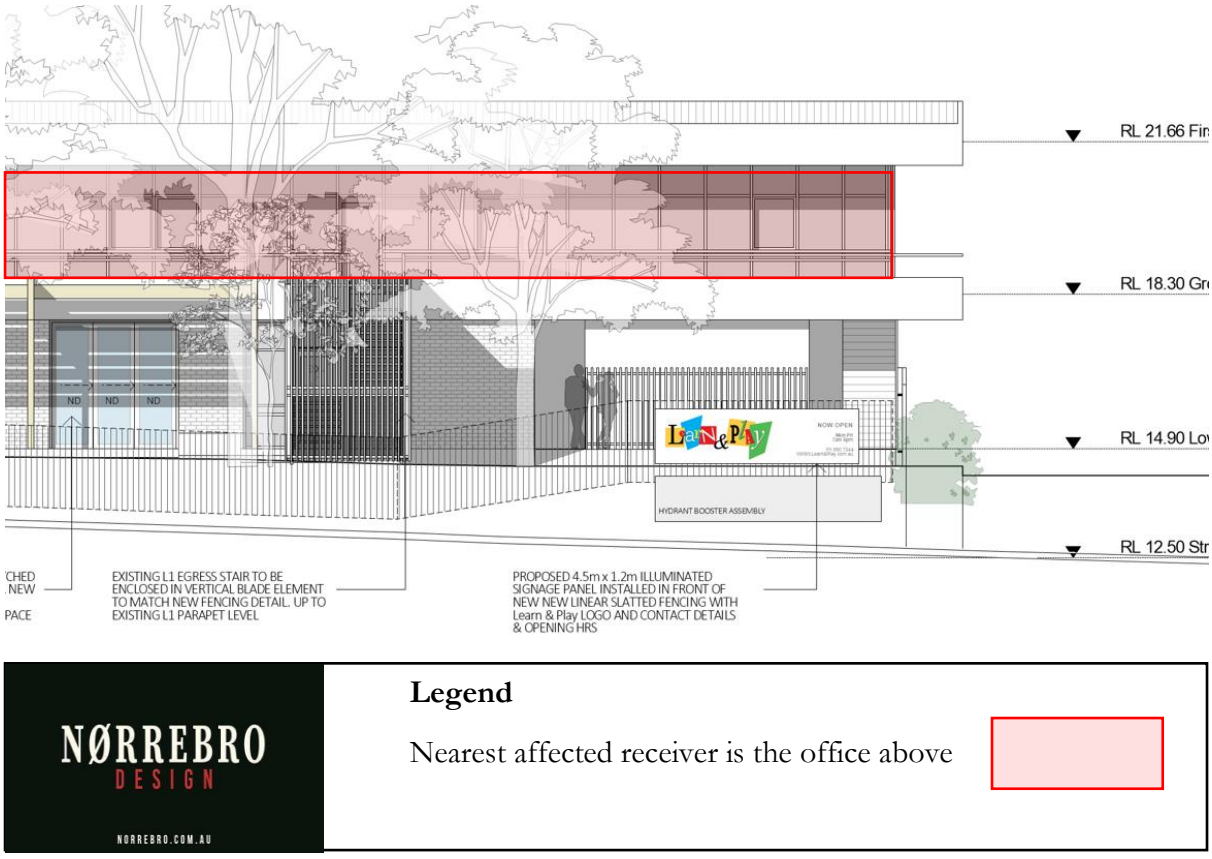

Figure 21: Receivers location

4.3. Detailed Design Review and Final Acoustic Verification

An acoustic consultant shall be engaged during detail design and final stages to ensure compliance with the project criteria, including internal acoustics and mechanical services noise control.

The current DA acoustic assessment based on the current scheme and proposed locations of play areas and interior layout indicate that compliance can be achieved.

5. Conclusion

Norrebro has been engaged to provide a Noise Assessment for the development application for a proposed child care centre at 4-10 Inman Road, Cromer, NSW.

It is our opinion that the acoustic criteria stipulated for the project are met and the acoustic impact on the adjacent properties will be minimal, due to a good location with moderate existing noise levels, lack of immediate residential receivers and structural design of the building with protruding slabs which provide shielding attenuation, as well as proposed covered outdoor play areas.

Please do not hesitate to contact the undersigned directly for acoustic matters relating to this project.

Yours faithfully,

Claudiu Pop
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BEng (Struct), MSc (Acoustics), PhD Cand. (Architecture)

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