

5 Skyline Place, Frenchs Forest (Jardin - Stage 2)

Noise Impact Assessment - Childare Centre

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Attention To	Skyline Gardens Pty Ltd

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1 INTRODUCTION

This report relates to the proposed Childcare Centre located within a residential development at 5 Skyline Place, French Forest. The CC is situated on the ground floor level of the northwest tower of the development with outdoor play areas. This report will address noise impacts associated with the proposed childcare centre only. The centre will consist of:

- One outdoor play area on the ground floor area for all children.
- Three separate indoor play areas for 0-2, 2-3 and 3-6 year olds.
- Associated offices and staff amenities.

The childcare centre is to have capacity for 71 children, with the following age breakdown:

- 18 children aged 0-2 years old.
- 20 children aged 2-3 years old.
- 33 children aged 3-6 years old.

The operational hours of the childcare centre are proposed to be between 7:30am - 6:00pm Monday to Friday.

1.1 REFERENCED DOCUMENTS

The following documents was utilised for the noise impact assessment of the proposed childcare centre.

- Warringah Development Control Plan / LEP 2011.
- Association of Australian Acoustical Consultants (AAAC) Guideline for Child Care Centre Acoustic Assessment, Version 3.0, 2020.
- NSW Environmental Protection Authority (EPA) document – ‘Noise Policy for Industry (NPfI) 2017’.
- Architectural Plans prepared by PA Studio Issue G – 5 Skyline Place S4.55.
- Landscape Plans prepared by Paddock Issued on 12th September 2024 – Project No : 2501

Refer to Appendix A for the full architectural and landscape plans.

2 SITE DESCRIPTION




The site is located within the ‘Business Park’ zone (B7) under Warringah Local Environment Plan 2011. Onsite acoustic surveying has been carried out by this office on the surrounding environment. The nearest sensitive noise receivers around the project site include the following:

- **C1:** Commercial dwelling located on the West also known as Sky Racing.
- **C2:** Commercial dwelling located on the East at 1 Skyline Place.
- **R1:** 5 Skyline Place Stage 2 – The approved mixed-use Seniors Living development in which the proposed childcare is maintained. Residential uses are located on the level directly above the proposed childcare location.
- **R2:** 5 Skyline Place Stage 1 – Seniors Living development to the north of the project site.

A site survey including surrounding receivers and monitoring locations is presented in Figure 1 below.



Figure 1: Aerial View of the Site Location and Sensitive Receivers.

-  Project Site
-  Residential Receivers
-  Commercial Receivers

3 EXISTING ENVIRONMENTAL NOISE LEVELS

Site investigation and noise measurements were undertaken during the design development stage of the overall project site. The approved DA (*REV/2019/0014 and Mod2019/065*) acoustic report (*ref: 20210014.1/2501A/R0/KNM dated 25th January 2021*) presents the following measured background noise level applicable to the site.

Table 3-1 - Rating Background Noise Levels

Time of Day	Rating Background Noise Level dB(A)L₉₀(Period)
	Monitor 1
Day (7:00am-6:00pm)	50
Evening (6:00pm-10:00pm)	44
Night (10:00pm-7:00am)	33

4 NOISE EMISSION CRITERIA

A noise emission assessment has been carried out to ensure noise emitted from the use of the site is in accordance with the requirements listed in this section.

This assessment will review noise emissions associated with the following:

- Noise emission from indoor and outdoor play areas
- Noise emission from mechanical plant (in principle)

4.1 APPLICABLE ASSESSMENT CRITERIA

4.1.1 Warringah DCP / LEP 2011

Warringah DCP / LEP 2011 states the following requirements in relation to noise emissions.

D3 Noise

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.

The DCP does not provide specific noise regulations for children outdoor and indoor play, therefore the assessment will utilise AAAC guidelines to assess noise generation from the proposed childcare centre.

4.1.2 AAAC Guideline for Child Care Centre Acoustic Assessment, Version 3.0, 2020

Section 3.2 of the guideline states the following regarding noise criteria to residential receptors:

3.2.1 Outdoor Play Area

Base Criteria – With the development of child care centres in residential areas, the background noise level within these areas can at certain times, be low. Thus, a base criterion of a contributed $L_{eq,15min}$ 45 dB(A) for the assessment of outdoor play is recommended in locations where the background noise level is less than 40 dB(A).

Background Greater Than 40 dB(A) – The contributed $L_{eq,15min}$ 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 an emergence above the background of 10 dB (ie background +10 dB if outdoor play is limited to 2 hours in the morning and 2 hours in the afternoon).

Up to 4 hours (total) per day – If outdoor play is limited to no more than 2 hours in the morning and 2 hours in the afternoon, the contributed $L_{eq,15 minute}$ noise level emitted from the outdoor play shall not exceed the background noise level by more than 10 dB at the assessment location.

More than 4 hours (total) per day – If outdoor play is not limited to no more than 2 hours in the morning and 2 hours in the afternoon, the contributed $L_{eq,15 minute}$ noise level emitted from the outdoor play area shall not exceed the background noise level by more than 5 dB at the assessment location.

3.2.2 Other Noise Emission

The cumulative $L_{eq,15\text{ minute}}$ noise emission level resulting from the use and operation of the child care 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 as defined above. This includes the noise emission resulting from:

- Indoor play
- Mechanical plant
- Drop off and pick up
- Other activities/ operations (not including outdoor play).

3.2.3 Sleep Disturbance

The noise impact of staff arrivals, setup, cleaning or other on-site activities prior to 7am or during night-time hours should be assessed at nearby residential premises. The L_{Amax} noise level emitted from vehicles arriving and parking, depending on the requirements of the state or territory where the centre is located shall not exceed the background noise level by more than 15 dB outside the nearest habitable room window.

4.2 SUMMARISED NOISE EMISSION REQUIREMENTS

The following tables present the noise emission objectives for the proposed childcare centre.

4.2.1 Childcare Centre Operational Noise Emission Requirements to Residential Receivers

Table 2 – Childcare Noise Emission Requirements to Residential Receivers

Source	Time Period	Residential Receiver Noise Emission Requirements dB(A) $L_{Aeq(15min)}$ -AAAC
Childcare Outdoor Play – More than 4 hours per day	Day (7:00am – 6:00pm)	(BG + 5) = 55
Childcare Outdoor Play – Up to 4 hours per day		(BG + 10) = 60
Indoor play/Mechanical plant/drop off & pick up and other activities (cumulative)		(BG + 5) = 55

4.2.2 NSW Environment Protection Authority (EPA) – ‘NSW EPA Noise Policy for Industry (NPfl) 2017’

The AAAC does not provide noise emission guideline for other sensitive land receivers, therefore this assessment will utilise the NPfl 2017 document to establish the amenity levels for other land uses.

Table 3 – NPfl Project Amenity Noise Levels for Commercial Receivers

Type of Receiver	Time of Day	Recommended Noise Level dB(A)$L_{eq}(\text{period})$	Project Amenity Noise Level dB(A)$L_{eq}(15 \text{ minute})$
Commercial	When in Use	65	63

5 NOISE EMISSIONS ASSESSMENT

A noise emission assessment has been carried to ensure noise emitted from the use of the site is in accordance with requirements listed in this section.

This assessment will review noise emissions associated with the following:

- Indoor Play Areas
- Outdoor Play Areas
- Mechanical plant (in principle)

5.1 ASSUMPTIONS ADOPTED IN ASSESSMENT

5.1.1 Operating Hours and Capacity

The childcare centre is to operate between 7:30am – 6:00pm Monday to Friday.

An occupancy of 71 kids is expected with the following age groups:

- 18 children aged 0-2 years old.
- 20 children aged 2-3 years old.
- 33 children aged 3-6 years old.

5.1.2 Outdoor Play Sound Power Levels

Noise emissions from outdoor play activities were predicted using the mid-point level of Sound Power Level data recommended by AAAC Guideline for Child Care Centre Acoustic Assessment (2020) which has been detailed in table below.

Table 4 – AAAC Sound Power Levels

Number and Age of Children (Active Play)	Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)								
	dB(A)	63	125	250	500	1k	2k	4k	8k
10 Children – 0 to 2 years	78	54	60	66	72	74	71	67	64
10 Children – 2 to 3 years	85	61	67	73	79	81	78	74	70
10 Children – 3 to 6 years	87	64	70	75	81	83	80	76	72

Table Notes: For simplicity, based upon a review of World Health Organization (WHO) data, a single recommended source height of 1 metre is suggested as the source heights [for children].

5.1.3 Outdoor Play Areas

The outdoor play noise has been predicted based on the following information and assumptions:

- Outdoor play time is to be limited to 4 hours per day (2 hours in the morning and 2 hours in the afternoon), and the noise levels are assessed to background + 10dB(A).
- Children are to be maintained within the segregated area for each age groups of children as outlined in the landscape plans. See Appendix A for the referenced floor plans.
- The number of children allowed outside at a time is to be reduced to:
 - 9 babies (0-2 years old)
 - 20 toddlers (2-3 years old)
 - 30 young kids (3-6 years old)

5.1.4 Indoor Play Areas

Noise emissions from indoor play areas are based on the following information and assumptions:

- The spatially averaged sound pressure level generated inside each of the internal play areas is 75dB(A)_{Leq} based on measurements taken by this office at similar sites. This noise level represents a high intensity of use and would only be applicable during loud group activities. Quieter group activities (such as group reading) would be subject to a significantly lower level of noise.
- All children are using the indoor activity areas at any given time and approximately distributed as described in the architectural drawings.
- All operable windows and doors are opened.

5.2 PREDICTED NOISE LEVELS

5.2.1 SoundPlan™ 8.0 Noise Modelling

Noise levels have been predicted at the receiver locations using SoundPlan™ 8.0 modelling software implementing the ISO 9613-2:1996 'Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation' noise propagation standard.

Digital Ground Elevation data are sourced from the Intergovernmental Committee on Surveying and Mapping (ICSM) - Elvis - Elevation and Depth - Foundation Spatial Data website. Receiver building spatial data (heights and elevations) are sourced from Geoscape Australia.

Noise enhancing meteorological conditions have been adopted as recommended by the NPfI, noting that the ISO 9613 modelling approach assumes that all receivers are "downwind" (i.e., that noise enhancing wind conditions are always in effect).

Ground absorption was conservatively calculated with a ground factor of 0 for all areas excepting localised lawns and greenery surrounding the site with a ground factor of 0.6 as recommended in *Engineering Noise Control* (Bies & Hanson).

The following figures detail computational noise modelling for the closest noise sensitive receivers and facades relating to noise from the outdoor play areas through the presentation of a façade noise map onto the respective buildings, with numeral results presented in the subsequent Tables.

SoundPLAN noise modelling has been conducted for the following:

- External noise emissions from indoor play areas.
- External noise emissions from use of the outdoor play areas.

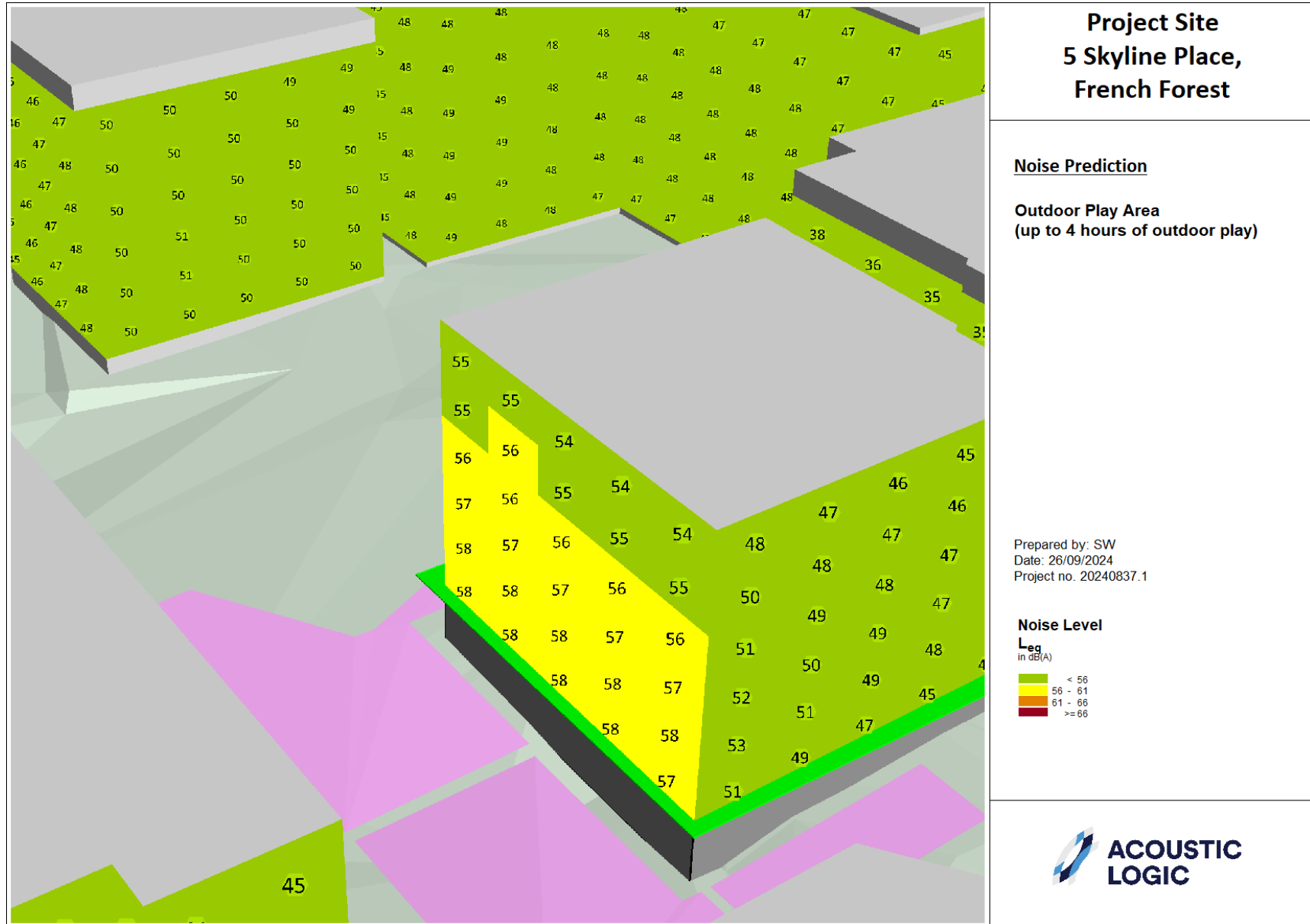


Figure 2: Outdoor Play Noise Prediction to R1

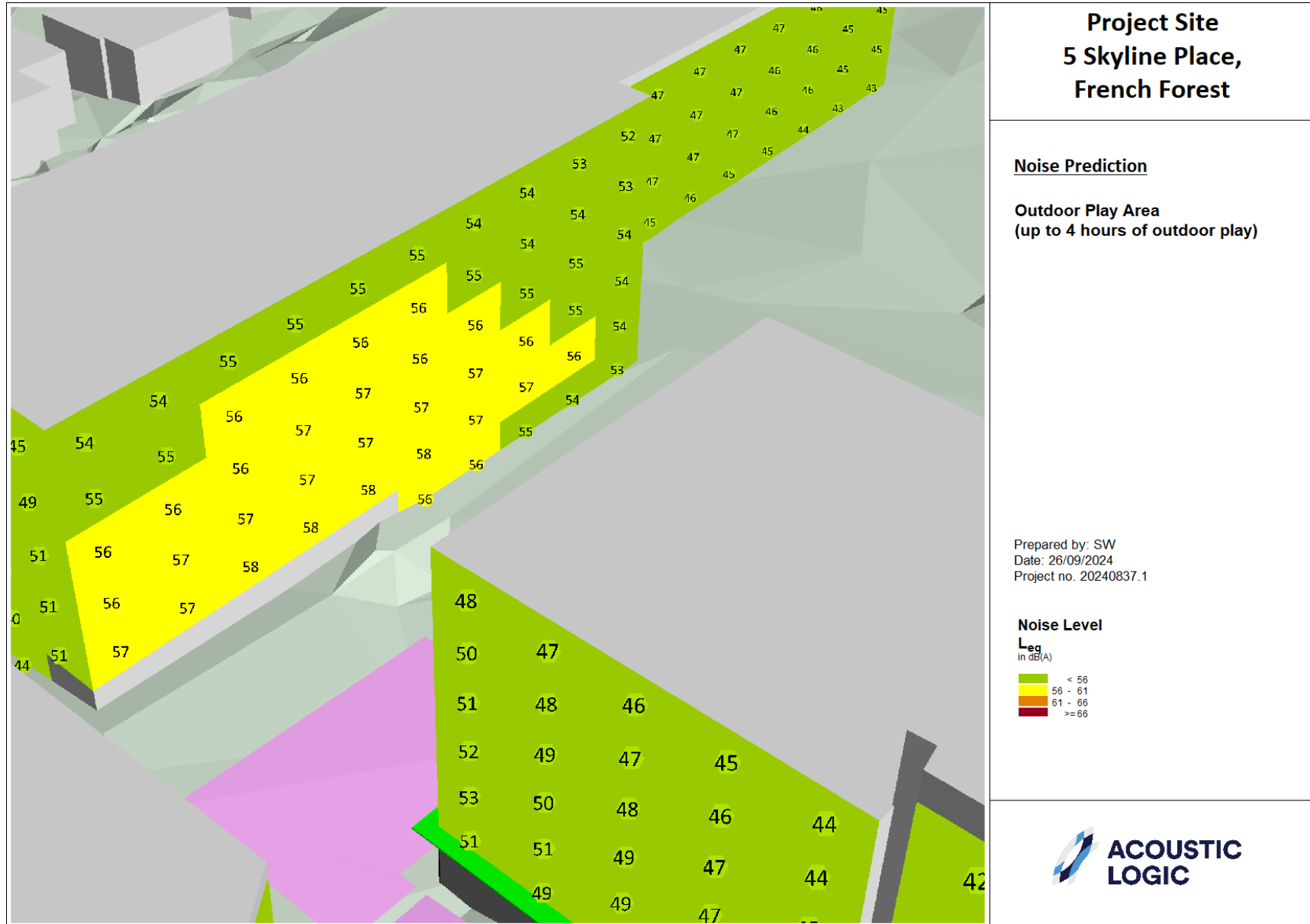


Figure 3:Outdoor Play Noise Prediction to R2

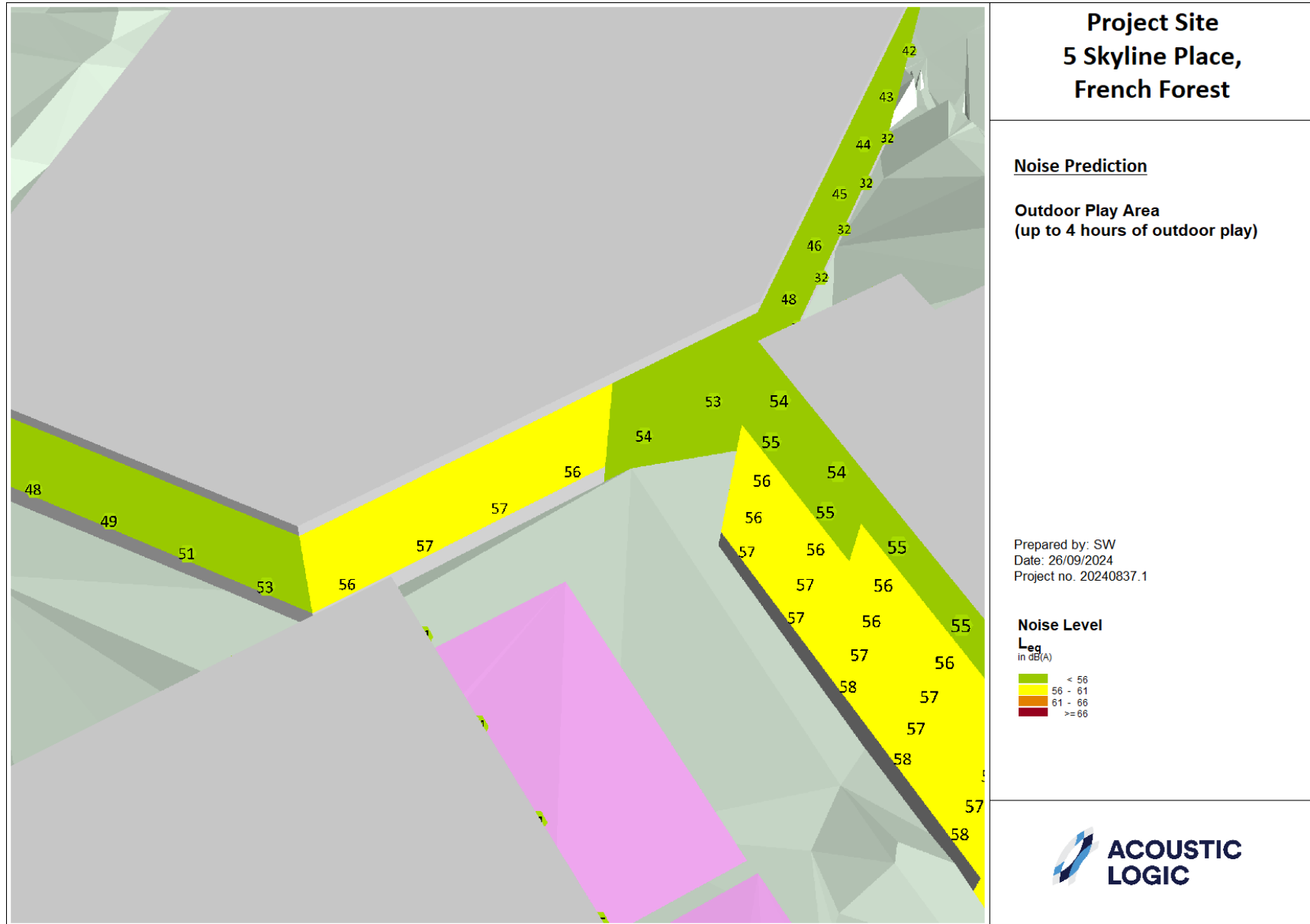


Figure 4: Outdoor Play Noise Prediction to C1

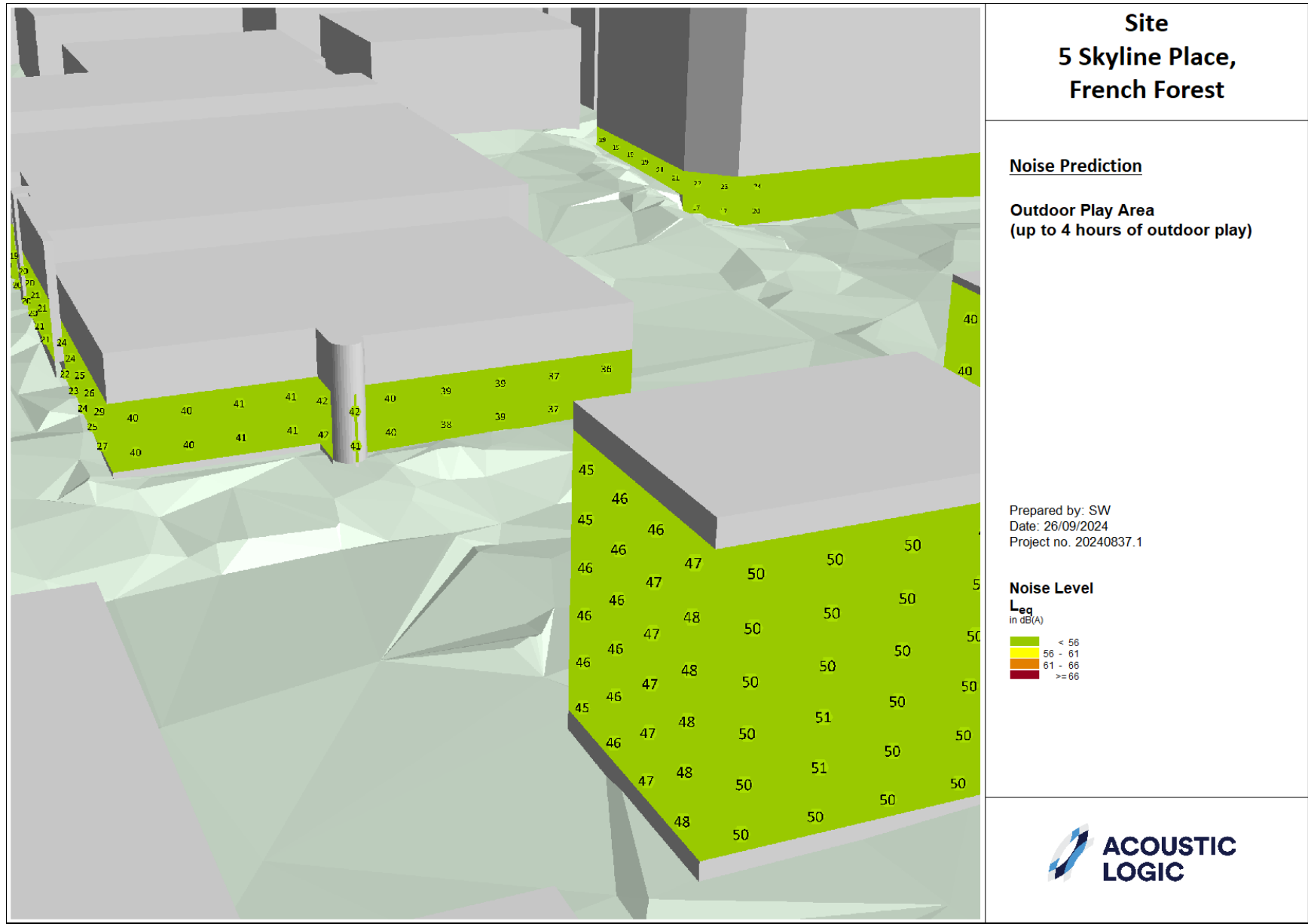


Figure 5: Outdoor Play Noise Prediction to C2

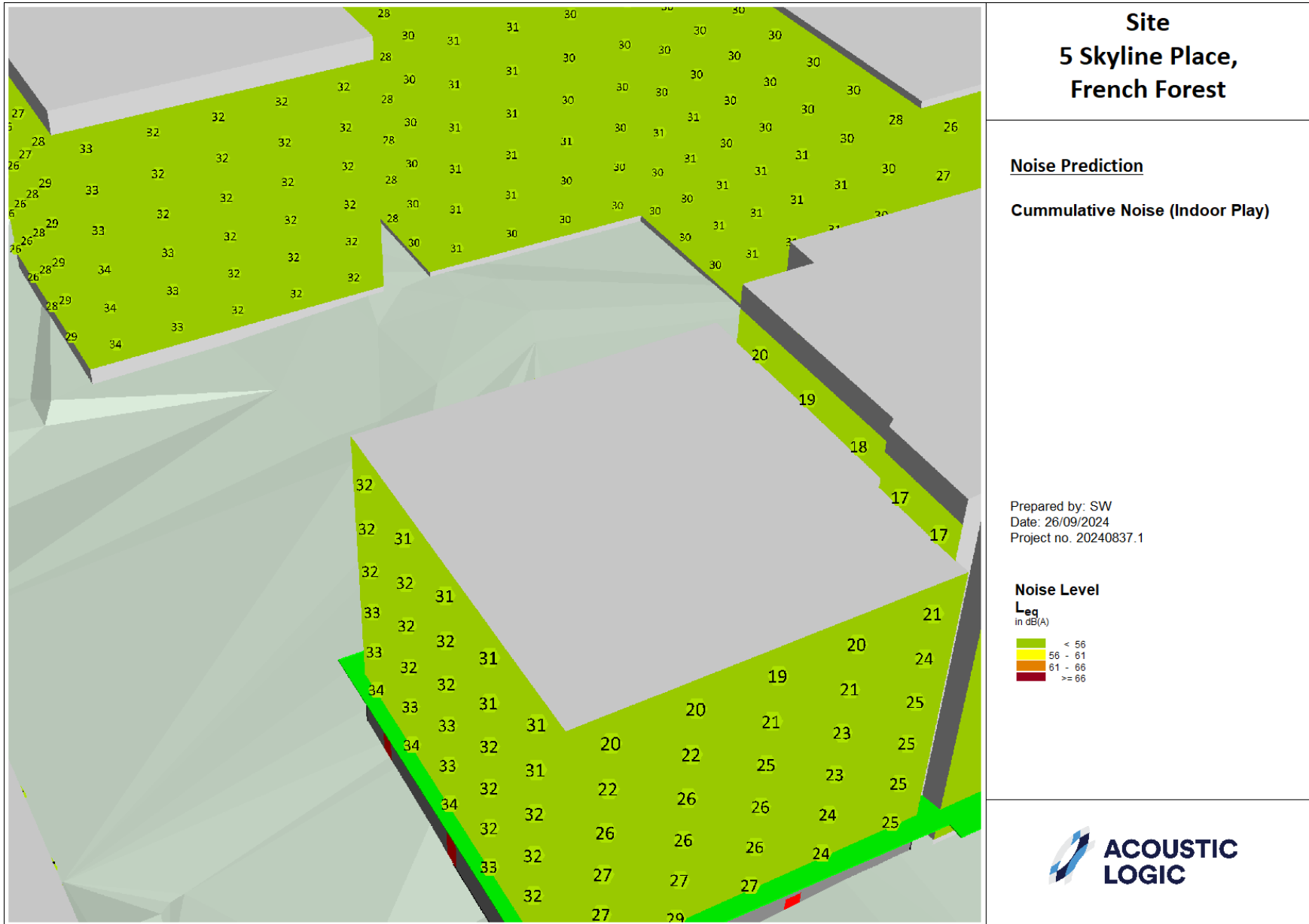


Figure 6: Indoor Play Noise Prediction to R1

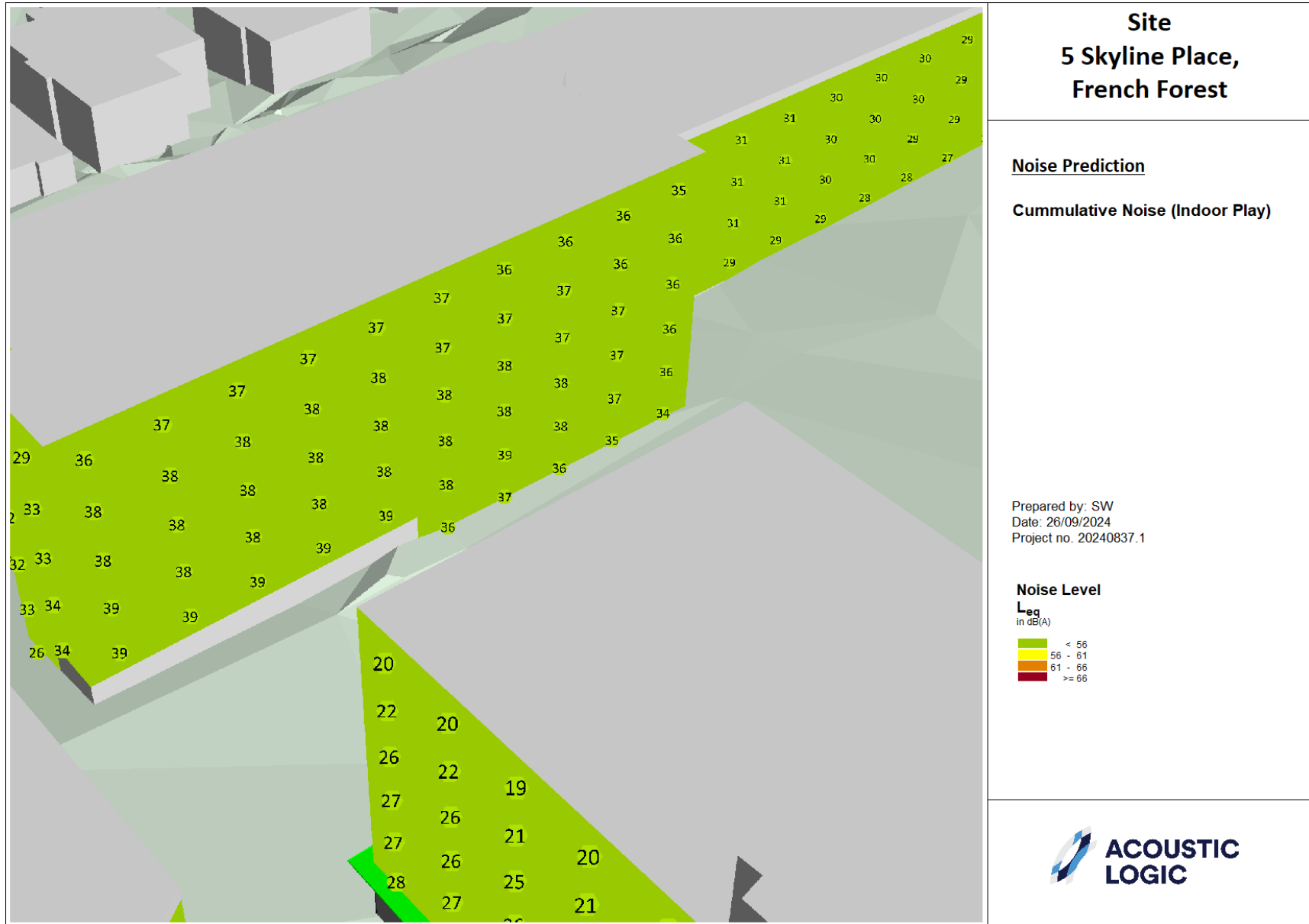


Figure 7: Indoor Play Noise Prediction to R2



Figure 8: Indoor Play Noise Prediction to C1

5.2.2 Cumulative Indoor Play Predicted Noise Levels

The calculations are based on the assumptions in Section 5.1.4.

Table 5 – Predicted Cumulative Noise Levels at Nearby Receivers (Indoor Play Areas)

Receiver	Assessment Location	Maximum Predicted External Noise Level dB(A) _{Leq(15min)}	Allowable Noise Level <u>BG+5</u> dB(A) _{Leq(15min)}	Compliance
Receiver R1	At receiver boundary	33	≤55	Yes
Receiver R2		39		
Receiver C1		41	≤ 63	
Receiver C2		<25		

Note: The predicted indoor play noise levels are significantly lower than outdoor play noise levels and therefore would not contribute to an increase to outdoor play noise.

5.2.3 Outdoor Play Usage

The predicted noise levels at nearby receivers are presented below. The predicted levels are based on the assumptions laid out in Section 5.1.3 and take into account any expected noise reduction provided by distance losses and the recommendations set out in Section 6.

Table 6 – Predicted Cumulative Noise Levels at Nearby Receivers (Outdoor Play Areas)

Receiver	Assessment Location	Maximum Predicted External Noise Level dB(A) _{Leq(15min)}	Allowable Noise Level <u>BG+10</u> dB(A) _{Leq(15min)}	Compliance
Receiver R1	At receiver boundary	58	≤60	Yes
Receiver R2		58		
Receiver C1		57	≤63	
Receiver C2		42		

5.2.4 Mechanical Plant

The mechanical selection for servicing the childcare centre is unknown at this stage, however the location of these plants would be considered during the design stage of the whole development. Thus, it is expected that a typical plant (condensers) will be located within either the basement or roof level. Satisfactory levels will be achievable through appropriate plant selection, location and if necessary, standard acoustic treatments such as duct lining, acoustic silencers, and enclosures.

Noise emissions from all mechanical services to the closest residential receiver shall comply with the requirements of Section 4.2.

Detailed acoustic review shall be undertaken at CC stage to determine acoustic treatments to control noise emissions to satisfactory levels.

6 RECOMMENDATIONS

6.1 MANAGEMENT CONTROLS

- The facility is not to exceed the 71 children capacity at any time.
- Outdoor play areas can operate at maximum child capacity with restrictions of 4 hours of total play time on the duration of use between 7:30am – 6:00pm.
- Operable windows and doors in indoor play areas may remain open at all times.
- Signs reminding staff and visitors to minimise noise at all times shall be installed at ingress/egress points from the childcare centre.
- All staff are to be given appropriate training in relation to acoustic impacts and requirements in terms of operation of the facility.
- Management is to ensure that no more than the following number of children are allowed to be outside during outdoor play activities. Ensure that the children are maintained within the separate play areas as outlined within the proposal plans.
 - 9 babies (0-2 years old)
 - 20 toddlers (2-3 years old)
 - 30 young kids (3-6 years old)
- Install a contact phone number at the front of the centre so that any complaints regarding the centre operation can be made.
- No amplified music systems are to be in use in external areas at any time.
- Mechanical plant to operate only during operational hours (between 7:30am and 6:00pm).

7 CONCLUSION

This report presents an acoustic assessment of noise impacts associated with the proposed child-care centre located at ground floor of 5 Skyline Place, French Forest. Based on the information provided above we concluded that the noise impacts associated with the operation of the childcare centre have been assessed with reference to the requirements of the following documents:

- Warringah Development Control Plan / LEP 2011;
- Association of Australian Acoustical Consultants (AAAC) Guideline for Child Care Centre Acoustic Assessment, Version 3.0, 2020;
- NSW Environmental Protection Authority (EPA) document – '*Noise Policy for Industry (NPfI) 2017*'.

Provided that the management controls presented in Section 6.1 above are implemented, noise emissions from the operations of the childcare centre shall comply with the noise limits stipulated in Section 4.2 of the report.

We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,



Acoustic Logic Pty Ltd
Samantha Wong

APPENDIX A: ARCHITECTURAL FLOOR AND LANDSCAPE PLANS



	<p>Client: [Redacted]</p> <p>Project: [Redacted]</p> <p>Location: [Redacted]</p>	<p>Scale: 1:1000</p> <p>Author: [Redacted]</p> <p>Reviewer: [Redacted]</p> <p>Date: [Redacted]</p>	<p>Project: SKY 5 Stage 2 Closure</p> <p>Client: [Redacted]</p> <p>PLANNING</p>	<p>Title: Overall Landscape DA Plan Design Intent Diagram</p>	<p>Revision: 001</p> <p>Date: 25/11/22</p>	<p>Sheet: 25/11/22</p> <p>Scale: A</p>
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