

OPERATIONAL NOISE MONITORING & COMPLIANCE REPORT

Community School

1 ROSEMEAD ROAD HORNSBY NSW



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TABLE OF CONTENTS

1	INTRODUCTION.....	1
2	BACKGROUND.....	1
2.1	LOCATION.....	1
2.2	LOCAL GOVERNMENT CONSENT AUTHORITY.....	3
3	THE COMMUNITY SCHOOL DEVELOPMENT	4
4	BACKGROUND & VALIDATION REQUIREMENTS.....	6
4.1	BACKGROUND	6
4.2	RELEVANT CONDITIONS OF CONSENT	6
4.3	PREVIOUS REPORTS	6
4.3.1	The Acoustic Report.....	7
4.3.2	The Addendum Report	8
4.3	REFERENCE BACKGROUND SOUND LEVELS.....	8
5	APPROACH & METHODOLOGY	9
5.1	REQUIREMENT.....	9
5.2	INSTRUMENTATION & MEASUREMENT PROCEDURE.....	9
5.2.1	Instrumentation.....	9
5.2.2	Conditions	9
5.2.3	Noise Monitoring Procedure	9
5.2.4	Instrumentation.....	9
5.3	MONITORING LOCATIONS	9
5.4	BACKGROUND SOUND LEVELS.....	10
5.5	OPERATIONAL NOISE MEASUREMENTS	10
5.6	ACOUSTIC MONITORING & COMPLIANCE ASSESSMENT.....	10
6	NOISE MONITORING & COMPLIANCE ASSESSMENT	11
6.1	MONITORING LOCATIONS	11
6.2	SITE PHOTOGRAPHS	12
6.3	NOISE MONITORING RESULTS	18
6.3.1	Adopted Background and Environmental Sound Levels.....	18
6.3.2	Measured Background & Environmental Sound Levels.....	18
6.3.3	Acoustic Impacts at Boundary Locations	18
6.3.4	Plant & Equipment Noise Impacts.....	21
6.3.5	Vehicle Arrival and Departure	23
7	FINDINGS & RECOMMENDATIONS.....	25
7.1	KEY FINDINGS.....	25
7.2	RECOMMENDATION	25
8	AUTHORISATION & LIMITATIONS	26

APPENDICES

FIGURE	DESCRIPTION	PAGE
A	Noel Child – Summary of Qualifications, Capability and Experience	A-1

LIST OF DIAGRAMS

FIGURE	DESCRIPTION	PAGE
2.1	Location of the Community School	1
2.2	Satellite Photograph of Site Location (October 6th, 2021)	2
2.3	Hornsby Shire Council Land Zoning Map	3
3.1	Site Plan	5
6.1	Acoustic Validation Measurement Locations	11
6.2	Outdoor Play Area Viewed from the South	12
6.3	Southern Portion of Outdoor Play Area	13
6.4	Car Park and Fence to 1A Rosemead Road	13
6.5	Boundary Acoustic Fence at Monitoring Locations 1 & 2	14
6.6	Eastern Boundary Acoustic Fence to Outdoor Play Area	14
6.7	Southeastern Corner of Outdoor Play Area	15
6.8	Fence and Gate between Western and Eastern Portions of Outdoor Play Area	15
6.9	Eastern Portion of the Outdoor Play Area Viewed from the North	16
6.10	Front Northeast Corner of the Site	16
6.11	Front Northwest Area of the Site	17
6.12	AC Condenser Unit (1)	21
6.13	AC Condenser Units (1)	21
6.14	AC Condenser Unit (1)	22
6.15	AC Condenser Unit (1)	22

LIST OF TABLES

TABLE	DESCRIPTION	PAGE
4.1	Reference Background and Environmental Sound Levels	8
6.1	Environmental and Background Sound Levels at Boundary Locations	18
6.2	Acoustic Impacts Measured at Boundary Locations	19
6.3	Incremental Noise at Boundary Locations from Internal and External Activities	20
6.4	Impacts of Internal & External Play Activity at Boundary Locations	20
6.5	P & E Noise at the Site Boundary	23
6.6	Noise Associated with Vehicle Arrival & Departure	23

1 INTRODUCTION

Blue Gum Community School, supported by professional services provided by Armada Architects, has completed the construction of a new Blue Gum Community School at 1 Rosemead Road Hornsby NSW. The new school will provide for a 32 place preschool and a 48 place primary school.

The development was approved by the Independent Planning Panel of the NSW Department of Planning, subject to a number of Consent Conditions F14 – F18, as detailed in Section 3 of this proposal, require that appropriate short term acoustic monitoring is undertaken following the commencement of operations at the new centre to ensure that operational noise generated by the development, including noise from outdoor play, indoor activities and mechanical plant use does not exceed the limits set out in the original acoustic assessment presented for the development. Noise attenuation measures are required to be implemented if relevant noise criteria are exceeded. Appropriate reporting is required to the Planning Secretary.

Armada Architects and Blue Gum Schools have engaged to undertake the operational noise monitoring and assessment required.

Noel Child of NG Child & Associates is an appropriately qualified and experienced person to undertake the work involved. His CV is provided for reference at Appendix A.

This document describes the short term operational noise monitoring undertaken and presents its key findings and results.

2 BACKGROUND

2.1 LOCATION

The general location of the Community School is indicated by the road map in Figure 2.1 on the following page.

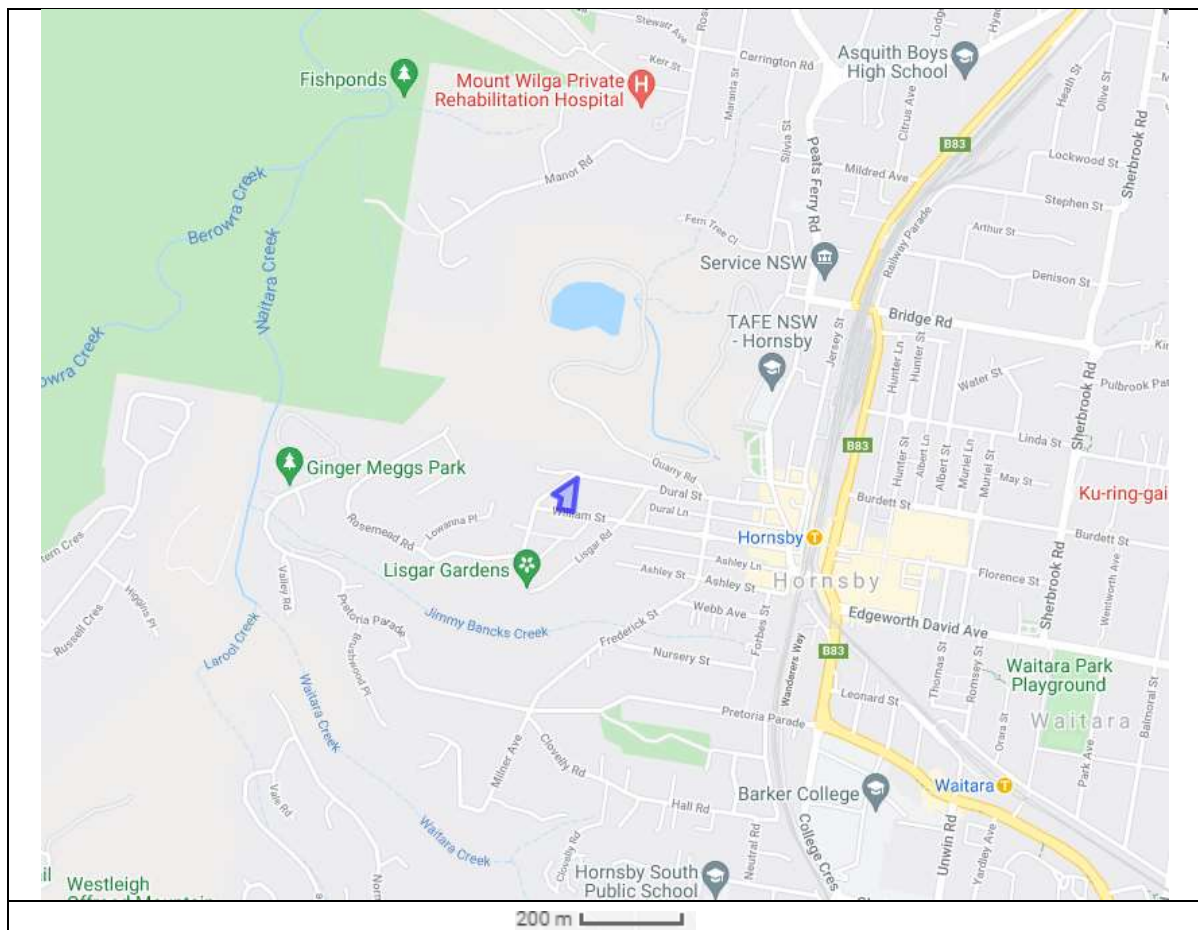


Figure 2.1 – Location of the Community School

Figure 2.2 below provides a recent (October 6th, 2021) satellite photograph of the site area.

The direction of north is towards the top of both Figures 2.1 and 2.2, and an approximate scale is indicated below both diagrams.

The site area is shown shaded in blue in both diagrams.



Figure 2.2 – Satellite Photograph of Site Location (October 6th, 2021)

2.2 LOCAL GOVERNMENT CONSENT AUTHORITY

The development site falls within the local government area of Hornsby Shire Council. The site is zoned “R2 – Low Density Residential”, as shown in Figure 2.5 below. The Rosemead Road site is at the left-centre of the map.

Other land uses in the general vicinity include other low density residential, medium and high density residential, mixed use and public recreation.

Land in the immediate vicinity of the subject site is low density residential.

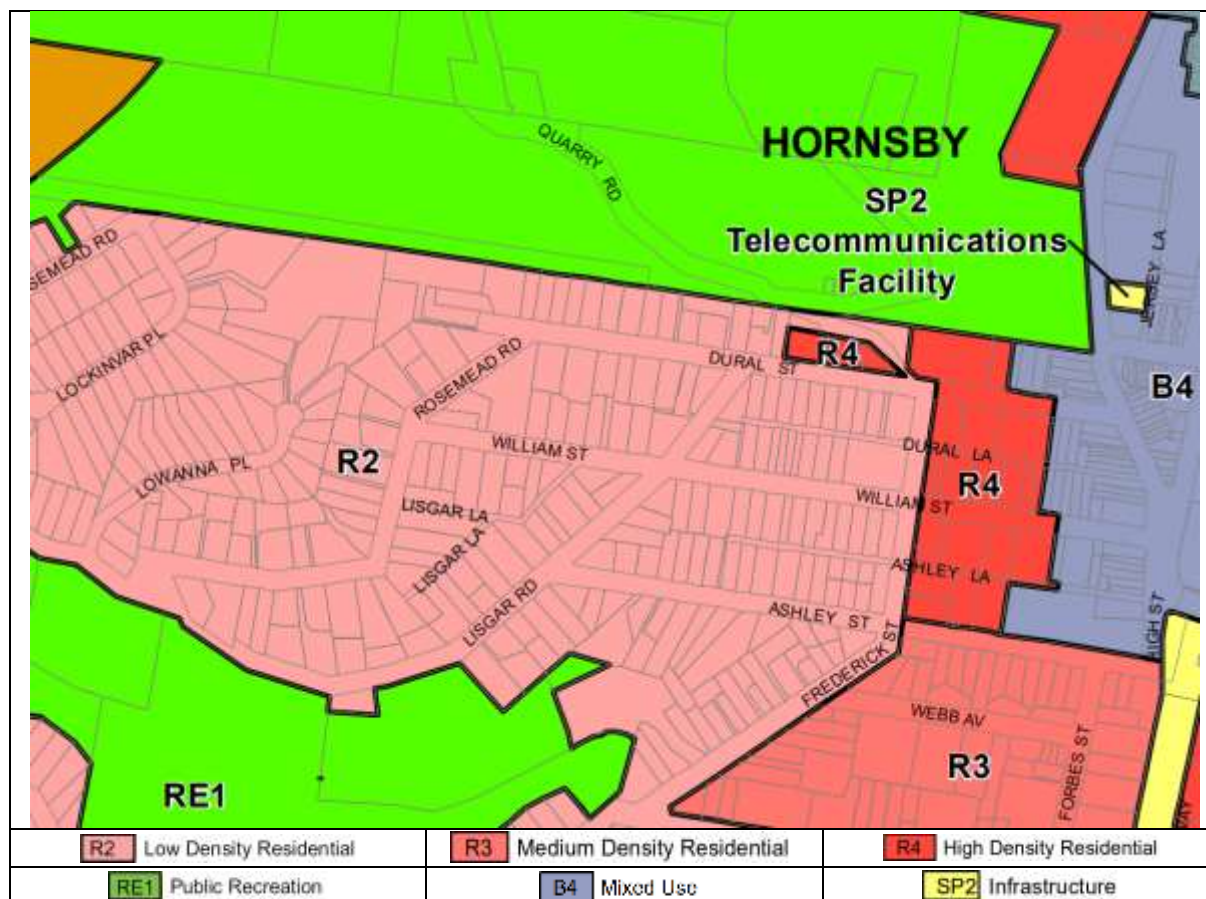


Figure 2.3 – Hornsby Shire Council Land Zoning Map

The zoning diagram shown in Figure 2.3 was sourced from the Hornsby Local Environment Plan 2013 (HELP 2013).

3 THE COMMUNITY SCHOOL DEVELOPMENT

The proposed development is a small community school incorporating a 32 place preschool and a 48 place primary school.

A total of 80 children are involved.

Construction of the development has involved modifications to an existing building at the 1 Rosemead Road site, and associated works including a car park area, as indicated by the plan provided in Figure 3.1 on the next page, as follows:

Figure 3.1 Site Plan

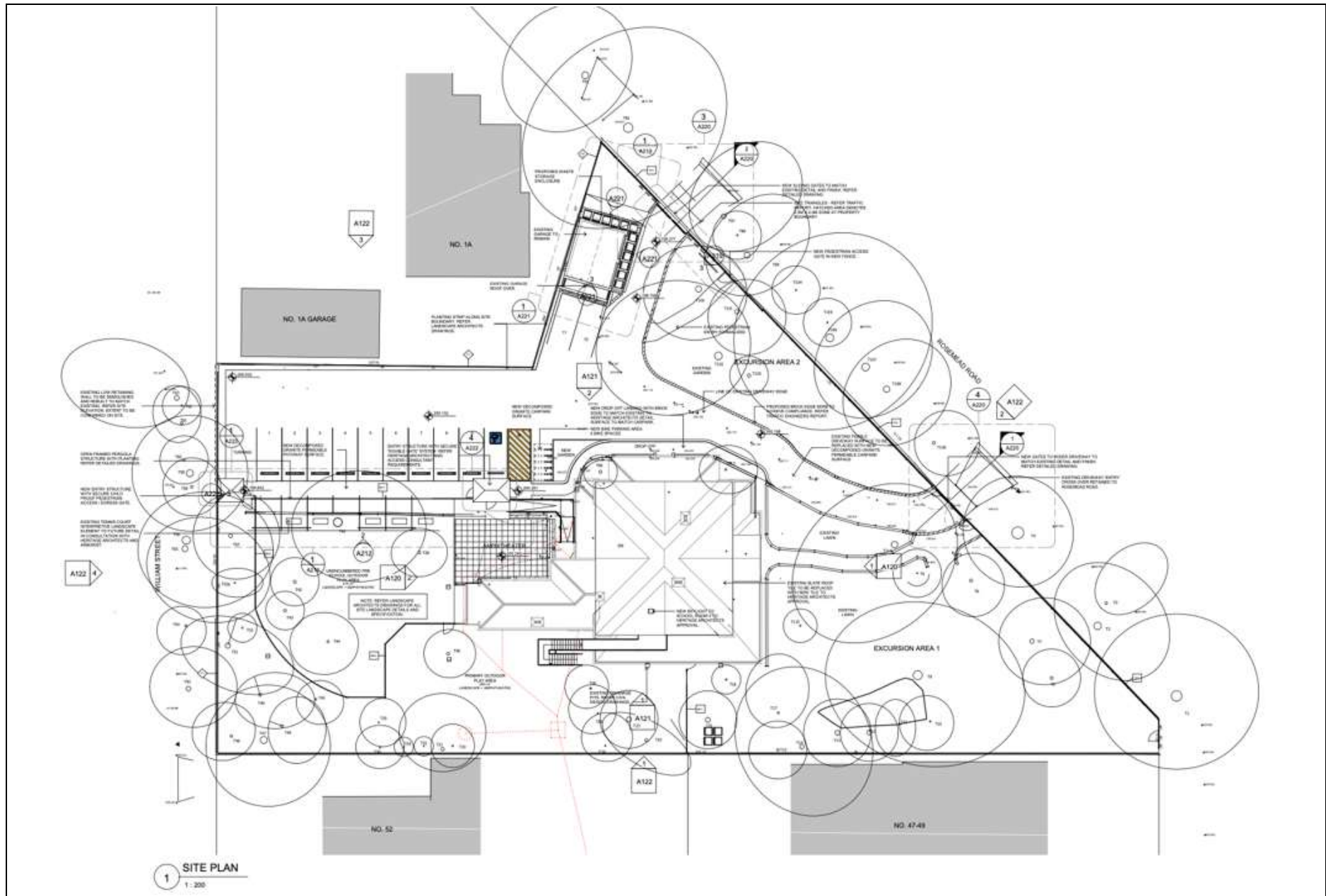


Figure 3.1 – Site Plan

4 BACKGROUND & VALIDATION REQUIREMENTS

4.1 BACKGROUND

As indicated in Section 1, a new Blue Gum Community School comprising a 32 place preschool and a 48 place primary school has been approved by the Independent Planning Panel of the NSW Department of Planning, subject to a number of Consent Conditions.

The school has now been constructed in accordance with the approval granted and commenced operating in February 2022.

Consent Conditions F14 – F18 require that appropriate short term acoustic monitoring is undertaken following the commencement of operations at the new school to ensure that operational noise generated by the development, including noise from outdoor play, indoor activities and mechanical plant use does not exceed the limits set out in the original acoustic assessment presented for the development.

Noise attenuation measures are required to be implemented if relevant noise criteria are exceeded. Appropriate reporting is required to the Planning Secretary.

4.2 RELEVANT CONDITIONS OF CONSENT

Consent Conditions. Conditions F14 – F18 require the monitoring and assessment of operation noise, as follows:

Operational Noise Limits

- F14. The Applicant must ensure that noise generated by operation of the development does not exceed the noise limits in *Acoustic Assessment Report, Proposed Community School, 1 Rosemead Road Hornsby NSW*, dated 6 May 2020 and the addendum dated 6 November 2020 prepared by NG Child & Associates.
- F15. The Applicant must undertake short term noise monitoring in accordance with the *Noise Policy for Industry* and the *Association of Australasian Acoustical Consultants Guideline for Child Care Centre Acoustic Assessment*, where valid data are collected within three months of commencement of operation of the development.
- F16. The monitoring program must be carried out by an appropriately qualified person and a monitoring report must be submitted to the Planning Secretary within two months of completion of the monitoring, to verify that operational noise levels including noise generated during use of the outdoor play areas, internal areas and the mechanical plant / equipment do not exceed the maximum allowable noise levels identified in the *Acoustic Assessment Report, Proposed Community School, 1 Rosemead Road Hornsby NSW*, dated 6 May 2020 and the addendum dated 6 November 2020 prepared by NG Child & Associates.
- F17. Should the noise monitoring program in condition F14 identify any exceedance of the allowable noise levels referred to above, the Applicant must implement appropriate noise attenuation measures within one month, so that operational noise levels do not exceed the recommended noise levels or provide attenuation measures at the affected noise sensitive receivers.
- F18. The evidence of additional noise attenuation measures and the resultant operational noise levels must be submitted to the satisfaction of the Planning Secretary, within one month of the implementation of such measures. A copy of the evidence must be submitted to the Certifier for information.

Compliance or otherwise with Consent Conditions F14 - F18 is addressed in this report.

4.3 PREVIOUS REPORTS

Consent Conditions F14 to F18 reference two previous acoustic reports, as follows:

Acoustic Assessment Report: Proposed Community School 1 Rosemead Road Hornsby NSW (NG Child & Associates; Version 5; May 6th, 2020) – the “Acoustic Report”; and

Updated Acoustic Comment and Advice: Proposed Preschool & Community School – 1 Rosemead Road, Hornsby, NSW (NG Child & Associates; November 6th, 2020) – the “Addendum Report”.

4.3.1 The Acoustic Report

The key findings and recommendations of the Acoustic Report are as follows:

Key Findings:

The following is a summary of the key findings of this assessment:

- ❑ Sound levels of less than 40 dB(A) will be achieved throughout the internal areas of the proposed educational facility, based on measured background sound levels and proposed layout and school design details as described in this report;
- ❑ Sound levels in the range 30-35 dB(A) will be achievable within any rest areas associated with the proposed facility, based on measured background sound levels; and proposed layout and school design details as described in this report;
- ❑ Noise levels of less than 55 dBA are projected to be achieved within the outdoor play areas associated with the proposed school;
- ❑ The level of noise estimated to be generated by activities within the internal areas of the proposed facility is projected to be essentially contained by the building structure of the school itself, and accordingly is projected to have no negative or non-compliant impacts on surrounding buildings, activities, and individuals;
- ❑ The level of noise estimated to be generated by activities within the outdoor activity areas associated with the proposed school is projected to have no negative or non-compliant impacts on surrounding buildings, activities, and individuals, subject to the implementation of the recommendations summarised below; and

On this basis, the acoustic performance of the proposed Community School will comply fully with the requirements of all relevant acoustic guidelines and requirements.

Recommendations:

The assessment has found that the proposed Community School will comply with the requirements of all relevant acoustic guidelines and regulations, subject to the advice provided generally in this report; adherence to normally accepted design and building practices, and the implementation of the following recommendations:

- ❑ Double lapped timber boundary fencing of height 2100 mm and with a minimum Rw rating of 25 should be installed along the western boundary of the outdoor play area, adjacent to the school car park, as detailed in this report;
- ❑ Double lapped timber boundary fencing of height 1800 mm and with a typical Rw rating of 25 should be installed along the remaining western boundaries of the site, as detailed in this report;
- ❑ Double lapped timber boundary fencing of height 1800 mm and with a typical Rw rating of 25 should be installed along the southern or William Street boundary of the site, as detailed in this report.
- ❑ Double lapped timber boundary fencing of height 1800 mm and with a typical Rw rating of 25 should be installed along the eastern boundary of boundary of the site, with the short section of fence between the front façade of the adjoining building progressively reducing in height to 1200mm to meet the open form black metal fence proposed for the Rosemead Road property boundary, as detailed in this report;
- ❑ Careful supervision of all external activities associated with the school should be maintained as detailed in this report to assist in achieving the required acoustic outcomes;
- ❑ A compact of understanding should be achieved with parents and guardian, and those dropping off and picking up children, to ensure that minimum noise driving practices are applied on streets near the school, and when using the school's driveway and car park to assist in achieving the required acoustic outcomes;

- ❑ Validation that any plant & equipment associated with the proposed school will not have an impact greater than 5 dBA above the measured background LA90 RBL, as indicated in this report, may be provided if required prior to the issue of an Occupation Certificate for the development; and
- ❑ A Noise Management Plan consistent with the guidelines set out in this report is prepared and included in the overall Management Plan for the school for implementation and where necessary continuous improvement.

4.3.2 The Addendum Report

The Addendum Report provided details of modifications to the community school design since the Acoustic report, as follows:

- ❑ **Changed Car Park Layout:** Transfer of the proposed car parking spaces from the 1A Rosemead Road boundary of the car park to the opposite side of the car park, adjacent to the outdoor play area, coupled with a proposed reduction in the height of the boundary acoustic fence between the car park area and the 1A Rosemead Road property from 2100 mm to 1800 mm.
- ❑ **Gradual Reduction in Height of Side Fence:** A gradual reduction in the height of the proposed 1800 mm side fence between the development and the 1A Rosemead Road property near the front or Rosemead Road site boundary where the side fence will intersect the 1200 mm non-acoustic front property fence.
- ❑ **Change in Fence Style on William Street Boundary:** Replacement of the proposed 1800 mm lap and cap timber acoustic fence with a more open non-acoustic fence along the rear or William Street site boundary.

It is noted that recommendation in the Acoustic Report for a 2100 mm fence with a minimum Rw rating of 25 to be installed along the western boundary of the outdoor play area, adjacent to the school car park, was revised in the Addendum Report to 2100 mm fence with a similar Rw rating.

4.3 REFERENCE BACKGROUND SOUND LEVELS

The following reference background (LA90, 15-minute) sound level (RBL) and environmental sound level were measured and reported in the Acoustic Report for the development, and have

Table 4.1 – Reference Background and Environmental Sound Levels

Reference Sound Levels Adopted for Assessment Purposes (dBA)	
L _{AF90}	39
L _{Aeq}	47

These RBL's were established by the original acoustic assessment for the project and were presented in Section 5 of the Acoustic Report.

5 APPROACH & METHODOLOGY

5.1 REQUIREMENT

The primary noise monitoring and assessment requirement is to demonstrate that noise from various activities at property boundaries complies with relevant criteria.

If any exceedances are noted, appropriate mitigation is required to be identified, and implemented.

5.2 INSTRUMENTATION & MEASUREMENT PROCEDURE

5.2.1 Instrumentation

The following procedures will be observed during noise measurement operations:

- ☐ Ensure that the Sound Level Meter (SLM) used for monitoring has current laboratory calibration certification;
- ☐ Operate the SLM strictly in accordance with relevant guidelines;
- ☐ Ensure the windscreen is attached and that the SLM is set to A-weighted and fast response;
- ☐ Prior to and completing each sound level measurement, the SLM should be field calibrated using the calibrator supplied with the instrument; and
- ☐ Ensure that the pre- and post- measurement calibrations do not differ by more than 0.5dB(A).

5.2.2 Conditions

Noise monitoring should be undertaken on days of light winds (<5 m/s) and no rain. Rain and too much wind will elevate the noise level. If there is no choice but to monitor in inclement weather, note the conditions in the field sheet.

5.2.3 Noise Monitoring Procedure

The noise monitoring reported in this document has been undertaken in accordance with the following standards, guidelines; and protocols:

- ☐ NSW EPA Noise Policy for Industry (2017);
- ☐ AS 1055.2—1997 Acoustics—Description and measurement of environmental noise; and
- ☐ Association of Australasian Acoustical Consultants Guideline for Child Care Centre Acoustic Assessment Version 3.0 (2020).

Monitoring was undertaken for a minimum of 15 minutes in each location, as required by the

5.2.4 Instrumentation

A Rion NL 62 Class 1 Sound Level Meter was used to record sound levels.

5.3 MONITORING LOCATIONS

Representative monitoring locations were identified at points on the property boundary that are appropriate to measure the impacts of noise emissions from:

- ☐ Outdoor play activities;

- ❑ Indoor activities and operations; and
- ❑ Plant & equipment

Details are provided in Section 6.

5.4 BACKGROUND SOUND LEVELS

Background sound levels were measured at the various boundary monitoring locations.

Measurements were of 15-minute duration.

5.5 OPERATIONAL NOISE MEASUREMENTS

Operational noise levels were measured at the various boundary monitoring locations.

Measurements were of 15-minute duration.

5.6 ACOUSTIC MONITORING & COMPLIANCE ASSESSMENT

Results of the acoustic monitoring and compliance assessment undertaken are detailed in Section 6 of this report.

6 NOISE MONITORING & COMPLIANCE ASSESSMENT

6.1 MONITORING LOCATIONS

As indicated in Section 5, seven representative boundary locations were selected for the monitoring and compliance assessment of operational noise generated by activities associated with the community school. These monitoring locations are illustrated in Figure 6.1, below.



Figure 6.1 - Acoustic Validation Measurement Locations

6.2 SITE PHOTOGRAPHS

Photographs illustrating relevant feature of the site, and the seven monitoring locations, are provided in Figures 6.2 – 6.11 below and on subsequent pages, as follows:

- Figure 6.2 Outdoor Play Area Viewed from the South
- Figure 6.3 Southern Portion of Outdoor Play Area
- Figure 6.4 Car Park and Fence to 1A Rosemead Road
- Figure 6.5 Boundary Acoustic Fence at Monitoring Locations 1 & 2
- Figure 6.6 Eastern Boundary Acoustic Fence to Outdoor Play Area
- Figure 6.7 Southeastern Corner of Outdoor Play Area
- Figure 6.8 Fence and Gate between Western and Eastern Portions of Outdoor Play Area
- Figure 6.9 Eastern Portion of the Outdoor Play Area Viewed from the North
- Figure 6.10 Front Northeast Corner of the Site
- Figure 6.11 Front Northwest Area of the Site



Figure 6.2 – Outdoor Play Area Viewed from the South



Figure 6.3 – Southern Portion of Outdoor Play Area



Figure 6.4 – Car Park and Fence to 1A Rosemead Road



Figure 6.5 – Boundary Acoustic Fence at Monitoring Locations 1 & 2



Figure 6.6 – Eastern Boundary Acoustic Fence to Outdoor Play Area



Figure 6.7 – Southeastern Corner of Outdoor Play Area



Figure 6.8 – Fence and Gate between Western and Eastern Portions of Outdoor Play Area



Figure 6.9 – Eastern Portion of the Outdoor Play Area Viewed from the North



Figure 6.10 – Front Northeast Corner of the Site



Figure 6.11 – Front Northwest Area of the Site

6.3 NOISE MONITORING RESULTS

6.3.1 Adopted Background and Environmental Sound Levels

The following daytime environmental and background sound levels were measured in the original acoustic assessment for the community school project

Rated Background Sound Level (RBL)	39 dBA, LA ₉₀ , 15-minute
Environmental Sound Level	47 dBA, LA _{eq} , 15-minute

The implication of these reference levels is that environmental noise levels, which is noise including road traffic noise, exceeds the measured background noise by 8 dBA during the daytime, or during the operating hours of the community school.

These reference levels have been adopted in subsequent correspondence and reporting.

Confirmatory reference sound levels have been measured on a short term basis wherever possible in this acoustic impact validation process.

6.3.2 Measured Background & Environmental Sound Levels

Background and environmental sound levels were measured at seven boundary locations at the site, as shown in Figure 6.11.

Sound levels were measured over 15-minute periods. The results are summarised in Table 6.1, below.

Table 6.1 – Environmental and Background Sound Levels at Boundary Locations

Location	Date	Time	LA _{eq} , 15-minute	LA ₉₀ , 15-minute
1	14 March 2022	9:21:15 – 9:36:15	47	41
2	14 March 2022	9:37:11 – 9:42:26	46	40
3	14 March 2022	9:46:02 – 10:01:02	46	40
4	14 March 2022	9:04:18 – 9:19:18	45	39
5	14 March 2022	11:16:03 – 11:31:03	47	42
6	14 March 2022	11:35:10 – 11:50:10	51	46
7	14 March 2022	11:57:23 – 11:12:23	52	46
Average			47.7	42.0

These results indicate an average differential of 6 dBA between the background LA₉₀, 15-minute and the environmental LA_{eq}, 15-minute sound levels at the site. This is slightly lower than the differential of 8 dBA measured during the original acoustic assessment.

An average differential of 6 dBA between background and environmental noise – that is the environmental noise without the effects children in the outdoor play area, has been adopted for assessment and validation purposes.

6.3.3 Acoustic Impacts at Boundary Locations

To assess the acoustic impacts under the varying operational scenarios referred to in Consent Conditions F14 – F18, LA_{eq} and LA₉₀ sound levels were measured at the seven boundary locations with all children inside the school building, and with all pre-school children at play in the outdoor play area.

The results are summarised in Table 6.2, on the following page.

Table 6.2 – Acoustic Impacts Measured at Boundary Locations

Location	Date	Time	Operational Condition	Measured Inside Boundary	
				LA _{eq} , 15-minute	LA ₉₀ , 15-minute
1	14 March 2022	9:45:15 – 10:00:15	All childcare children in the outdoor play area	50	42
	14 March 2022	9:37:11 – 9:42:26	All children indoors	47	41
2	14 March 2022		All childcare children in the outdoor play area	49	42
	14 March 2022	9:37:11 – 9:42:26	All children indoors	46	40
3	14 March 2022		All childcare children in the outdoor play area	51	42
	14 March 2022	9:46:02 – 10:01:02	All children indoors	46	40
4	14 March 2022		All childcare children in the outdoor play area	45	39
	14 March 2022	9:04:18 – 9:19:18	All children indoors	45	39
5	14 March 2022		All childcare children in the outdoor play area	47	42
	14 March 2022	11:16:03 – 11:31:03	All children indoors	47	42
6	14 March 2022		All childcare children in the outdoor play area	49	44
	14 March 2022	11:35:10 – 11:50:10	All children indoors	51	46
7	14 March 2022		All childcare children in the outdoor play area	50	44
	14 March 2022	11:57:23 – 11:12:23	All children indoors	52	46

The incremental noise impacts at the various boundary locations with all children inside and outside the school building are summarised in Table 6.3, below.

Table 6.3 – Incremental Noise at Boundary Locations from Internal and External Activities

Location	Operational Condition	Measured Inside Boundary		
		LAeq, 15 minute	LA90, 15-minute	Increment dBA
1	All childcare children in outdoor play area	50	42	8
	All children indoors	47	41	6
2	All childcare children in outdoor play area	49	42	7
	All children indoors	46	40	6
3	All childcare children in outdoor play area	51	42	9
	All children indoors	46	40	6
4	All childcare children in outdoor play area	45	39	6
	All children indoors	45	39	6
5	All childcare children in outdoor play area	47	42	5
	All children indoors	47	42	5
6	All childcare children in outdoor play area	49	44	5
	All children indoors	51	46	5
7	All childcare children in outdoor play area	50	44	6
	All children indoors	52	46	6

The impact of the incremental noise due to the activities of children inside and outside the school building on both the school and residential side of the property boundaries is summarised in Table 6.4, below. These impacts have been calculated by deducting the 6 dBA increase over background adopted in the original acoustic report and in this validation assessment from the incremental noise including that of children's indoor and outdoor play activities.

Table 6.4 – Impacts of Internal & External Play Activity at Boundary Locations

Location	Impact Inside Boundary due to Children Indoors and Outdoors		Attenuation Due to Acoustic Fence (Conservative)	Impact on the Residential Side due to Children in the Outdoor Play Area
1	Outdoors	2	10 dBA	0 dBA
	Indoors	0	10 dBA	0 dBA
2	Outdoors	1	10 dBA	0 dBA
	Indoors	0	10 dBA	0 dBA
3	Outdoors	3	10 dBA	0 dBA
	Indoors	0	10 dBA	0 dBA
4	Outdoors	0	10 dBA	0 dBA
	Indoors	0	10 dBA	0 dBA
5	Outdoors	0	10 dBA	0 dBA
	Indoors	0-	10 dBA	0 dBA
6	Outdoors	0	10 dBA	0 dBA
	Indoors	0	10 dBA	0 dBA
7	Outdoors	0	10 dBA	0 dBA
	Indoors	0	10 dBA	0 dBA

No acoustic impact is indicated on the residential side of the property boundaries.

6.3.4 Plant & Equipment Noise Impacts

External items of plant and equipment at the site comprise five air conditioning condenser units positioned on the side wall of the community school building, approximately adjacent to Boundary Position 4 in Figure 6.11. These items of plant and equipment are illustrated in Figures 6.12 to 6.15 below and on the following page.



Figure 6.12 – AC Condenser Unit (1)



Figure 6.13 – AC Condenser Units (2)



Figure 6.14 – AC Condenser Unit (3)



Figure 6.15 – AC Condenser Unit (4)

In the case of these items of plant and equipment, which was operating for safety and health reasons during this validation process, the background differential of 8 dBA between the measured daytime environmental noise level of 47 dBA and the measured LA90 RBL background level of 47 dBA has been adopted as a comparative reference.

This differential was established prior to the introduction of the plant and equipment in question.

To assess the impact of the five items of plant and equipment on the facility side of the residential boundary, both the LAeq, 15-minute environmental noise level and the LA90, 15-minute background sound level were measured over fifteen minute periods immediately inside the facility boundary at Location 4.

The results are summarised in Table 6.5, below.

Table 6.5 – P & E Noise at the Site Boundary

Location	Date	Time	LAeq, 15-minute	LA90, 15-minute
4	14 March 2022	9:04:18 – 9:19:18	45	39

The differential of 6 dBA measured at Location 4 (on the facility side of the property boundary) was in fact than the differential measured in the original acoustic assessment.

It is also noted that the actual noise impact from the items of plant and equipment on the residential side of the boundary at Location 4 will be subject to the acoustic attenuation or reduction provided by the timber acoustic fence,

This type of fence has an Rw rating of 25 (refer Table 6.8 of the adopted acoustic report for the project: *Acoustic Assessment Report: Proposed Community School 1 Rosemead Road Hornsby NSW (Version 5; May 6th, 2020)*).

Conservatively assuming that this Rw rating translates to an actual noise attenuation (or reduction) performance of 10 dBA, calculated on the applicable 15-minute average basis, the assessed 0 dBA increment on the community school side of the residential boundary fence would obviously result in no net increase in noise on the residential side of the boundary fence.

This performance confirms that the five items of external plant and equipment operating at the community school facility do not result in an acoustic impact of greater than 5 dBA at the nearest residential boundary.

In point of fact, the five items of plant and equipment were noted to generate very little if any perceptible noise.

6.3.5 Vehicle Arrival and Departure

Although not specified as part of the acoustic validation required by Consent Conditions F14 to F18, the opportunity arose during the acoustic validation measurements undertaken to measure the acoustic impact of a vehicle dropping off a child at the centre.

Details are summarised in Table 6.6, below.

Table 6.6 – Noise Associated with Vehicle Arrival & Departure

Location	Date	Time	LAeq	Duration (seconds)
Arrival				
2	14 March 2022	10:11:13 – 10:11:22	61	9
Departure				
2	14 March 2022	10:16:26 – 10:16:37	62	11

The background environmental sound level measured at this location, which is consistent with the background sound location measured and adopted for the original acoustic assessment of the project, was 46 dBA.

That means that the arrival and departure of a vehicle involved in the drop off of a child at the centre involved an average environmental noise of 62 dBA LAeq over a 20 second period, or an incremental acoustic impact of 16 dBA ($62 - 46 = 16$) over this period.

Assuming a “worst case” scenario of one drop off and one pick per child spread over a ninety minute period in the mornings and afternoon, together with, say, eight staff vehicle movements over these same periods, a maximum total of eighty-five vehicle movements could be anticipated during both the morning and afternoon periods.

The six fifteen minute periods in the ninety minute morning and afternoon periods assumed would mean 14 vehicle movements each of 20 seconds and imposing a 16 dBA noise increment inside the property boundary.

That is, a 16 dBA noise increment over 4 minutes and 40 seconds, or 31%, of the fifteen minute period.

This equates to a 5 dBA increment inside the residential boundary fence calculated on a 15-minute average basis.

The 1800 mm double lapped and capped boundary fence has been designed to provide protection against the acoustic impact of vehicles arriving and departing – dropping off and picking up children.

This type of fence has an Rw rating of 25 (refer Table 6.8 of the adopted acoustic report for the project: *Acoustic Assessment Report: Proposed Community School 1 Rosemead Road Hornsby NSW (Version 5; May 6th, 2020)*).

Conservatively assuming that this Rw rating translates to an actual noise attenuation (or reduction) performance of 10 dBA, calculated on the applicable 15-minute average basis, the assessed 5 dBA increment on the community school side of the residential boundary fence would result in no net increase in noise on the residential side of the boundary fence.

This performance confirms that the requirement for vehicles dropping off and picking up children to not result in a cumulative increase of more than 5 dBA (LAeq,15-minutes) at the residential boundary has been achieved.

7 FINDINGS & RECOMMENDATIONS

7.1 KEY FINDINGS

Blue Gum Community School, supported by professional services provided by Armada Architects, has completed the construction of a new Blue Gum Community School at 1 Rosemead Road Hornsby NSW. The new school will provide for a 32 place preschool and a 48 place primary school.

This report presents the results of short term acoustic monitoring undertaken as required by Consent Conditions F14, F15 and F16 following the commencement of operations at the new community school.

Conditions F14, F15 and F16 require:

- F14. The Applicant must ensure that noise generated by operation of the development does not exceed the noise limits in *Acoustic Assessment Report, Proposed Community School, 1 Rosemead Road Hornsby NSW*, dated 6 May 2020 and the addendum dated 6 November 2020 prepared by NG Child & Associates.
- F15. The Applicant must undertake short term noise monitoring in accordance with the *Noise Policy for Industry* and the *Association of Australasian Acoustical Consultants Guideline for Child Care Centre Acoustic Assessment*, where valid data are collected within three months of commencement of operation of the development.
- F16. The monitoring program must be carried out by an appropriately qualified person and a monitoring report must be submitted to the Planning Secretary within two months of completion of the monitoring, to verify that operational noise levels including noise generated during use of the outdoor play areas, internal areas and the mechanical plant / equipment do not exceed the maximum allowable noise levels identified in the *Acoustic Assessment Report, Proposed Community School, 1 Rosemead Road Hornsby NSW*, dated 6 May 2020 and the addendum dated 6 November 2020 prepared by NG Child & Associates.

The results of the acoustic monitoring undertaken have demonstrated that noise generated during the use of the outdoor play areas, internal areas, mechanical plant and equipment and the arrival and departure of vehicles does not exceed the maximum allowable noise levels identified in the *Acoustic Assessment Report: Proposed Community School 1 Rosemead Road Hornsby NSW* (NG Child & Associates; Version 5; May 6th, 2020) and the addendum report *Updated Acoustic Comment and Advice: Proposed Preschool & Community School – 1 Rosemead Road, Hornsby, NSW* (NG Child & Associates; November 6th, 2020).

On this basis no corrective actions are required in relation to Consent Conditions F17 and F18, which require:

- F17. Should the noise monitoring program in condition F14 identify any exceedance of the allowable noise levels referred to above, the Applicant must implement appropriate noise attenuation measures within one month, so that operational noise levels do not exceed the recommended noise levels or provide attenuation measures at the affected noise sensitive receivers.
- F18. The evidence of additional noise attenuation measures and the resultant operational noise levels must be submitted to the satisfaction of the Planning Secretary, within one month of the implementation of such measures. A copy of the evidence must be submitted to the Certifier for information.

7.2 RECOMMENDATION

This acoustic monitoring reported in this document has addressed the requirements of Consent Conditions F14 and F15 and demonstrated compliance with Consent Condition F16.

On this basis, the following recommendations are made:

1. That this advice is provided to the Planning Secretary and the Certifier at interest; and
2. That subject to acceptance of this advice by the Planning Secretary and the Certifier at interest, no further monitoring is considered necessary to demonstrate compliance with the requirements of the relevant Consent Conditions.

8 AUTHORISATION & LIMITATIONS

NG Child & Associates has based this report on the data, methods and sources described herein. Subject to the limitations described within the report, it is the professional opinion of NG Child & Associates that this report provides an accurate and reliable assessment of acoustic compliance and performance in relation to Consent Conditions F14, F15, F16, F17 and F18 for the community school development now approaching completion at 1 Rosemead Road Hornsby NSW, as described in this report.



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

16 May 2022

APPENDIX A

Noel Child Summary of Qualifications, Capability & Experience

1 PERSONAL DETAILS

Full Name: Noel George CHILD
Profession: Consultant in Environmental Assessment and Management
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 **Fax:** 61 2 9899 1797 **Mobile:** 0409 393024

2 CAPABILITY AND EXPERIENCE - SHORT SUMMARY

Noel Child is a successful and experienced commercial and technical professional with over 30 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, safety, and general operational activities at a national level, while his formal professional training includes strategic management, environmental, engineering and business disciplines. He has undertaken a number of senior corporate appointments with distinction and been successfully involved in the ownership and operation of a major petroleum distribution and marketing company in regional Australia. More recently, working through his own businesses Environment Australia and NG Child & Associates, 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, both nationally and internationally.

Noel has had post-graduate training in several technical and commercial disciplines, and provides specialised teaching input, by invitation, to post graduate engineering and business management courses conducted by the Faculties of Business and Engineering at Sydney's University of Technology. He has strong affiliations with a number of international corporations and agencies and has worked closely with both the regulators and the regulated in a number of aspects of environmental management, assessment and performance. He has also been recognised as an independent expert on engineering, and 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 also provides 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

BE (Chemical Engineering), UNSW, Sydney
Master of Business Studies, University of New South Wales, Sydney
B.Sc. (Hons) Applied Chemistry (Environmental), University of Technology, Sydney
Graduate Diploma (Environmental Engineering and Management), UNSW, Sydney
Qualified Environmental Auditor, Standards Australia
Member, Royal Australian Chemical Institute, 1972/2021
Member, Institution of Engineers, Australia, 1972/2021
Member, Clean Air Society of Australia and New Zealand, 1992/2021
Member, Australian Natural Gas Vehicle Council, 1996/2004
Executive Director, Australasian Natural Gas Vehicles Council, 2003/2004
Visiting Fellow, Institute for Sustainable Futures, UTS, 1995/2002
Research Fellow, Faculty of Civil & Environmental Engineering, UTS, 1996/2012
Research Associate, New York Academy of Sciences, 2000/2014

4 RECENT ASSIGNMENTS & EXPERIENCE

Mostyn Copper (2016 – Current) – Assessment of air quality, acoustic, electromagnetic field and site contamination issues associated with a number of childcare centre projects undertaken by the Mostyn Copper Group and clients throughout the Sydney metropolitan area.

Mostyn Copper & the ATC (2017 – Current) – Environmental assessment of various aspects of the Coopers Paddock site near the ATC racecourse at Warwick Farm.

Boskovitz Lawyers & Ceerose Construction (2019 - Current) – Independent assessment of acoustic, air quality and electromagnetic field issues associated with a proposed childcare centre development at Willoughby Road Willoughby for submission to the NSW Land and Environment Court,

Lodestone HQ (1998 - Current) – Environmental assessment of proposed childcare centre development at the Princes Highway Kirrawee NSW, and several previous childcare centre developments over a twenty year period, including acoustic, electromagnetic field, air quality and site contamination considerations.

Government of the PRC & Thyssen Transrapid Australia (2004 - Current) – Adviser on technical and operational issues associated with the development and construction of a high-speed magnetic levitation train systems within the People's Republic of China, and elsewhere, including electrolysis, electromagnetic and stray field effects.

The Bathla Group (2014 - Current) – Environmental assessment of a number of residential development projects for submission to local government consent authorities, or the NSW Land and Environment Court, including acoustic, air quality, site contamination and environmental management issues.

Trumen Corporation (2006 - Current) – Environmental assessment, including electromagnetic field, acoustic and contamination assessment and certification, of mixed use, childcare centre and industrial unit and self-storage development projects throughout the Sydney metropolitan area.

Montessori Academy (2012 - Current) – Independent audit and assessment of acoustic, air quality and electromagnetic field issues associated with a range of childcare centre and early learning developments throughout the Sydney area, and in the ACT.

Archizen Architects (2003 - Current) – Environmental assessment of a range of proposed childcare centre developments throughout NSW, including general environmental, acoustic assessment, air quality and electromagnetic field assessment.

Dr James Smith SC (2018 – Current) – Provision of specialist advice and delivery of expert evidence regarding a number of cases, including acoustic, electromagnetic and site contamination issues.

Australian Consulting Architects (2010 – 2019) – Acoustic, electromagnetic, stray current and electrolysis assessments of development projects a Field Place Telopea; Windsor Road Vineyard; Camden Valley way Horningsea Park and others.

Futurespace/Renascent (2008 - 2018) – Environmental assessment of proposed childcare centre developments at Waterloo Road Macquarie Park and Cleveland Street Strawberry Hills, including general environmental, acoustic assessment, air quality and electromagnetic field assessment.

Commonwealth Bank (2016 – Current) – Environmental assessment, including general, acoustic, air quality, electromagnetic field and wind impact assessment, of a childcare centre development to be located on Level 2 of Darling Park Power 2, Sussex Street, Sydney.

LEDA Holdings – Environmental Assessment of a proposed childcare centre at 32 Cawarra Road Caringbah NSW, including general environmental, acoustic, air quality and electromagnetic field assessments.

Universal Property Group (Current) – Environmental assessment of a proposed multi building, multi-level residential development at Garfield Street, Wentworthville NSW, including general environmental, acoustic, site and soil contamination and preliminary geotechnical assessments.

Gundagai Meat Processors (Current) – Review and enhancement of solid and liquid waste processing and management systems at GMP's Gundagai abattoir, including the on-site treatment of waste streams from meat processing and other operations.

Campbelltown City Council (Current) – Peer review of acoustic assessments submitted to Campbelltown City Council regarding assessment of the acoustic impacts of developments including a major truck maintenance facility and the expansion of Macarthur Square shopping centre, including the conduct of noise measurements.

Brenchley Architects (2009 - Current) – Acoustic assessments of proposed residential and commercial developments at Elizabeth Street Sydney; Spit Road Mosman, Botany Road Waterloo, Cranbrook Street, Botany and Bellevue Hill Road, Bellevue Hill NSW.

Bovis Lend Lease (20010 -2017) – Environmental assessment of a major development site at Darling Walk, Darling Harbour NSW, including a detailed review of air quality, electromagnetic field and acoustic issues for review by the NSW Department of Planning.

Penrith City Council (2012 - 2016) – Preparation of the ongoing Penrith City Council response to the NSW Government Long Term Transport Plan, including consideration of transport and associated environmental issues affecting the Penrith Local Government Area.

Western Sydney Mayoral Forum (1998- 2015) – Environmental assessment and review of the development of a second Sydney airport at Badgerys Creek, including assessment of acoustic and electromagnetic field impacts.

Michael Bell Architects & Clients (2004 to Current) – Assessment of the environmental impacts, including acoustic impacts, associated with various childcare centre applications in suburban Sydney, and the Sydney CBD, including the development of plans for the management and control of such impacts.

NSW Roads & Traffic Authority (2004 to 2018) – Review of international technologies, systems & applications in relation to the treatment of motor vehicle exhaust emissions and associated air pollution within and discharged from road tunnels, in accordance with the conditions of approval for the M5 East Motorway

Federal Airports Corporation (1995 - 2017) – Environmental studies for the Sydney West Airport, including consideration of air quality, acoustic and electromagnetic and radio-frequency issues.

Isuzu-GM (2003 to 2018) – Representations to Environment Australia and the Department of Transport and regional Services regarding the emission performance standards of Japanese sourced medium and heavy natural gas trucks, with the aim of having the current Japanese emission standard accepted within the Australian design Rule 80 series of vehicle emission standards.

City of Sydney (2005 - 2007) – Assessment of air quality and odour issues associated with a proposed redevelopment of craft studios and associated facilities at Fox Studios, Moore Park, Sydney, and review of air quality monitoring stations in the Sydney CBD area, in part as a basis for monitoring the air quality and potential health cost impacts of transport congestion and modes.

Warren Centre for Advanced Engineering, University of Sydney (2000 to 2003) – Contribution to the report “Sustainable Transport for Sustainable Cities”, a major government and private enterprise funded study into the future sustainability of transport in Sydney and adjoining regions, including in particular a review of associated environmental issues. Study received the 2003 Bradfield Award for Engineering Excellence from the Australian Institute of Engineers.

United Kingdom Department of the Environment (1994) – Contribution to the development of revised environmental guidelines for air, soil and groundwater water quality.

United States Environmental Protection Agency (1994) - Contribution to an international team developing strategies for the control and management of air pollution in seven major US cities.

5 CORPORATE EXPERIENCE

NG Child & Associates

- ❑ **1992--Present**, Managing Principal - Responsible for all aspects of the conduct of a specialist private engineering and environmental consultancy, including administration, marketing, team coordination and technical and professional delivery.

Western Fuel Distributions Pty Limited, Australia

- ❑ **1984-92** Managing Principal. - Responsible for all aspects of the management and development of one of the largest private petroleum distributorships then operating in Australia, with a peak annual sales volume of 70 million litres, turnover of \$30 million per annum, a direct staff of thirty, and a network of some 40 retail and wholesale agency outlets. This position included direct personal accountability for all aspects of storage, distribution and environmental performance.

Caltex Oil Australia Limited

- ❑ **1982-84** General Manager, Marketing and Operations. Responsible for the management and operation of Caltex Australia's marketing, storage, warehousing, distribution, environmental and safety functions, including seaboard terminal and marine operations.
- ❑ **1980-82** National Consumer Marketing Manager. Responsible for Caltex Australia's national consumer, industrial and distributor marketing activities.

Golden Fleece Petroleum Limited

- ❑ **1977 - 1980** Manager Operations, NSW. Responsible for the overall management of the distribution, warehousing, seaboard terminal and lubricant production activities of Golden Fleece Petroleum in New South Wales, including environmental, occupational health and safety matters.

Esso Australia Limited

- ❑ **1976-77** SA Manager, Marketing and Operations. Responsible for all aspects of the management of Esso's petroleum, lubricant and LPG storage, distribution and marketing throughout South Australia.
- ❑ **1975-76** Refinery Manager. Responsible for all engineering, operational and environmental aspects of the joint Esso/Mobil refinery at Port Stanvac in South Australia.
- ❑ **1975** Manager, Process Operations, Port Dixon Refinery, Malaysia. Six-month special assignment at the Esso Petroleum Refinery, Port Dixon, Malaysia.
- ❑ **1971-75** Senior Analyst, Logistics and Corporate Strategy Departments, Esso Sydney Head office.

6 SOME REPORTS & PUBLICATIONS

- ❑ **High Speed Rail – Benefits for the Nation**, Keynote address at the UNSW Institute of Environmental and Urban Studies International High-Speed Rail Seminar, August 2018.
- ❑ **Electromagnetic Impact of Magnetic Levitation Trains**, Report to the Shanghai Municipal Transport Commission detailing constraints associated with electromagnetic field impacts, September 2017)
- ❑ **The M5 East Road Tunnel: Implications for Ventilation, Air Quality and Emission Treatment Systems**, International Road Transport and Tunneling Forum, Graz Austria, May 2016.
- ❑ **Sydney's High Residential Growth Areas: Averting the Risk of a Transportation Underclass**, World Transport & Environmental Forum, Reims France, June 2014.
- ❑ **Review of Options for the Treatment or "Filtration" of Tunnel Gases and Stack Emissions**, City of Sydney. January 2014
- ❑ **M5 East Freeway: A Review of Emission Treatment Technologies, Systems and Applications**, NSW RTA and NSW Department of Planning, April 2004; June 2008; September 2010)
- ❑ **High Speed Trains in Australia: Connecting Cities and Energising Regions**; with the Hon Peter Nixon AO, October 2010.
- ❑ **Transport Fuels in Australia: The Folly of Australia's Increasing Reliance on Imported Crude Oil**, Submission to the Australian Senate Rural and Regional Affairs and Transport Committee Inquiry into Australia's Future Oil Supply and Alternative Transport Fuels, February 2006.
- ❑ **The Japan 2003 CNG Emission Standard & the Emission Performance of the Isuzu 4HF-1-CNG: The Case for Acceptance under ADR80**. Submission on behalf of Isuzu GM Australia to the Commonwealth Department of Transport and Regional Services, June 2004.
- ❑ **Sustainable Transport for Sustainable Cities**, Warren Centre for Advanced Engineering, Sydney University, January 2003
- ❑ **Future Directions: Challenges & Opportunities in the Australian CNG Vehicle Industry**, ANGVC, December 2002
- ❑ **Engineering and Environmental Aspects of Enclosing the Cahill Expressway Cutting**, City of Sydney, May 2001.
- ❑ **High Speed Rail in Australia: Beyond 2000** (with the Hon Peter Nixon), November 2000
- ❑ **M5 East Motorway: Proposed Single Emission Stack at Turrella – Review of Air Quality Impacts and Consideration of Alternative Strategies**, Canterbury City Council, February 1999

7 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.
- ❑ Dr Jack Munday, Past Chairman Historic Houses Trust, Environmentalist
- ❑ Mr Stephen Lye, Development Manager, Trumen Corporation, Sydney.
- ❑ Mr Peter Han, Project Director, Commonwealth Bank, Sydney
- ❑ Mr Michael Bell, Principal, Michael Bell Architects, Sydney.
- ❑ Mr Graeme Allen, Director, the Bathla Group
- ❑ Mr Luke Johnson, General Manager, Wollondilly Shire Council
- ❑ Mr Bernie Clark, Chief Executive, Thyssen Australia
- ❑ Mr Bruce Glanville, former Managing Partner, Deloitte Canberra
- ❑ Alex Mitchell, Journalist



Noel G Child
16 May 2022

ATTACHMENT A
Client Reference List

Acre Woods Childcare Pty Ltd
Australian Commonwealth Environmental Protection Agency
Australian Consulting Architects
Australian Federal Airports Corporation
Australian Federal Department of Transport and Regional Development
Bovis Lend Lease
Brenchley Architects
Campbelltown City Council
Canterbury City Council, Sydney, NSW
Commonwealth Banking Corporation
Environment Protection Authority of NSW
Exxon Chemical
Fairfield City Council, Sydney, NSW
First Impressions Property
FreightCorp, Sydney, NSW
Futurespace
GM - Isuzu
Guangxi Environment Protection Bureau
Gundagai Meat Processors
Hong Kong Department of the Environment
Hornsby and Ku-ring-gai Councils, Sydney, NSW
John McCormack
Kaunitz Yeung Architecture
LEDA Holdings
Michael Bell Architects
Minter Ellison
Mobil Oil Australia Associated
NSW Roads & Traffic Authority
Ove Arup & Partners
Qantas Airways
Queensland Ports Corporation
Renascent
Salibeau Pty Ltd
Shell Australia
Sinclair Knight Merz
Skouras and Mabrokardatos
Southern Sydney Regional Organisation of Councils (SSROC)
State Rail Authority of NSW
Stephen Davidson Property Investments
Sydney Skips & Galaxy Waste
The City of Sydney
The Western Sydney Alliance of Mayors
Thyssen Krup Transrapid Australia
Tom Howard QC
Trumen Corporation
UK Department of the Environment
United States Environment Protection Agency
University of Technology, Sydney
Warren Centre for Advanced Engineering, University of Sydney
Waverley Council, Sydney, NSW
Western Sydney Parklands