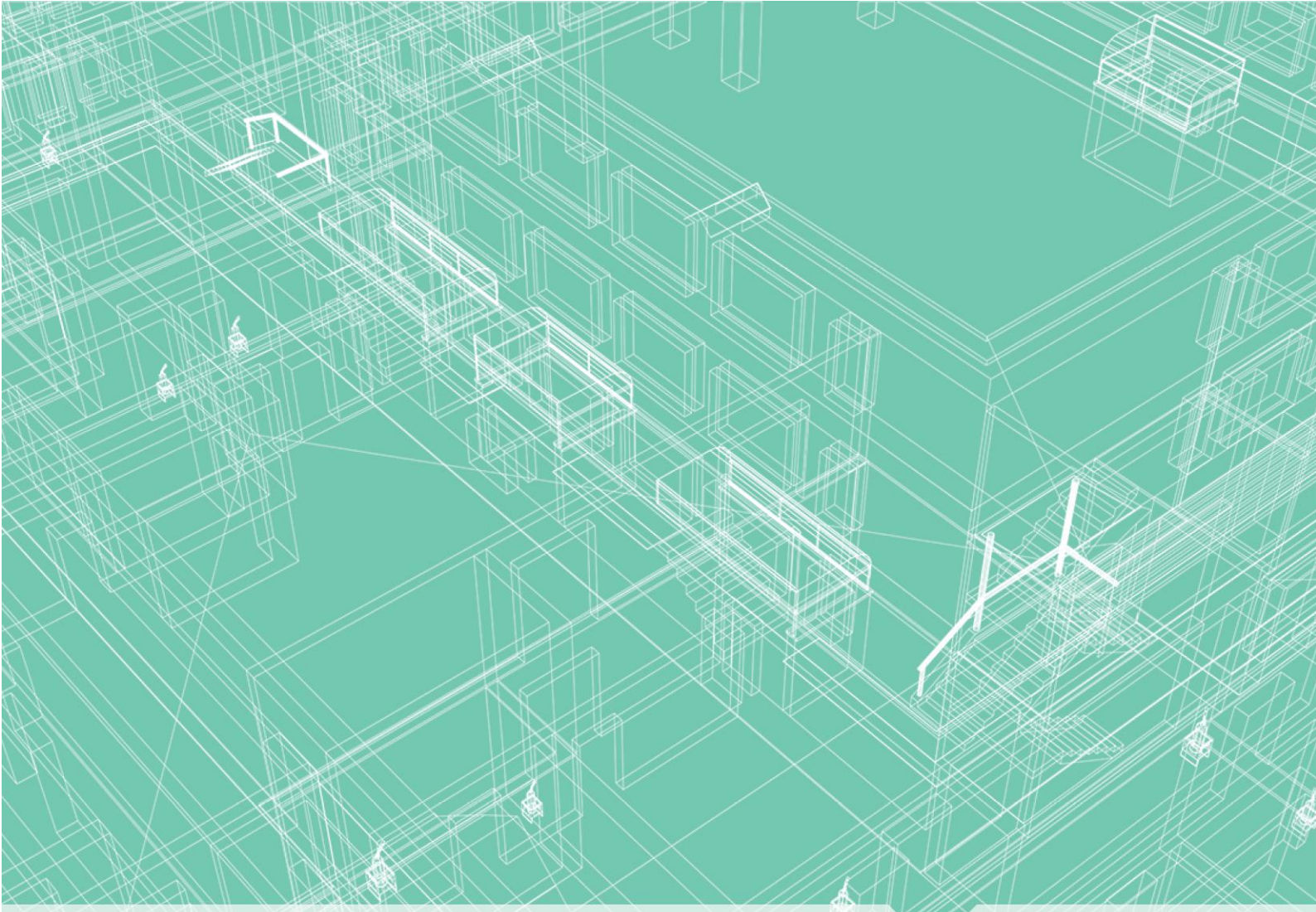

CONSTRUCTION NOISE AND VIBRATION MANAGEMENT PLAN

MOSMAN HIGH SCHOOL UPGRADE

ACOUSTIC SERVICES

JHA

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DOCUMENT CONTROL SHEET

Project Number	200453
Project Name	Mosman High School Upgrade
Description	Construction Noise and Vibration Management Plan
Main Contractor	Multiplex Constructions
Key Contact	Project Manager: Jade Nicholson. Senior Project Engineer: Christina Travers-Jones

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Revision History

Issued To	Revision and Date						
Multiplex Constructions	REV	A	B	C			
	DATE	29/10/2021	18/11/2021	26/11/2021			
	REV						
	DATE						

CONTENTS

1 INTRODUCTION

1.1 OVERVIEW

This Construction Noise and Vibration Management Plan (CNVMP) has been prepared by JHA Consulting Engineers on behalf of Multiplex Constructions for School Infrastructure NSW (SINSW) to address the Condition of Consent B19 of the State Significant Development Application (SSD-10456) for the proposed upgrade of the Mosman High School (the Proposal) located at 745 Military Road, Mosman.

Mosman High School has consent for a new building on the corner of Military and Belmont Roads with capacity for up to 1,200 students. The proposal will include demolition of existing buildings, new building works, associated core infrastructure, new outdoor play areas including roof top play space and associated landscaping works.

This document and related work have been prepared following JHA Consulting Engineers Quality and Environmental Management Systems, which are based on AS/NZS ISO 9001:2015 and ISO 14001:2015.

1.2 PURPOSE OF THE CNVMP

The purpose of this CNVMP is to ensure that noise and vibration impacts due to Construction activities are appropriately managed in accordance with relevant legislation and standards, plus protection of the nearby sensitive receivers. The objectives of this acoustic assessment are:

- Comply with the relevant Conditions of Consent as per SSD-10456.
- Identify noise sensitive receivers that will potentially be affected by the works.
- Determine existing ambient and background noise levels on site.
- Establish the appropriate noise level and vibration criteria in accordance with the relevant standards, guidelines and legislation.
- Determine whether the relevant criteria can be achieved based on assumed construction works and plant for the noise assessments. Where applicable, provide recommendations for any necessary acoustic control measures that will need to be incorporated into the development or use in order to ensure with the assessment criteria.
- Provide recommendations for Construction Noise and Vibration Planning.

This CNVMP identifies the Contractor's obligations and the requirements to manage noise and vibration during construction such that the necessary allowances within the construction costs, programmes and work methodologies can be made. Relevant legislation, guidelines and standards are identified in this CNVMP.

1.3 NOISE AND VIBRATION ISSUES

This CNVMP addresses all works from construction works associated with the proposed development. The construction works will contribute noise and vibration emissions to the surrounding environment. Typically, this will comprise of continuous and intermittent noise and vibration from on-site construction equipment and plant equipment.

Construction noise associated with the project may include airborne and ground-borne noise impacts as follows:

- Airborne Noise: Proposed construction works will generate noise that will propagate through the air. Airborne noise generated by external construction activities is likely to impact on surrounding sensitive receivers.
- Ground-borne noise and vibration impacts: Construction and piling works have the potential to generate noise and vibration that propagates through the ground and building structural elements which is then radiated by vibrating wall and floor surfaces of nearby sensitive receivers.

1.4 RESPONSIBILITIES

The Main Contractor must be responsible for ensuring that the noise and vibration from activities carried out on site are minimised as far as practical.

The Main Contractor is responsible for:

- Ensuring that any site noise and vibration plus any complaints, are monitored, investigated, managed and controlled in accordance with the recommendations provided in this plan.
- Ensuring procurement documents specify any particular requirements in relation to the management of noise and vibration.
- Ensuring all works are undertaken in accordance with the requirements of the contract documents and this plan.
- Ensuring all project personnel and sub-contractors employed are aware of their responsibilities in regard to the management of noise and vibration during construction and assume the responsibilities assigned to them within the plan.
- Monitoring and managing noise and vibration impacts on sensitive receivers, in accordance with the requirements of the relevant guidelines and standards.
- Consulting with the occupants of surrounding buildings to inform them of the nature of the construction works, to determine any specific noise and vibration sensitivity they may have and to negotiate respite times during noisier works.

2 DESCRIPTION OF THE PROPOSAL

2.1 SITE DETAILS

Mosman is a suburb of Sydney, in the Local Government Area of Mosman. The existing Mosman High School site is located at 745 Military Road, NSW 2088.

The site contains the existing Mosman High School and is currently surrounded by a mix of commercial, and residential receivers. The surrounding land uses are as follows:

- *North*: Immediately North of the site is currently a mix of residential, commercial, place of worship and active recreational noise receivers along Belmont and Military Roads.
- *East:* Land to the East is occupied by Military Road with a mix of commercial and residential properties.
- *South*: Land immediately to the South is occupied by commercial and residential receivers.
- *West*: Land to the West is occupied by largely residential development with a small commercial property.

Figure 1 shows the proposed development site (golden shadow) and surrounding noise sensitive receivers.

Figure 1: Proposed development and surrounding sensitive receivers.

2.2 NOISE SENSITIVE RECEIVER DETAILS

A summary of the nearest noise sensitive receivers, grouped into Noise Catchment Areas (NCA's), surrounding the site is shown in Table 1, including approximate distances from the site to the NCA's boundaries, noting also the type of receiver within the NCA's.

ID	*Sensitive Receiver*	*Receiver Type*	*Address*	*Approx. closest distance, m*
R1	Residential noise catchment	Residential	1 Belmont Rd	30
R2	Residential noise catchment	Residential	161 Avenue Rd	40
R3	Residential noise catchment	Residential	6 Gladstone Ave	35
C1	Commercial noise catchment	Commercial	15 Belmont Rd	60
C2	Commercial noise catchment	Commercial	743 Military Rd	20
C3	Commercial noise catchment	Commercial	771 Military Rd	15
C4	Commercial noise catchment	Commercial	130 Avenue Rd	20
M1	Residential noise catchment	Mixed-use	862 Military Rd	25
W1	Scots Kirk	Place of Worship	9 Belmont Rd	50

Table 1: Receivers surrounding the site and the approximate distances from boundaries.

It is noted that if noise and vibration impacts associated with the proposed development are controlled at the nearest sensitive receivers, then compliance with the recommended criteria at all noise sensitive receivers should be achieved.

3 SITE MEASUREMENTS

Attended and unattended noise surveys were conducted as per the WSP report[1] at the locations shown in Figure 2 in accordance with Australian Standard AS1055:2018. The noise survey locations were selected as they are representative of the noise levels at the nearby affected noise sensitive receivers described within this report. The noise surveys have been used to establish the noise assessment level criteria for the proposed development.

Figure 2: Noise surveys locations and boundary of the site.

On Thursday 5th December 2019, short-term noise measurements were undertaken during the day-time period. A summary of the results of the short-term noise monitoring are shown in Table 2.

ID	*Location*	*Date and Time*	*Parameter*	*Overall dB(A)*
M1	19 Keaston Avenue, Mosman	05/12/2019 2.24pm – 2.39pm	$L_{90,15min}$	39
			$L_{eq,15min}$	43
M2	Mosman High School Gladstone Avenue Boundary	05/12/2019 2.44pm – 2.59pm	$L_{90,15min}$	46
			$L_{eq,15min}$	54
M3	Mosman High School, Military Road Boundary	05/12/2019 3.03pm – 3.18pm	$L_{90,15min}$	61
			$L_{eq,15min}$	67
M4	40 Muston Street, Mosman	05/12/2019 3:36pm – 3:41pm	$L_{90,15min}$	41
			$L_{eq,15min}$	60

Table 2: Results of the short-term noise monitoring.

[1] WSP Mosman High School, Noise And Vibration Impact Assessment for SSDA, Rev 1, August 2020.

Long-term noise monitoring was carried out by from Friday 29th November to Thursday 5th December 2019.

The Rating Background Levels (RBLs) have been established in general accordance with the methodology described in the NSW NPI – i.e. 10th percentile background noise level (L_{A90}) for each period of each day of the ambient noise level. The median of these levels is then presented as the RBL for each assessment period.

These RBLs are shown in Table 3 together with the ambient noise levels (L_{Aeq}) measured for each period.

Location	*Rating Background Levels, dB(A)*			*L_{Aeq} Ambient Noise Levels, dB(A)*		
	Day 7am-6pm	*Evening 6pm-10pm*	*Night 10pm-7am*	*Day 7am-6pm*	*Evening 6pm-10pm*	*Night 10pm-7am*
L1	44	40	35	58	54	50
L2	58	51	36	66	64	61

Table 3: Results of the long-term noise monitoring.

4 NOISE AND VIBRATION CRITERIA

4.1 RELEVANT CODES AND STANDARDS

In preparing this CNVMP, the following documentation including legislation, codes, standards and guidelines have been considered:

- Regulatory Framework:
  - Environmental Planning and Assessment (EP&A) Act 1979.
  - Protection of the Environmental Operations (POEO) Act 1997.
- Construction Noise and Vibration:
  - Development Conditions of Consent (SSD-10465).
  - NSW Department of Environment and Climate Change (DECC) *'Interim Construction Noise Guideline'* (ICNG) 2009.
  - NSW DECC Assessing Vibration: A Technical Guideline 2006.
  - NSW Transport Roads & Maritime Services (RMS) *'Construction Noise and Vibration Guideline'* 2016.
  - Australian Standard AS 2436:2010 *'Acoustics – Guide to Noise Control on Construction, Maintenance & Demolition Sites'*.
  - British Standards Institution BS 6472:2008 *'Evaluation of human exposure to vibration in buildings (1 to 80 Hz)'*.
  - British Standards Institution BS 7385.2:1993 *'Evaluation and Measurement for Vibration in Buildings. Guide to Damage Levels from Ground-borne Vibration'*.

4.2 REGULATORY FRAMEWORK

4.2.1 ENVIRONMENTAL PLANNING AND ASSESSMENT (EP&A) ACT 1979

The Environmental Planning and Assessment Act 1979 (EP&A Act) provides the regulatory framework for the protection of the environment in NSW. The EP&A Act is relevantly about planning matters and ensuring that "environmental impact" associated with the proposed development is properly considered and reasonable before granting development consent to develop.

The assessment of "environmental impact" relies upon the identification of acceptable noise criteria which may be defined in a Development Control Plan, or derived from principles using guidelines like NSW EPA Noise Policy for Industry (NPI 2017) or Noise Guide for Local Government (NGLG 2013).

4.2.2 PROTECTION OF THE ENVIRONMENTAL OPERATIONS (POEO) ACT 1997

The Protection of the Environment Operations (POEO) Act 1997 has the objective to protect, restore and enhance the quality of the NSW environment. Abatement of noise pollution is underpinned by the definition of *"offensive noise"* as follows:

"...

(a) that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:

> *(i) is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or*

(ii) interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or

(b) that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances, prescribed by the regulations.

..."

Noise Guide for Local Government (NGLG) 2013, provides a consideration checklist to determine an *"offensive noise"*.

4.3 DEVELOPMENT CONDITIONS OF CONSENT (SSD-10465)

Clause B19 of the Development consent (SSD-10465) states the following:

"... The Construction Noise and Vibration Management Sub-Plan must address, but not be limited to, the following:

(a) be prepared by a suitably qualified and experienced noise expert;

(b) describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009);

(c) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;

(d) describe details of respite periods for noise generating works that exceed the 'highly noise affected' threshold and/or generate noise with annoying of intrusive characteristics as identified within the Interim Construction Noise Guideline (DECC, 2009).

(e) include strategies that have been developed with the community for managing high noise generating works;

(f) describe the community consultation undertaken to develop the strategies in condition B19(e);

(g) include a complaints management system that would be implemented for the duration of the construction; and

(h) include a program to monitor and report on the impacts and environmental performance of the development and the effectiveness of the implemented management measures in accordance with the requirements of condition B16. ..."

The development consent also defines construction hours (Clause C4, C5, C6, C7 and C8) and construction noise limits (Clause C13, C14, C15, C16, C17 and C18) for the project.

"... Construction Hours

C4. Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:

(a) between 7am and 6pm, Mondays to Fridays inclusive; and

(b) between 7:30am and 3:30pm, Saturdays.

No work may be carried out on Sundays or public holidays.

C5. Notwithstanding condition C4, provided noise levels do not exceed the existing background noise level plus 5dB, works may also be undertaken during the following hours:

(a) between 6pm and 7pm, Mondays to Fridays inclusive; and

(b) between 3:30pm and 4pm, Saturdays.

C6. Construction activities may be undertaken outside of the hours in condition C4 and C5 if required:

(a) by the Police or a public authority for the delivery of vehicles, plant or materials; or

(b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or

(c) where the works are inaudible at the nearest sensitive receivers; or

(d) where a variation is approved in advance in writing by the Planning Secretary or his nominee if appropriate justification is provided for the works.

C7. Notification of such construction activities as referenced in condition C6 must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

C8. Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

(a) 9am to 12pm, Monday to Friday;

(b) 2pm to 5pm Monday to Friday; and

(c) 9am to 12pm, Saturday. ..."

"... Construction Noise Limits

C13. The development must be constructed to achieve the construction noise management levels detailed in the Interim Construction Noise Guideline (DECC, 2009). All feasible and reasonable noise mitigation measures must be implemented and any activities that could exceed the construction noise management levels must be identified and managed in accordance with the management and mitigation measures identified in the approved Construction Noise and Vibration Management Plan.

C14. The Applicant must ensure construction vehicles (including concrete agitator trucks) do not arrive at the site or surrounding residential or commercial precincts outside of the construction hours of work outlined under condition C4.

C15. The Applicant must implement, where practicable and without compromising the safety of construction staff or members of the public, the use of 'quackers' to ensure noise impacts on surrounding noise sensitive receivers are minimised.

Vibration Criteria

C16. Vibration caused by construction at any residence or structure outside the site must be limited to:

(a) for structural damage, the latest version of DIN 4150-3 (1992-02) Structural vibration - Effects of vibration on structures (German Institute for Standardisation, 1999); and

(b) for human exposure, the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration: a technical guideline (DEC, 2006) (as may be updated or replaced from time to time).

C17. Vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in condition C16.

C18. The limits in conditions C16 and C17 apply unless otherwise outlined in a Construction Noise and Vibration Management Plan, approved as part of the CEMP required by condition B19 of this consent. ..."

4.4 NSW INTERIM CONSTRUCTION NOISE GUIDELINE

The noise criteria in this section are for guidance only and do not form part of any legal obligation on the part of the project proponent. However, compliance with these criteria is considered best practice.

The ICNG suggest construction noise management levels that may minimise the likelihood of annoyance being caused to noise sensitive residential receivers depending on the duration of works. The Noise Management Levels (NMLs) for long-term duration works are as follows for residential receivers:

Time of Day	*NML $L_{Aeq,15min}$*	*How to Apply*
ICNG Criteria for Recommended Standard Hours: Mon-Fri 7am-6pm Sat 8am-1pm No work on Sundays or public holidays	Noise affected: RBL + 10dB	The noise affected level represents the point above which there may be some community reaction to noise. ▪ Where predicted or measured $L_{Aeq,15min}$ is greater that the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. ▪ The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected: 75dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. ▪ Where noise is above this level, the relevant authority may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: 1. Times identified by the community when they are less sensitive to noise. 2. If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
ICNG Criteria for Outside Recommended Standard Hours *Refer to approved hours from the Consent Conditions*	Noise affected: RBL + 5dB	▪ A strong justification would typically be required for work outside the recommended standard hours. ▪ The proponent should apply all feasible and reasonable work practices to meet the noise affected level. ▪ Where all feasible and reasonable practices have been applied and noise is more than 5dB(A) above the noise affected level, the proponent should negotiate with the community.

Table 4: ICNG construction airborne noise criteria for residential receivers surrounding the construction site.

In order to establish the airborne construction noise criteria, noise levels from the unattended noise monitoring have been used for the noise sensitive receivers – refer to Section 3. Table 5 below summarises the airborne construction noise criteria for most affected noise sensitive receivers surrounding the development site.

Sensitive Receiver		*Airborne Construction Noise Criteria, L_{Aeq} dB(A)*	
		Within Standard Hours	*Outside Standard Hours*
Residential suburban (R3) *Mixed use (B4)*	Noise affected / External	68	63
	Highly noise affected / External	75	NA
Commercial		70 (when in use)	
Place of Worship		70[2] (when in use)	

Table 5: ICNG construction airborne noise criteria for noise sensitive receivers surrounding the site. Note 2: External noise criterion for Place of Worship has been estimated considering a minimum sound transmission loss of 25dB for fixed windows and a target internal noise level of 45dB(A).

The ICNG recommends internal ground-borne noise maximum levels at residences affected by nearby construction activities. Ground-borne noise is noise generated by vibration transmitted through the ground into a structure and can be more noticeable than airborne noise for some sensitive receivers. The ground-borne noise levels presented below from the ICNG are for residential receivers during evening and night-time periods only, as the objective is to protect the amenity and sleep of people when they are at home.

- Evening: $L_{Aeq,15min}$ 40dB(A) (internal)
- Night: $L_{Aeq,15min}$ 35dB(A) (internal)

The internal noise levels are assessed at the centre of the most affected habitable room. No assessments of ground borne noise are has been conducted as no out of hours work is proposed to occur during evening time and night time.

4.5 VIBRATION CRITERIA

There are two items that shall be considered in the assessment of vibration impacts from construction works. These include vibration impacts in terms of human comfort and building damage.

4.5.1 HUMAN COMFORT

The Department of Environment and Climate Change (DECC) developed the document *'Assessing Vibration: A Technical Guideline'* in February 2006 to assist in preventing people from exposure to excessive vibration levels within buildings. It is based on the guidelines contained in BS 6472.1:2008 *'Guide to evaluation of human exposure to vibration in buildings – Vibration sources other than blasting'*. The guideline does not however address vibration induced damage to structures or structure-borne noise effects.

Vibration and its associated effects are usually classified as follows:

- *Continuous vibration*. An uninterrupted vibration for a defined period. This type of vibration is assessed on the basis of weighted root-mean-squared (rms) acceleration values.
- *Impulsive vibration*. A vibration which has a rapid build up to a peak followed by a damped decay that may or may not involve several cycles of vibration (depending on the frequency and damping).
- *Intermittent vibration*. An interrupted periodic vibration of continuous or repeated periods of impulsive vibration, or continuous vibration that varies significantly in amplitude. This type of vibration is assessed on the basis of Vibration Dose Values (VDV).

Vibration criteria for continuous and impulsive vibration are presented in Table 6, in terms of vibration velocity levels. The values are assessed for the most critical frequency range (higher than 8 Hz assuming sinusoidal

motion). When assessing intermittent vibration comprising a number of events, it is recommended that the Vibration Dose Value (VDV) is used Table 7 shows the acceptable VDV values for intermittent vibration.

Receiver Type	*Time*	*RMS velocity, mm/s [dB ref 10^{-6}mm/s]*			
		Continuous Vibration		*Impulsive Vibration*	
		Preferred	*Maximum*	*Preferred*	*Maximum*
Residences	Day-time	0.20 [106 dB]	0.40 [112 dB]	6.00 [136 dB]	12.00 [142 dB]
	Night-time	0.14 [103 dB]	0.28 [109 dB]	2.00 [126 dB]	4.00 [132 dB]

Table 6: Continuous and impulsive vibration criteria applicable to the site. Note: Day-time is 07:00am to 10:00pm and night-time is 10:00pm to 07:00am.

Place	*Time*	*Vibration Dose Values, $m/s^{1.75}$*	
		Preferred	*Maximum*
Residences	Day-time	0.20	0.40
	Night-time	0.13	0.26

Table 7: Intermittent vibration criteria applicable to the site.

4.5.2 STRUCTURAL BUILDING DAMAGE

4.5.2.1 Structural Building Damage

Ground vibration from construction activities can damage surrounding buildings or structures. For unoccupied buildings, or during periods where the buildings are unoccupied, the vibration criteria for building damage suggested by German Standard DIN 4150.3:2016 *'Structural Vibration – Effects of Vibration on Structures'* and British Standard BS 7385.2:1993 *'Evaluation and Measurement for Vibration in Buildings'* are to be adopted. Guideline values from DIN 4150.3:2016 and BS 7385.2:1993 are presented in Table 8 and Table 9 respectively.

Structural type	*RMS velocity, mm/s*			
	Foundation			*Plane of floor uppermost full storey*
	Less than 10Hz	*10 to 50Hz*	*50 to 100Hz*	*Frequency mixture*
Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15

Table 8: DIN 4150.3:2016 Guideline values of vibration velocity for evaluating the effects of short-term vibration.

Structural type	*Peak particle velocity, mm/s*	
	4 to 15Hz	*15Hz and above*
Unreinforced or light framed structures Residential or light commercial type buildings	15mm/s @ 4Hz increasing to 20mm/s @ 15Hz	20mm/s @ 15Hz increasing to 50mm/s @ 40Hz and above

Table 9: BS 7385.2:1993 Guideline values of vibration velocity for evaluating cosmetic damage.

5 CONSTRUCTION ACTIVITIES

Multiplex has been engaged as the main Contractor for the proposed works. A construction noise and vibration assessment has been carried out based on information supplied by the Contractor which includes construction phases and construction plant associated. The Contractor will be responsible for preparing a Construction Works Plan and Schedule which include all relevant noise and vibration information.

5.1 DESCRIPTION OF WORKS

The stages of work as provided by the Contractor that have been assessed, and which construction activities will occur during those stages are as follows:

- Phase 1: Demolition.
- Phase 1A: Excavation and piling.
- Phase 2: Structure.
- Phase 3: Façade.
- Phase 3A: Fitout.
- Phase 4: Landscaping.

5.2 PROPOSED CONSTRUCTION WORKING HOURS

Section 4.3 of this report contains the constructions hours defines in the development conditions of consent.

5.3 TYPICAL EQUIPMENT AND NOISE LEVELS

In accordance with the information provided and to assess the potential noise and vibration impacts during works from a quantitative point of view, the construction noise sources for the works occurring during the project and the associated equipment noise levels are listed in Table 10.

Sound power levels are based on the databases published by Australian Standard 2436:2010 *'Guide to Noise Control on Construction, Maintenance & Demolition Sites'*, Roads and Maritime Services '*Construction Noise and Vibration Guideline*' and the UK Department for Environmental, Food and Rural Affairs (DEFRA).

Stage of works	*Item*	*Typical Sound Power Level L_{WAeq} (dB ref 1pW)*	*Typical Sound Pressure Level L_{Aeq} at 10m (dB ref 20μPa)*
Demolition	Excavator	107	79
	Concrete Saw	117	89
	Excavator with hammer	122	94
	Truck (Dump)	117	89
Excavation and piling	Bored Piling Rig	111	83
	Excavator	107	79
	Truck (Dump)	117	89
Structure	Tower Crane	105	77
	Truck	107	79
	Concrete Pump	108	80
	Concrete Agitator	109	76
	Hand tools (Electric)	102	74
Façade and Fit-out	Tower Crane	105	77
	Materials hoist	107	79
	Truck	107	79
	Hand tools (Electric)	102	74
Landscaping and Make-good	Excavator	107	79
	Concrete Saw	117	89
	Excavator with hammer	122	94
	Concrete Pump	108	80
	Concrete Agitator	109	76
	Truck	107	79

Table 10: Anticipated maximum airborne noise levels for construction plant used during the different stages of the works.

6 CONSTRUCTION NOISE AND VIBRATION ASSESSMENT

A construction noise and vibration assessment has been carried out based on the proposed plant and machinery throughout the works associated with the stages as per Section 5.

6.1 ASSESSMENT METHODOLOGY

An assessment of the likely noise and vibration impacts of the assumed stage of works on the most affected NCA's surrounding the site has been carried out. The assessment has considered the following:

- Construction activities considered in the noise impact are detailed in Section 5.1.
- Proposed construction hours as per Section 5.2.
- Typical noise source levels considered in the noise impact are detailed in Section 5.3.
- Project specific noise and vibration criteria at sensitive receivers as outlined in Section 4.
- A 2.4m high solid hoarding shall be installed on the eastern boundary along Military Rd and 2m high solid hoarding on the other boundaries – refer to Figure 3.
- The predictions consider continuous operation of the construction plant over the 15-minute assessment period plus a range of distances from the site boundaries.

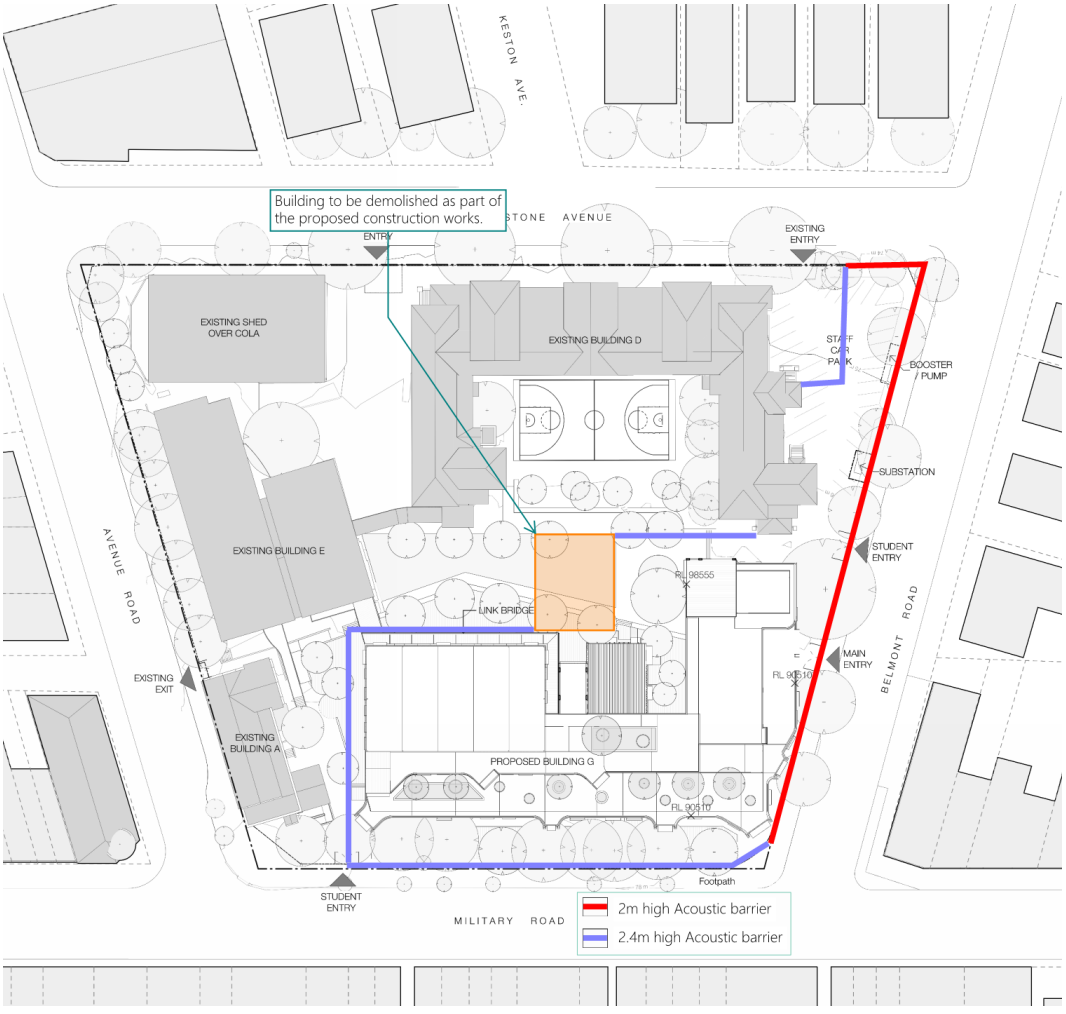


Figure 3: Site with proposed location and extent of acoustic barrier (red and purple outline).

In order to assess noise impact from the site during construction, a noise model was prepared to represent 'reasonable' worst periods of construction activities. Noise emissions from the construction of the proposed development have been modelled in SoundPLAN v8 software. The assumptions that were made within the assessment include the following:

- Hoarding.
- Ground topography.
- Noise modelling has been conducted using an implementation of the ISO 9613.2:1996 *'Acoustics - Attenuation of sound during propagation outdoors'*.
- Height of the noise receiver at 1.5m above ground level.
- Ground absorption (0.10 paved surfaces and 0.60 vegetation).
- Atmospheric propagation conditions were modelled with neutral conditions.
- Construction noise sources (listed in Table 10) spread around the construction site.

The predicted noise levels at the surrounding sensitive receivers have been based on the assumptions and aforementioned sound power levels of the equipment. The results of the predicted noise levels are presented in the following Sections and Appendix A. Figure 4 shows a render of the 3D noise model used for the noise level predictions.

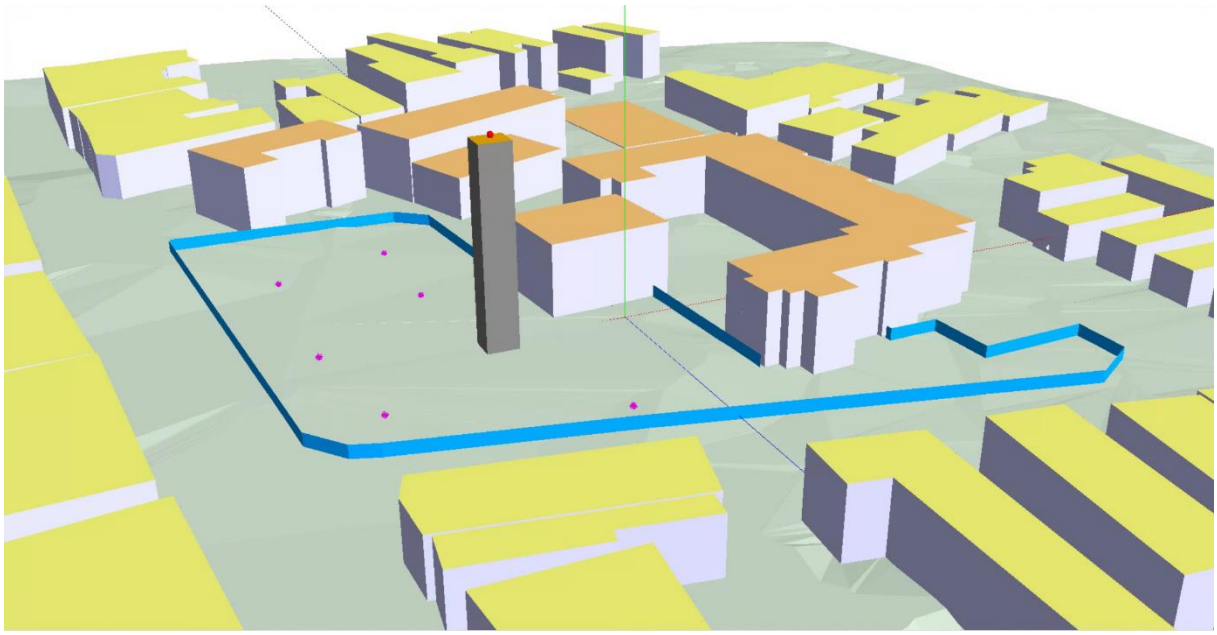


Figure 4: 3D noise model of the construction site and surrounding receivers.

It should be noted that the predicted noise levels generated during the construction works may vary depending on many factors including:

- Final selection of plant and equipment which could differ from the plant presented in Table 10.
- Exact location of equipment and plant on site – relative to the noise sensitive receivers.
- Shielding of noise provided by hoardings on site.
- Reflections provided by existing structures on and around the site.

6.2 NOISE ASSESSMENT

The predicted noise levels for the stages of work detailed in Table 10 are presented in the following Sections. These predicted noise levels are typically representative of the worst case 15 minutes that it would be expected. The predicted noise levels at receiver locations are calculated to 1.5m above ground level, at the most affected point externally to each receiver that has been identified as the most affected.

The ICNG requires, and it is usual practice, to predict the reasonable worst-case noise level. For construction-type activities this will typically be when plant is operating close to an assessment location. However, it shall be considered that on larger construction sites (such as this one) where plant moves around, noise will not be at the reasonable worst-case noise level throughout the entire duration of the activity: it will be lower when the plant is further away. Therefore, it can be stated that noise levels will be lower at times throughout the construction activity.

6.2.1 PHASE 1: DEMOLITION

Table 11 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed demolition works. Allowances have been made for distance attenuation, shielding and reflections.

Item	*Typical Noise Level L_{WA} dB*	*Predicted Noise Levels $L_{Aeq,15min}$, dB(A) (re. 20µPa)*							
		Residential Receivers			*Other Receivers*				
		R1	*R2*	*R3*	*C1/W1*	*C2*	*C3*	*C4*	*M1*
Excavator	107	41	38	52	31	44	48	39	40
Excavator with hammer	122	64	50	56	49	50	70	50	65
Truck (Dump)	117	67	40	52	60	66	49	43	52
Concrete Saw	117	46	51	68	44	52	64	49	49
Total		71	54	68	62	68	71	54	66

Table 11: Predicted airborne noise levels for the proposed demolition at the nearest noise receivers.

Results show that predicted construction noise levels are expected to exceed the NMLs (orange font) for NCA's R1 and C3 when works will be carried out in proximity of the boundaries close to the receivers. The predicted exceedance of the NMLs in the surrounding receivers will trigger the contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

6.2.2 PHASE 1A: EXCAVATION AND PILING

Table 12 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed excavation and piling works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$, dB(A) (re. 20µPa)							
		Residential Receivers			Other Receivers				
		R1	R2	R3	C1/W1	C2	C3	C4	M1
Truck (Dump)	117	66	47	55	58	67	55	43	63
Excavator	107	50	33	49	40	52	42	33	52
Bored Piling Rig	111	55	41	49	45	59	49	39	60
Total		69	49	56	v	70	58	46	67

Table 12: Predicted airborne noise levels for the proposed excavation and piling works at the nearest noise receivers.

Results show that predicted construction noise levels are expected to meet the NMLs for all receivers; however, exceedances are expected when noisy construction activities will take place close to the residential receivers. These expected exceedances of the NMLs in the surrounding receivers will trigger the Contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

6.2.3 PHASE 2: STRUCTURE

Table 13 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed structure works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$, dB(A) (re. 20µPa)							
		Residential Receivers			Other Receivers				
		R1	R2	R3	C1/W1	C2	C3	C4	M1
Truck	107	58	31	42	49	57	47	33	53
Concrete Pump	108	55	34	37	48	61	49	31	56
Concrete Agitator	109	55	39	49	50	59	51	34	60
Hand tools (Electric)	102	45	33	41	34	49	42	29	49
Tower Crane	105	49	41	39	44	49	42	42	48
Total		61	44	51	54	65	55	44	63

Table 13: Predicted airborne noise levels for the proposed structure works at the nearest noise receivers.

Results show that predicted structure construction noise levels are expected to meet the NMLs for all receivers.

6.2.4 PHASE 3: FAÇADE

Table 14 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed façade works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$, dB(A) (re. 20µPa)							
		Residential Receivers			Other Receivers				
		R1	R2	R3	C1/W1	C2	C3	C4	M1
Truck	107	57	34	42	49	57	47	35	53
Hand tools (Electric)	102	45	33	41	34	49	41	29	49
Materials hoist	107	56	40	49	51	61	51	33	60
Tower Crane	105	49	41	39	44	49	42	42	48
Total		60	44	51	53	63	54	44	62

Table 14: Predicted airborne noise levels for the proposed façade works at the nearest noise receivers.

Results show that predicted façade construction noise levels are expected to meet the NMLs for all receivers.

6.2.5 PHASE 3A: FITOUT

Table 15 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed fitout works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$, dB(A) (re. 20µPa)							
		Residential Receivers			Other Receivers				
		R1	R2	R3	C1/W1	C2	C3	C4	M1
Truck	107	57	36	42	49	57	47	35	53
Hand tools (Electric)	102	45	33	44	34	49	42	30	49
Materials hoist	107	56	40	49	51	61	51	33	60
Tower Crane	105	49	41	39	44	49	42	42	48
Total		60	45	52	53	63	53	44	62

Table 15: Predicted airborne noise levels for the proposed fitout works at the nearest noise receivers.

Results show that predicted fitout construction noise levels are expected to meet the NMLs for all receivers.

6.2.6 PHASE 4: LANDSCAPING AND MAKE-GOOD

Table 16 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed landscaping works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$, dB(A) (re. 20µPa)							
		Residential Receivers			Other Receivers				
		R1	R2	R3	C1/W1	C2	C3	C4	M1
Truck	107	66	39	66	66	60	37	58	40
Hand tools (Electric)	102	52	34	52	52	46	31	39	34
Concrete Pump	108	45	48	44	37	35	38	40	35
Concrete Agitator	109	38	50	50	36	36	38	39	36
Excavator with hammer	122	49	50	68	47	47	51	51	49
Concrete Saw	117	48	50	63	50	47	51	51	48
Total		66	56	70	67	61	54	59	52

Table 16: Predicted airborne noise levels for the proposed landscaping works at the nearest noise receivers.

Results show that predicted construction noise levels are expected to exceed the NMLs (orange font) for NCA's R2 and R3 when works will be carried out in proximity of the boundaries close to the receivers. The predicted exceedance of the NMLs in the surrounding receivers will trigger the contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

6.3 VIBRATION ASSESSMENT

The vibration intensive plant used during the construction works may impact in adjacent sensitive receivers. In order to assess the construction vibration impact due to heavy construction plant, the NSW RMS *'Construction Noise and Vibration Guideline'* provides safe working distances for vibration intensive plant and are quoted for both 'cosmetic' damage (in accordance with BS 7385.2:1993) and human comfort (in accordance with DEC's *'Assessing Vibration: A Technical Guideline'*). The recommended safe working distances are provided in Table 17.

Plant Item	*Description*	*Cosmetic Damage*	*Human Response*
Vibratory Roller	200 kN (Typically 4-6 tonnes)	12m	40m
	300 kN (Typically 7-13 tonnes)	15m	100m
Medium Hydraulic Hammer	12–18 t excavator	7m	23m
Large Hydraulic Hammer	18-34 t excavator	22m	73m

Table 17: Recommended minimum working distances for vibration intensive plant from sensitive receivers.

The minimum working distances are indicative and will vary depending on the particular item of plant and local geotechnical conditions. They apply to cosmetic damage of typical buildings under typical geotechnical conditions. The construction methods are to be reviewed to ensure the safe working distances are achieved.

All work, particularly piling, is to be conducted in accordance with the safe working distances. Where sheet piling is within 20m of a building, vibratory piling should be considered, and attended vibration measurements conducted in order to verify levels.

In relation to human comfort (response), the minimum working distances in Table 17 relate to intermittent vibration (VDV parameter) as for most construction activities, vibration emissions are intermittent in nature. Where the predicted vibration levels will exceed the human comfort objectives, the procedures in Section 7.3.2 are to be followed in order to mitigate the potential impacts at sensitive receivers.

If the contractor has concerns for the disruptions at the nearest sensitive receivers due to vibration intensive plant use, it is recommended that prior to the commencement of the works, to undertake a preliminary vibration survey on each key vibration generating activity / equipment.

7 NOISE AND VIBRATION CONTROL RECOMMENDATIONS

This section of the Construction Noise and Vibration Planning provides general recommendations only and provides applicable criteria together with best noise and vibration control practices to be observed during the proposed works.

Any noise from construction activities to be carried out on site must not result in *'offensive noise'* to any noise sensitive receiver. To this end, the Contractor employed to undertake the construction works is responsible for ensuring that any site noise and, in particular, any complaints shall be monitored, investigated, managed and controlled.

7.1 ACOUSTIC SCREENING

Acoustic screening is recommended during all phases of the construction work at the locations shown in Figure 3, except for the internal works. The acoustic screening should be 2m high along the Belmont Rd and 2.4m high along the Military Rd. The acoustic screen shall be Class A hoarding or equivalent and constructed from minimum 19mm thick plywood.

7.2 RESPITE PERIODS

Respite periods are defined by the development conditions of consent – refer to Section 4.3. They should generally be implemented into the work methodology in order to reduce the impact onto the surrounding NCA's, as detailed in Section 7.7. High noise generating activities such as rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

- 9:00am to 12:00pm, Monday to Friday;
- 2:00pm to 5:00pm Monday to Friday; and
- 9:00am to 12:00pm, Saturday.
- Rock breaking, excavation and piling should not occur for more than 3 hours continuously, with at least a 1 hour respite period in between.

7.3 GENERAL CONTROLS FOR NOISE AND VIBRATION

According to ICNG and AS2436:2010 *'Guide to Noise Control on Construction, Maintenance & Demolition Sites'*, the following techniques could be applied to minimize the spread of noise and vibration to the nearest sensitive receivers.

7.3.1 NOISE

If a process that generates significant noise levels cannot be avoided, the amount of noise reaching the receiver should be minimised. Two ways of achieving this are to either increase the distance between the noise source and the receiver or to introduce noise reduction measures such as screens.

Physical methods to reduce the transmission of noise between the site works and residences, or other sensitive land uses, are generally suited to works where there is longer-term exposure to the noise. Generic practices that will reduce noise from the site include:

- Increasing the distance between noise sources and sensitive receivers.
- Reducing the line-of-sight noise transmission to residences or other sensitive land uses.
- Constructing barriers that are part of the project design early in the project to introduce the mitigation of site noise.

- Installing purpose built noise barriers and enclosures.

7.3.2 VIBRATION

Vibration can be more difficult to control than noise, and there are few generalizations that can be made about its control. It should be kept in mind that vibration may cause disturbance by causing structures to vibrate and radiate noise in addition to perceptible movement. Impulsive vibration can, in some cases, provide a trigger mechanism that could result in the failure of building components that had previously been in a stable state.

During the erection of the new structure, some vibrations (transmitted through the existing structures nearby the demolition sites) are expected, being more of a concern for the surrounding sensitive receivers.

It can also trigger annoyance being elevated into action by occupants of exposed buildings, and should therefore be included in the planning of communication with impacted communities. It should be remembered that failures, sometimes catastrophic, can occur as a result of conditions not directly connected with the transmission of vibrations, e.g. the removal of supports from retaining structures to facilitate site access.

Where site activities may affect existing structures, a thorough engineering appraisal should be made at the planning stage.

General principles of seeking minimal vibration at receiving structures should be followed in the first instance. Predictions of vibration levels likely to occur at sensitive receivers are recommended when they are relatively close, depending on the magnitude of the source of the vibration or the distance associated. Relatively simple prediction methods are available in texts, codes of practice or other standards, however it is preferable to measure and assess site transmission and propagation characteristics between source and receiver locations.

Guidance for measures available for the mitigation of vibration transmitted can be sought in more detailed standards, such as BS5228.2:2009+A1:2014 *'Code of practice for noise and vibration control on construction and open sites. Vibration'* or policy documents, such as the NSW DEC *'Assessing Vibration: A technical guideline'*.

Identifying the strategy best suited to the control of vibration follows a similar approach to that of noise avoidance, control at the source, control along the propagation path, control at the receiver, or a combination of these. It is noted that vibration sources can include stationary plants (pumps and compressors), portable plants (jackhammers and pavement vibrators), mobile plants, pile-drivers, tunneling machines and activities, and blasting, amongst others. Unusual ground conditions, such as a high water-table, can also cause a difference to expected or predicted results, especially when considering the noise propagated from piling.

7.4 UNIVERSAL WORK PRACTICES

To minimise construction noise complaints due to preventable activities at any time of the day, the following work practices shall be considered:

- Regularly train workers and contractors (such as a toolbox talks) to use equipment in ways to minimise noise.
- Ensure site managers periodically check the site and nearby residences and other sensitive land use for noise problems so that solutions can be quickly applied.

- Include in tenders, employment contracts, subcontractor agreements and work method statements clauses that require minimisation of noise and compliance with directions from management to minimise noise.
- Avoid the use of radios or stereos outdoors where neighbours can be affected.
- Avoid shouting, and minimise talking loudly and slamming vehicle doors.
- Keep truck drivers informed of designated vehicle routes, parking locations, acceptable delivery hours or other relevant practices.
- Develop a one-page summary of approval or consent conditions that relate to relevant work practices, and pin it to a noticeboard so that all site operators can quickly reference noise information.
- Workers may at times need to discuss or negotiate practices with their managers.

For work practices during night-time, the following shall be considered:

- Avoid the use of equipment which generates impulsive noise.
- Minimise the need for reversing or movement alarms.
- Avoid dropping materials from a height.
- Avoid metal-to-metal contact on equipment.
- Schedule truck movements to avoid residential streets if possible.
- Avoid mobile plant clustering near residences and other sensitive land uses.
- Ensure periods of respite are provided in the case of unavoidable maximum noise level events.

7.5 CONSULTATION AND NOTIFICATION

The community is more likely to be understanding and accepting of noise if the information provided is frank, does not attempt to understate the likely noise level, and if commitments are firmly adhered to. Community Consultation shall be as per EIS requirements and this has been addressed before the preparation of this CNVMP.

Recommended actions before and during construction are as per the endorsed Community Consultation Document – refer to Appendix B.

7.6 MANAGING NOISE LEVELS AND MAINTENANCE PROGRAM FOR PLANT AND EQUIPMENT

In terms of both cost and results, controlling noise at the source is one of the most effective methods of minimising the noise impacts from any construction activities. Recommendations for managing noise levels from plant and equipment are as follows:

- Use quieter methods:
  - Examine and implement, where feasible and reasonable, alternatives to rock-breaking work methods, such as hydraulic splitters for rock and concrete, hydraulic jaw crushers, chemical rock and concrete splitting, and controlled blasting such as penetrating cone fracture. The suitability of alternative methods should be considered on a case-by-case basis.
  - Use alternatives to diesel and petrol engines and pneumatic units, such as hydraulic or electric controlled units where feasible and reasonable. Where there is no electricity supply, use an electrical generator located away from residences.

- Use quieter equipment:
  - Examine different types of machines that perform the same function and compare the noise level data to select the least noisy machine. For example, rubber wheeled tractors can be less noisy than steel tracked tractors.
  - Noise labels are required by NSW legislation for pavement breakers, mobile compressors, chainsaws and mobile garbage compactors. These noise labels can be used to assist in selecting less noisy plant.
  - Pneumatic equipment is traditionally a problem – select super silenced compressors, silenced jackhammers and damped bits where possible.
  - When renting, select quieter items of plant and equipment where feasible and reasonable.
  - When purchasing, select, where feasible and reasonable, the most effective mufflers, enclosures and low-noise tool bits and blades. Always seek the manufacturer's advice before making modifications to plant to reduce noise.
- Operate plant in a quiet and efficient manner:
  - Reduce throttle setting and turn off equipment when not being used.
  - Examine and implement, where feasible and reasonable, the option of reducing noise from metal chutes and bins by placing damping material in the bin.

The Contractor shall prepare and implement a regular plant and equipment use and maintenance program. This is to ensure that 'noisy' equipment or tools are not used. This program should ensure that the contractor will:

- Regularly inspect and maintain equipment to ensure it is in good working order. Also check the condition of mufflers.
- Equipment must not be operated until it is maintained or repaired, where maintenance or repair would address the annoying character of noise identified.
- For machines with enclosures, check that doors and door seals are in good working order and that the doors close properly against the seals.
- Return any hired equipment that is causing noise that is not typical for the equipment – the increased noise may indicate the need for repair.
- Ensure air lines on pneumatic equipment do not leak.

7.7 WORKS TIMING RESTRICTIONS AND SCHEDULING

Works should be carried out during periods specified by the approved Construction Hours. Scheduling noisy work during periods when people are least affected reduces noise impact on those. Recommendations for work scheduling are as follows:

- Provide respite periods.
- Schedule activities to minimise noise impacts:
  - Organise work to be undertaken during the recommended standard hours where possible.
  - When works outside the recommended standard hours are planned, avoid scheduling on Sundays or public holidays.
  - Schedule work when neighbours are not present (for example, commercial neighbours).

- Schedule noisy activities around times of high background noise (local road traffic or when other local noise sources are active) where possible to provide masking or to reduce the amount that the construction noise intrudes above the background.
- Consult with affected neighbours about scheduling activities to minimise noise impacts.

- Organise deliveries and access:
  - Nominate an off-site truck parking area, away from residences, for trucks arriving prior to gates opening.
  - Amalgamated loads can lead to less noise and congestion in nearby streets.
  - Optimise the number of vehicle trips to and from the site – movements can be organised to amalgamate loads rather than using a number of vehicles with smaller loads.
  - Inform, and consult where possible, the potentially noise-affected residences or other sensitive land uses of designated access routes to and from site, and make drivers aware of nominated vehicle routes.
  - Schedule deliveries to nominated hours only.

7.8 ADDITIONAL NOISE AND VIBRATION CONTROLS

There will likely be times or situations when construction works exceed the stated criteria at the nearest receivers, particularly when works occur in the areas closer to the receiver(s). Therefore, all feasible and reasonable noise control measures should be considered.

If, during construction, an item of equipment exceeds either the noise criteria at any location or the equipment noise level limits, the following noise control measures, together with construction best practices presented in this Section shall be considered to minimise the noise and vibration impacts of the project on the surrounding noise sensitive receivers:

- Schedule noisy activities to occur outside of the most sensitive times of the day for each nominated receiver. For example, the residential receivers are likely to be more sensitive to noise before 8am and after 6pm.
- Consider implementing equipment specific temporary screening for noisy equipment, or other noise control measures recommended in Appendix C of AS2436:2010. This will most likely apply to noisier hand-held items such as jack-hammers and circular saws.
- Locate specific activities such as carpentry areas (use of circular saws, etc.) to internal spaces or where shielding is provided by existing structures or temporary screening.
- Limit the number of trucks and heavy vehicles on site at any given time through scheduling deliveries at differing times.
- Traffic rules should be prepared to minimise the noise impact on the community.
- When loading and unloading trucks, adopt best practice noise management strategies to avoid materials being dropped from height.
- Avoid unnecessary idling of trucks and equipment. Vehicles and equipment to be turned off when not in use.
- Ensure that any miscellaneous equipment (extraction fans, hand tools, etc.) not specifically identified in this plan incorporates silencing/shielding equipment as required to meet the noise criteria.

If the measured construction vibration levels exceed the appropriate criteria during the works, one or more of the following measures should be taken:

- Modifications to construction equipment used.
- Modifications to methods of construction.
- Rescheduling of activities to less sensitive times.

If the measures given cannot be implemented or have no effect on noise or vibration levels or impact generated, a review of the criteria should be undertaken and the noise and vibration strategy amended.

7.9 MONITORING PROGRAM

Where noise and vibration criteria are being exceeded or in response to valid complaints, noise and/or vibration monitoring should be undertaken. This would be performed inside the premises of the affected property and on site adjacent to the affected receivers.

Monitoring is to be undertaken by an experienced noise and vibration monitoring professional or an acoustic consultant. The results of any noise or vibration monitoring are to be provided to the relevant party or person in a timely manner allowing the builder to address the issue and respond to the complaints.

Noise and vibration monitoring can take two forms:

- Short-term monitoring: Short-term monitoring consists of attended monitoring when critical stages of the construction are occurring. This normally provides real-time assistance and guidance to the sub-contractor on site letting them know when the noise and vibration criteria are exceeded allowing the selection of alternative method on construction or equipment selection in order to minimise noise and vibration impacts.
- Long-term monitoring: Similarly long-term monitoring uses noise and vibration loggers providing real-time alerts to the builder / site manager when the noise and vibration criteria are exceeded. Typically, the noise and vibration loggers stay on site for a period of several months for the critical construction stages of the project. Sometimes the period of construction noise and vibration monitoring is dictated by the local authorities through the Conditions of Consent if applicable.

Both methodology are complementary and normally used simultaneously providing a significant of amount of data via the long-term monitoring but also providing information on the sources of noise and vibration generating exceedances via the short-term or attended monitoring.

The following may be included in a noise monitoring report:

- The type of monitoring conducted (for example, at a particular project stage or following complaints) and a brief statement of the measurement method.
- The noise / vibration conditions on the consent / licence, or the relevant noise management objectives.
- Descriptions of the nearest affected residences and other sensitive land uses or, in the case of complaints, description of the complainant location and complaint.
- Plan or diagram showing the location of the monitoring and the noise generating works.
- Description of the instrumentation used.
- Name and relevant qualifications or professional memberships of monitoring personnel.
- The weather conditions during monitoring.
- The time(s) and duration(s) of monitoring, including dates – in the case of complaints.
- A clear description of the construction activities taking place during the monitoring.

- The results of monitoring at each monitoring location, including a comparison with the consent conditions or relevant noise management objectives.
- A clear statement outlining the project's compliance or non-compliance with the conditions or objectives.
- Where the monitored level is higher than the conditions or objectives, the reasons for non-compliance should be stated, strategies for minimising noise identified and stated, and the appropriate actions to implement the strategies.

7.10 WORKERS' TRAINING AND AWARENESS

The Contractor shall provide all project personnel and subcontractors with training on the environmental obligations through project inductions, toolbox talks, and through Safety Works Methods (SWMs).

All Project work personnel and subcontractors shall undergo a general project induction prior to commencing work. This should include a noise component to reinforce the importance of noise issues and the measures that will be implemented to protect the environment.

All inductions shall be carried out by the site manager, or his designate in the site office as appropriate. During the induction, each contractor / worker shall be taken around the site to ensure they are fully aware of the exclusion zones and site specific environment.

Site inductions and daily SWMs and toolbox talks will highlight the specific environmental requirements and activities being undertaken at each work area which will include relevant noise management matters.

7.11 OCCUPATIONAL HEALTH AND SAFETY

In addition to potential noise and vibration impacts on the community and structures, construction noise and vibration can also have an adverse impact upon the health of workers. It is important that Contractors adopt noise management strategies to prevent or minimise worker exposure to excessive noise and vibration. Such measures will also assist in reducing noise and vibration impacts on the surrounding community.

The National Occupational Health and Safety Commission (NOHSC) recommends a maximum acceptable workplace noise exposure level of 85dB(A) ($L_{Aeq,8h}$) for an eight-hour time period.

Personnel involved in operations should be issued with ear plugs or ear muffs which must be used whenever noise levels interfere with normal speech when individuals are standing at a distance of 1m from each other, or when the $L_{Aeq,8hr}$ exceeds 85dB(A).

Signs should be erected and made visible at the entry to all areas where noise levels will exceed 85dB(A).

7.12 CONSTRUCTION TRAFFIC ROUTES

The Contractor shall establish and implement traffic routes for deliveries to the site, which minimise the noise impact on surrounding noise sensitive receivers as best possible. Refer to Construction Traffic Management Plan prepared by ptc, dated 14/10/2021.

8 CONCLUSIONS

A construction noise and vibration assessment has been carried out for the proposed works for the upgrade of Mosman High School project. This report addresses the Condition of Consent B19 of the State Significant Development Application SSD-10456.

In particular, this report identifies the Contractor's obligations and the requirements to manage noise and vibration during construction such that Contractor can make the necessary allowances within the construction costs, programmes and work methodologies.

The responsibilities of all stakeholders are identified and a framework for the management of noise and vibration during construction works is provided.

This report establishes relevant noise level criteria, details the acoustic assessment and provides comments and recommendations for the proposed development.

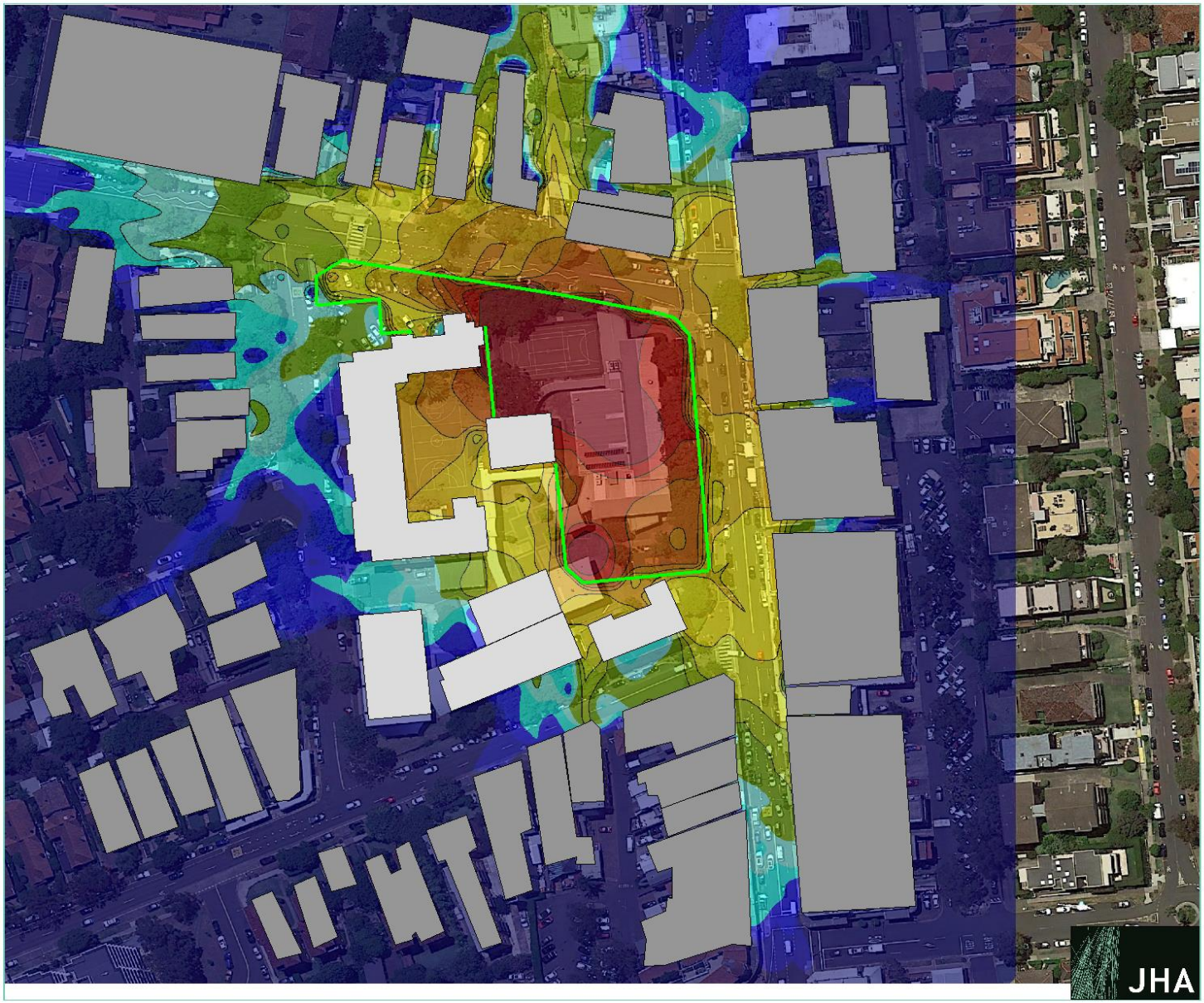
Potential construction noise and vibration impacts on the surroundings have been presented in this report and recommendations based on the relevant guidelines are provided. It is expected that the predicted exceedance of the NMLs in the surrounding receivers triggers the proponent to apply all reasonable and feasible work practices to minimise the noise as much as possible, and community consultation, as per the requirements of the ICNG. Refer to Section 6 for details.

For each of the work stages and associated plant, assuming that they are exceeding the noise level criteria, the noise control measures presented in Section 7 shall be considered and implemented wherever reasonable and feasible in order to minimise any potential noise impact. Operation time restrictions shall be applied to 'noisy' construction plant to minimise noise impact to the nearest sensitive receivers.

The information presented in this report shall be reviewed if any modifications to selection of equipment / machinery, construction methodologies and modifications to the works construction program.

Based on the information presented in this report, relevant objectives will be satisfied and therefore approval is recommended to be granted.

APPENDIX A: PREDICTED CONSTRUCTION GRID NOISE MAPS



Project:
Mosman High School,
Mosman NSW 2088

Phase / Stage:
Phase 1 / 1A - Demolition and Excavation

Assessment Type:
Grid Noise Map

Noise levels dB(A)
$L_{aeq\ (15min)}$

		<=	52
52	<	<=	54
54	<	<=	56
56	<	<=	58
58	<	<=	60
60	<	<=	62
62	<	<=	64
64	<	<=	66
66	<	<=	68
68	<	<=	70
70	<	<=	72
72	<	<=	74
74	<	<=	76
76	<	<=	78
78	<	<=	80
80	<		

N

Scale 1:1500
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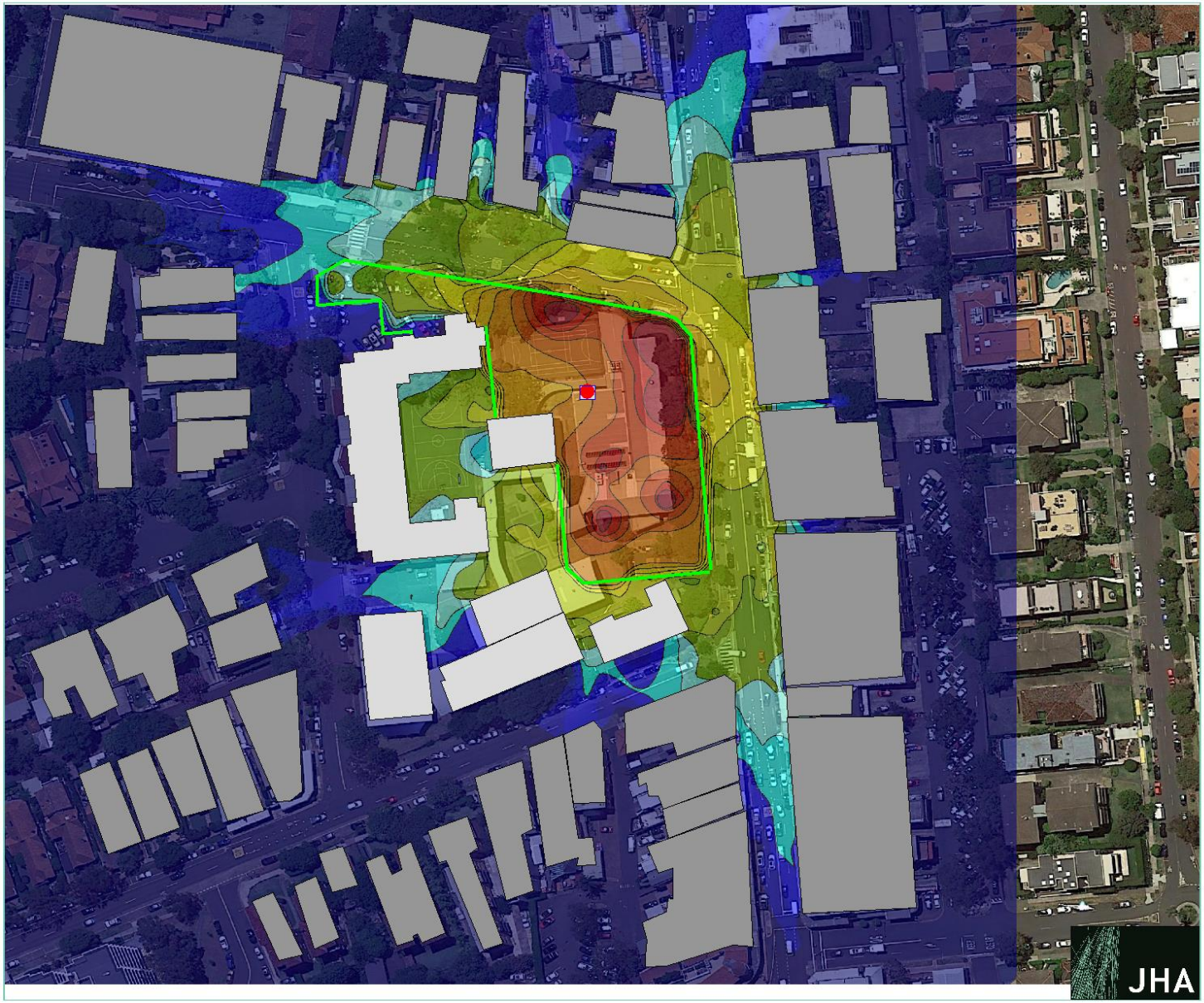


Project:
Mosman High School,
Mosman NSW 2088

Phase / Stage:
Phase 2 - Structure

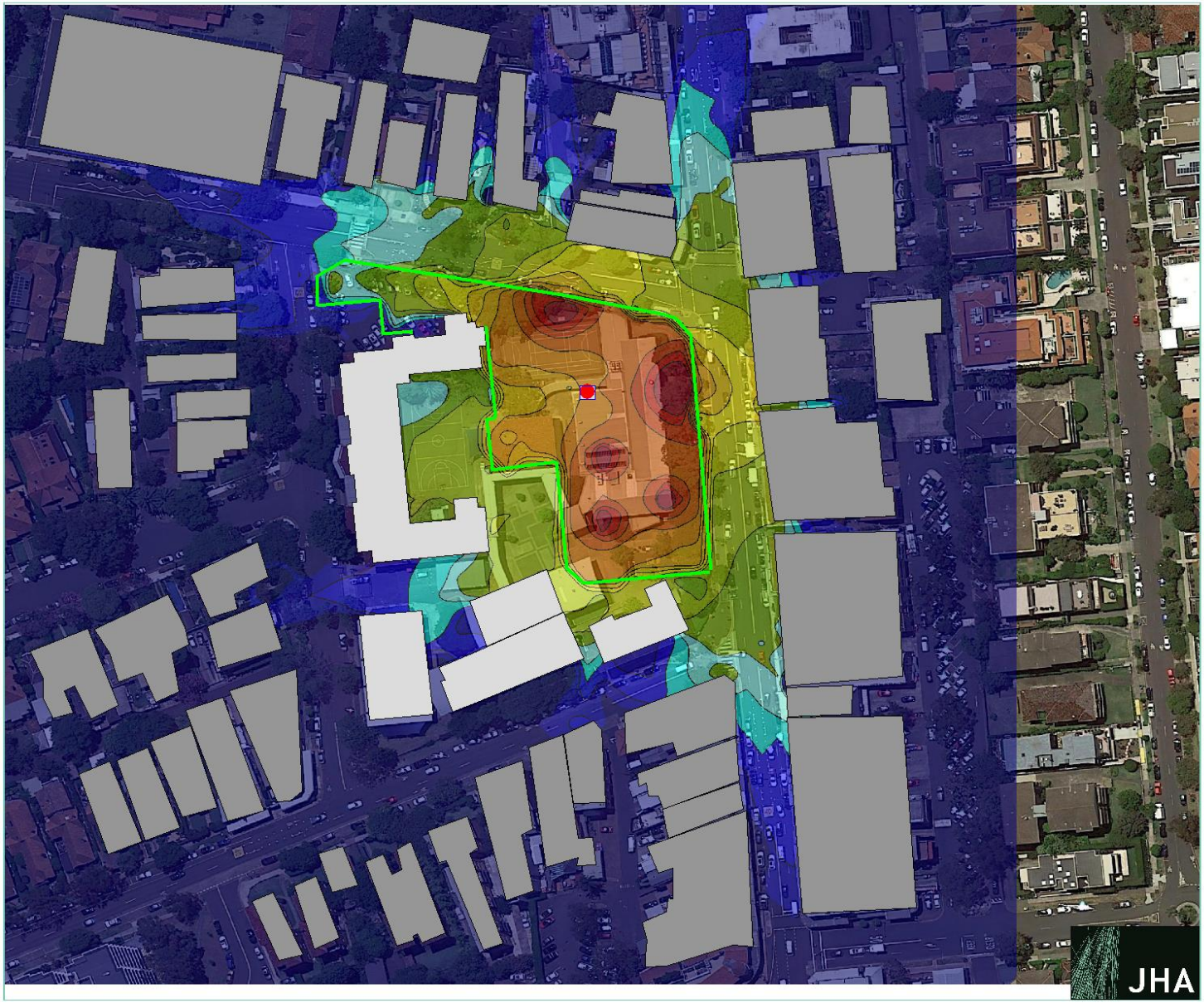
Assessment Type:
Grid Noise Map

Noise levels dB(A)
$L_{aeq\ (15min)}$

		<=	52
52	<	<=	54
54	<	<=	56
56	<	<=	58
58	<	<=	60
60	<	<=	62
62	<	<=	64
64	<	<=	66
66	<	<=	68
68	<	<=	70
70	<	<=	72
72	<	<=	74
74	<	<=	76
76	<	<=	78
78	<	<=	80
80	<		

N

Scale 1:1500
0 4.5 9 18 27 36 m



Project:
Mosman High School,
Mosman NSW 2088

Phase / Stage:
Phase 3 - Facade & Fitout

Assessment Type:
Grid Noise Map

Noise levels dB(A)
$L_{aeq\ (15min)}$

		<=	52
52	<	<=	54
54	<	<=	56
56	<	<=	58
58	<	<=	60
60	<	<=	62
62	<	<=	64
64	<	<=	66
66	<	<=	68
68	<	<=	70
70	<	<=	72
72	<	<=	74
74	<	<=	76
76	<	<=	78
78	<	<=	80
80	<		

N

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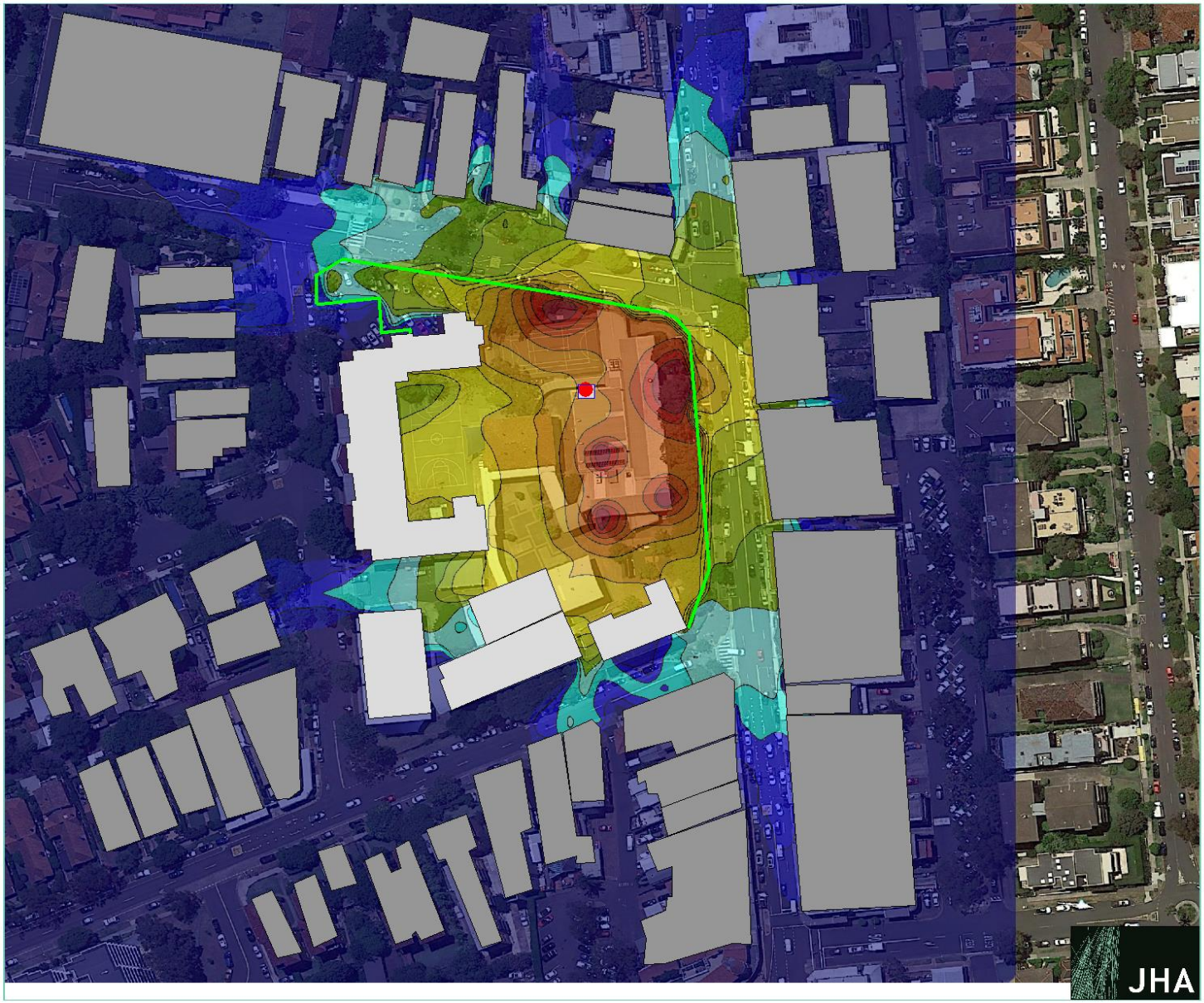

Project:
Mosman High School,
Mosman NSW 2088

Phase / Stage:
Phase 3A - Demolition and Facade & Fitout

Assessment Type:
Grid Noise Map

Noise levels dB(A)
$L_{aeq\ (15min)}$

		<=	52
52	<	<=	54
54	<	<=	56
56	<	<=	58
58	<	<=	60
60	<	<=	62
62	<	<=	64
64	<	<=	66
66	<	<=	68
68	<	<=	70
70	<	<=	72
72	<	<=	74
74	<	<=	76
76	<	<=	78
78	<	<=	80
80	<		

N

Scale 1:1500
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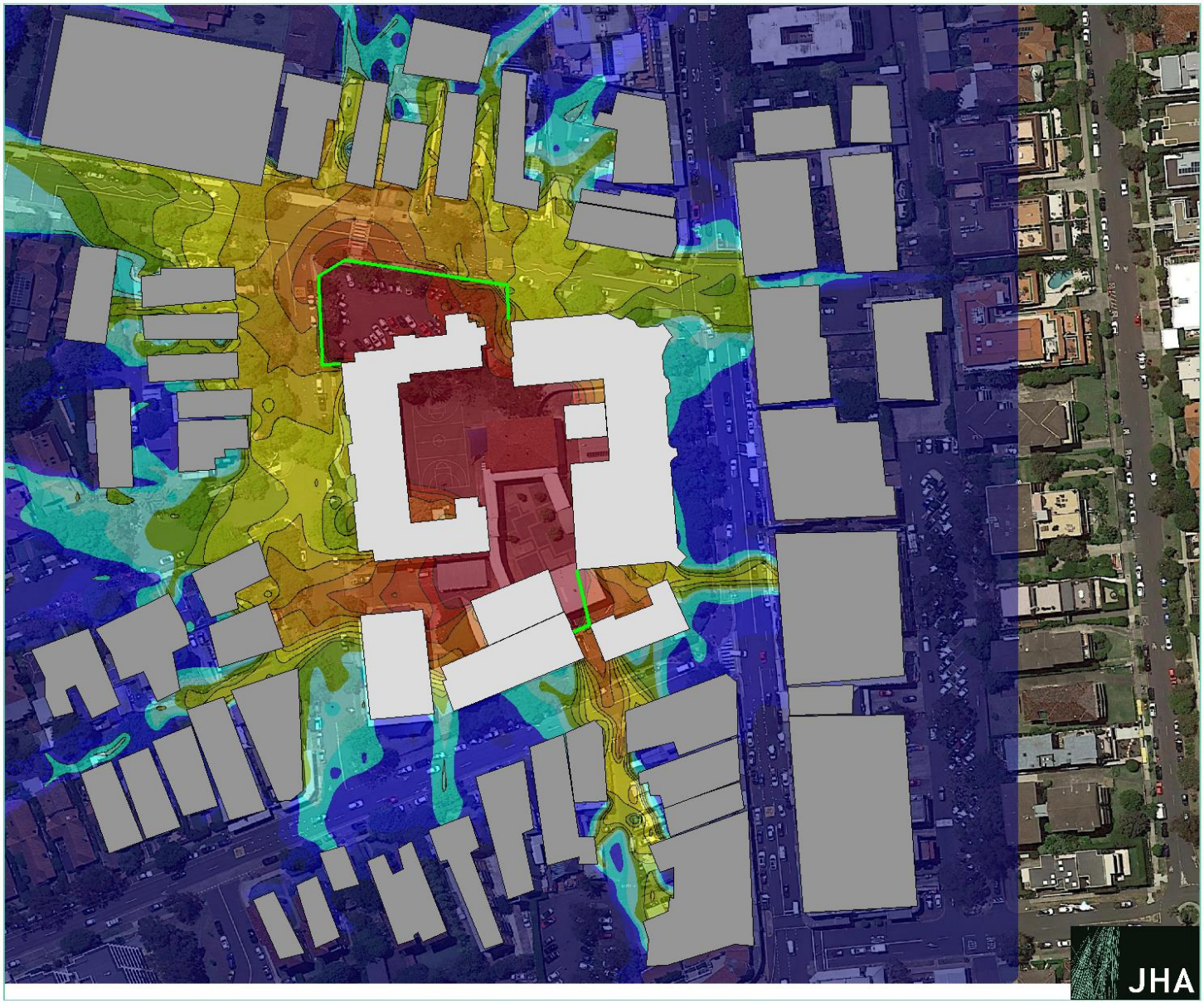

Project:
Mosman High School,
Mosman NSW 2088

Phase / Stage:
Phase 4 - Landscaping and make-good

Assessment Type:
Grid Noise Map

Noise levels dB(A)
$L_{aeq\ (15min)}$

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52	<	<=	54
54	<	<=	56
56	<	<=	58
58	<	<=	60
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62	<	<=	64
64	<	<=	66
66	<	<=	68
68	<	<=	70
70	<	<=	72
72	<	<=	74
74	<	<=	76
76	<	<=	78
78	<	<=	80
80	<		

N

Scale 1:1500
0 4.5 9 18 27 36 m

APPENDIX B: COMMUNITY COMMUNICATION STRATEGY

NSW GOVERNMENT Education

October 2021

School Infrastructure NSW

Community Communication Strategy

Mosman High School Upgrade

Contents

Document Purpose

This Community Communication Strategy (CCS) has been developed by School Infrastructure NSW (SINSW) to:

- Successfully consider and manage stakeholder and community expectations as integral to the successful delivery of the project.
- Outline interfaces with other disciplines, including safety, construction, design and environment, to ensure all activities are co-ordinated and drive best practice project outcomes.
- Inform affected stakeholders, such as the local community or road users about construction activities.
- Provide a delivery strategy which enables the open and proactive management of issues and communications.
- Highlight supporting procedures and tools to enable the team to deliver this plan effectively.
- Provide support for the broader communications objectives of SINSW, including the promotion of the project and its benefits.

This Community Consultation Strategy (CCS) will be implemented through the design and construction phase of the project and for 12 months following construction completion.

Plan review

The CCS will be revised regularly to address any changes in the project management process, comments and feedback by relevant stakeholders, and any changes identified as a result of continuous improvement undertakings. This will be done in close consultation with the SINSW Senior Project Director, appointed Project Management Company and/or Contractor and SINSW Community Engagement Manager.

Approval

The CCS is reviewed and approved by the SINSW Senior Project Director, in close consultation with Schools Operations and Performance, with final endorsement from the SINSW Community Engagement Senior Manager before being submitted to the Planning Secretary for approval.

Table 1: List of SSD application consent conditions for communication and engagement and where they are addressed in this strategy

State Significant Developments B8	The community communications strategy addresses this in section
Identify people to be consulted during the design and construction phase	Section 4 Section 5
Set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the development	Section 6 Section 7 Section 8.4
Provide for the formation of community-based forums, if required, that focus on key environmental management issues for the development	Section 4
Set out procedures and mechanisms:	
• Through which the community can discuss or provide feedback to the Applicant	Section 4 Section 6 Section 8.5
• Through which the Applicant will respond to enquiries or feedback from the community; and	Section 8.5

State Significant Developments B8	The community communications strategy addresses this in section
• To resolve any issues and mediate any disputes that may arise in relation to construction and operation of the development, including disputes regarding rectification or compensation	Section 8.5

1. Context

The NSW Government is investing $7.9 billion over the next four years, continuing its program to deliver 215 new and upgraded schools to support communities across NSW. This is the largest investment in public education infrastructure in the history of NSW.

The NSW Department of Education is committed to delivering new and upgraded schools for communities across NSW. The delivery of these important projects is essential to the future learning needs of our students and supports growth in the local economy.

The upgrade of Mosman High School will provide students the latest educational facilities.

The project will deliver:

- 16 new home base classrooms
- One additional administration office and staff room
- New library
- Multipurpose space for use as a hall and gym
- New outdoor areas and a rooftop play space
- New canteen facilities.

The Mosman High School Upgrade is classified as a state significant development, and has been assessed by the Department of Planning, Industry and Environment (DPIE). Consent was provided on 6 August, 2021.

The project is available the DPIE planning portal at www.planningportal.nsw.gov.au/major-projects/project/34286.

2. Community Engagement Objectives

SINSW's mission is to provide school infrastructure solutions by working collaboratively with all our stakeholders to create learning environments across NSW that serve our future needs and make us all proud.

This CCS has been developed to achieve the following community engagement objectives:

- Promote the benefits of the project
- Build key school community stakeholder relationships and maintain goodwill with impacted communities
- Manage community expectations and build trust by delivering on our commitments
- Provide timely information to impacted stakeholders, schools and broader communities
- Address and correct misinformation in the public domain
- Reduce the risk of project delays caused by negative third party intervention
- Leave a positive legacy in each community.

3. Key Messages

Through each phase of the project, the key messages and means of engagement will be regularly reviewed, refined and updated. Information that is currently in the public domain is outlined below.

3.1. High level messaging

The NSW Government is investing $7.9 billion over the next four years, continuing its program to deliver 215 new and upgraded schools to support communities across NSW. This is the largest investment in public education infrastructure in the history of NSW.

The NSW Department of Education is committed to delivering new and upgraded schools for communities across NSW. The delivery of these important projects is essential to the future learning needs of our students and supports growth in the local economy.

3.2. Project messaging

The upgrade of Mosman High School will provide students the latest educational facilities.

The Mosman High School upgrade project is classified as a State Significant Development.

3.2.1. Project status

The projects' State Significant Development application has been assessed by DPIE and consent to proceed was granted on 6 August, 2021.

3.2.2. Project benefits

The upgrade project will deliver the following benefits:

- 16 new home base classrooms
- One additional administration office and staff room
- New library
- Multipurpose space for use as a hall and gym
- New outdoor areas and a rooftop play space
- New canteen facilities.

3.2.3. High-quality learning environment

The project will provide flexible learning spaces which make use of the latest technology to enhance the learning experience for the next generation of students. Furthermore, the contemporary and sustainable facilities provide an outstanding working environment for school staff.

Flexible learning spaces are adaptable to accommodate small or large groups and facilitate students use of modern technology, while working independently and collaboratively.

3.2.4. Environmental benefits

The new facilities will be built in accordance with current sustainability principles. SINSW is committed to environmentally conscious construction and maintenance practices.

3.3. Construction phase

3.3.1. Traffic management

The construction contractor has developed a Construction Traffic and Pedestrian Management Plan (CTPMP) to ensure that vehicle movements are managed with minimal disruption to the local community.

3.3.2. Noise, vibration and dust

Any activity that could exceed approved construction noise management levels will be managed in strict accordance with the Protection of the Environment Operations Act 1997. All works will be conducted in accordance with the Contractor's approved Construction Noise Management Plan. Vibration from works will be minimal and kept within acceptable levels as stated in the document 'Assessing Vibration: a technical guideline' which outlines vibration criteria for day time periods.

Mitigation measures will be in place to manage noise and dust levels, including hoarding to minimise the effects of noise and dust and hosing down as required to ensure the safety of the school and local community.

Construction works, including the delivery of materials to and from the site, will take place between 7:00am and 6:00pm Monday to Friday and between 7:00am and 3:30pm on Saturdays. In line with the NSWs Environmental Planning and

Assessment (COVID-19 Development – Construction Work Days) Order 2020, SINSW construction sites may now operate on weekend and public holidays during the COVID-19 pandemic. Alignment to Order and any changes to it, will be monitored on an ongoing basis.

Notwithstanding the specified hours, provided noise levels do not exceed the existing background noise level plus 5dB, works may also be undertaken during the following hours:

(a) between 6pm and 7pm, Mondays to Fridays inclusive; and

(b) between 3:30pm and 4pm, Saturdays.

High noise generating activities such as rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

(a) 9:00am to 12:00pm, Monday to Friday;

(b) 2:00pm to 5:00pm Monday to Friday; and

(c) 9:00am to 12:00pm, Saturday.

Activities may be undertaken outside of these hours if required:

(a) by the Police or a public authority for the delivery of vehicles, plant or materials; or

(b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or

(c) where the works are inaudible at the nearest sensitive receivers; or

(d) where a variation is approved in advance in writing by the Planning Secretary or his nominee if appropriate justification is provided for the works.

Notification of such construction activities must be given to affected residents before undertaking the activities or as soon as possible afterwards.

3.3.3. Disruptive works

Construction work for the Mosman High School Upgrade is underway. The following activities are planned for the upcoming weeks (*works will be outlined*). You can contact us directly using the details below to discuss any aspect of this work.

3.3.4. Get involved

We are committed to working together with our school communities and other stakeholders to deliver the best possible learning facilities for students. Your feedback is important to us. For more information contact us via the details below.

- Email: schoolinfrastructure@det.nsw.edu.au
- Website: schoolinfrastructure.nsw.gov.au
- Phone: 1300 482 651

3.3.5. Fauna and vegetation

SINSW is committed to ensuring construction work has a minimal impact upon fauna and vegetation on site.

SINSW will comply with all Development Consent Conditions relating to the protection of fauna and vegetation, and will comply with all relevant mitigation measures listed in the Environmental Impact Statement (EIS).

Prior to construction, a Construction Environmental Management Plan (CEMP) will be prepared to govern the completion of all construction works. The CEMP will detail measures to be taken for the protection and management of fauna and vegetation, will be prepared in accordance with relevant guidelines and performance indicators, and will be submitted to the Certifier and DPIE.

3.3.6. Soil and water

SINSW is committed to the appropriate management of soil and water on the construction site.

SINSW will comply with all Development Consent Conditions relating to soil and water management and will comply with all relevant mitigation measures listed in the EIS.

Prior to construction, a CEMP will be prepared to govern the completion of all construction works. The CEMP will detail measures for the management of soil and water, will be prepared in accordance with relevant guidelines and performance indicators, and will be submitted to the Certifier and DPIE.

A suitably qualified and experienced consultant will prepare a Construction Soil and Water Management Sub-Plan (CSWMSP), which will form part of the CEMP. The CSWMSP will:

- describe erosion and sediment control measures to be implemented during construction
- provide a plan of how construction works will be managed in wet-weather events
- detail flows from the site to surrounding area
- describe the measures to be taken to manage stormwater and flood flows for small and large sized events

Erosion and sediment controls will be installed and maintained in accordance with the "Blue Book" – *Managing Urban Stormwater: Soils and Construction (4th edition)*. These controls will be implemented prior to the commencement of any other site disturbance works.

Only approved soil and fill types will be used onsite. Accurate records will be kept on the volume and type of fill used onsite.

3.3.7. Visual amenity

Prior to construction, a CEMP will be prepared to govern the completion of all construction works. The plan will detail measures to maintain visual amenity, will be prepared in accordance with relevant guidelines and performance indicators, and will be prepared to the satisfaction of the DPIE.

The CEMP will include provisions for the management of outdoor lighting. The installation and operation of outdoor lighting will comply with both AS 4282-2019 – Control of the Obtrusive Effects of Outdoor Lighting and AS 1158.3.1-2005 – Lighting for Roads and Public Spaces – Part 3.1: Pedestrian Area (Category P) Lighting.

Visual amenity impacts will be limited during construction via the installation of appropriate site fencing and adherence to site housekeeping procedures.

3.3.8. Contamination

Prior to construction, a CEMP will be prepared to govern the completion of all construction works. The CEMP will detail contamination management measures, will be prepared in accordance with relevant guidelines and performance indicators, and will be submitted to DPIE.

The project site has been tested for contamination and is considered to be safe and suitable for the school upgrade.

The CEMP will include protocols for the management of unexpected contamination discovered during the course of construction works.

3.3.9. Heritage

Prior to construction, a CEMP will be prepared to govern the completion of all construction works. The plan will detail measures to protect heritage matters, will be prepared in accordance with relevant guidelines and performance indicators, and will be submitted to DPIE.

The CEMP will include unexpected finds protocols for objects of Aboriginal or Historic heritage.

In the event that relics of Aboriginal heritage are discovered, all works in the immediate area will cease immediately, and consultation will occur with a suitably qualified archaeologist, registered Aboriginal representatives and the relevant authorities to determine an appropriate management strategy.

In the event that relics of historic heritage are discovered, all works in the immediate area will cease immediately, and consultation will occur with the relevant authorities to determine an appropriate management strategy.

4. Project Governance

4.1. Project Reference Group

The Department's engagement process strives to engage with key stakeholders from the school community. As part of this process, a Project Reference Group (PRG) is established early in the project with nominated representatives from the school community to ensure input from, and consult with, impacted stakeholders.

The PRG provides key information from an operational, educational, change and logistics perspective into the planning, through the design and construction phases of the project.

The PRG will receive project briefings and key progress updates on project progress to support its responsibilities in assisting to communicate updates to school staff, parents and stakeholders in the wider local community.

The Project Reference Group will be conducted as two separate groups during the development and delivery of all projects:

(a) Project Reference Group – Planning

A nominated group (limited to 10) participates in workshops to develop the Educational Principles and Education Rationale which will inform the Functional Design Brief. These workshops are chaired by the SINSW Senior Project Director (or delegate) and may be facilitated by an Education Consultant. This activity will inform the development of the building design.

(b) Project Reference Group – Delivery

The purpose of the group is to seek input and inform design processes and provide operational requirements and information to help minimise the impact of the project on school operations. These workshops are chaired by the Senior Project Director (or a delegate) and may be facilitated by the appointed architectural consultant, as required. The PRG will provide key information from an operational and logistics perspective to assist project delivery.

Specifically, for communication and engagement related matters, the PRG will:

- Provide a forum for discussion and exchange of information relating to the planning and delivery of the project
- Identify local issues and concerns to assist the project team with the development of mitigation strategies – to manage and minimise construction and environmental impacts to the school community and local residents
- Provide feedback to the communications and community engagement team on key messages and communications and engagement strategies
- Provide advice on school engagement activities
- Assist to disseminate communications to the school community and other stakeholders.

As per all department led delivery projects, the PRG acts as a consultative forum and not a decision-making forum for the planning and delivery of this school infrastructure project.

Figure 1: Project Reference Group (PRG)

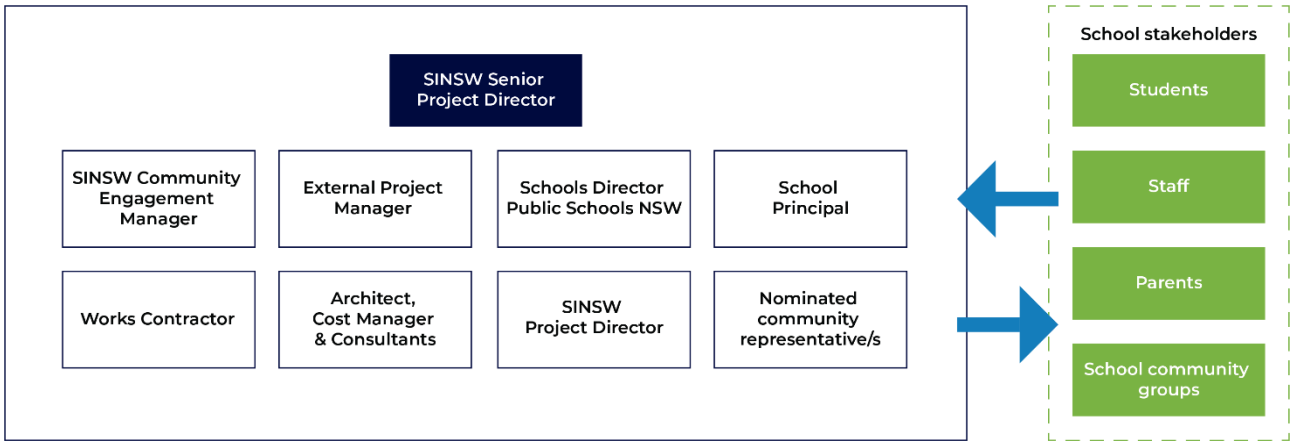
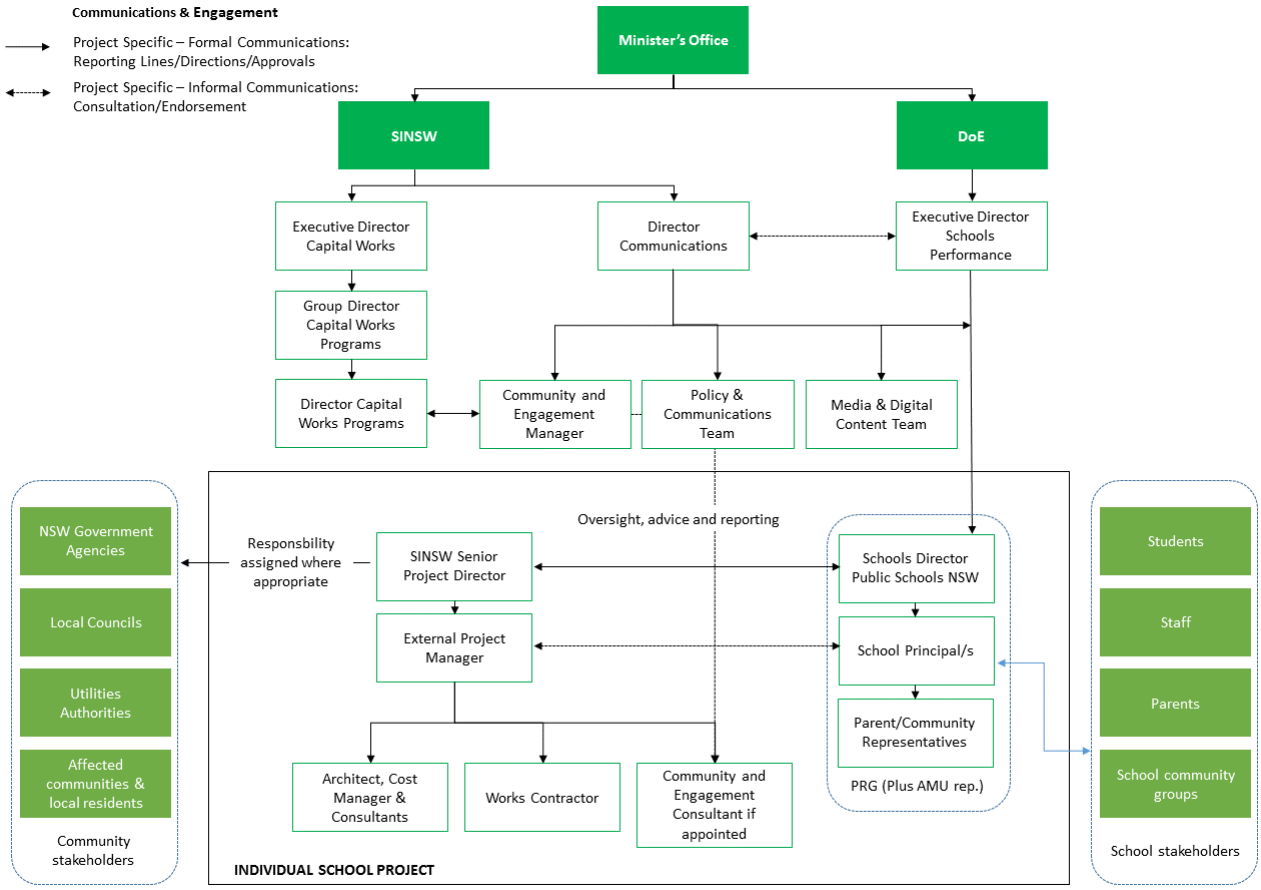


Figure 2: SINSW Project Governance

Figure 2 below maps how the department and SINSW will communicate both internally and externally.



5. Stakeholders

The stakeholder list below summarises who will be consulted during the design and construction phase via ongoing face-to-face meetings, communication collateral and digital engagement methods.

Table 2: Stakeholders

Stakeholders	Interest and involvement
Local Members of Parliament: ▪ State Government Member for North Shore – Felicity Wilson MP ▪ Federal Government Member for Warringah – Zali Steggall MP	▪ Meeting the economic, social and environmental objectives of state and federal governments ▪ Delivering increased public education capacity on time ▪ Delivering infrastructure which meets expectations ▪ Addressing local issues such as traffic, congestion and public transport solutions
Government agencies and peak bodies: ▪ Transport for NSW ▪ Roads and Maritime Services NSW ▪ Fire and Rescue NSW ▪ NSW Department of Education ▪ NSW Department of Planning, Industry and Environment ▪ NSW Environmental Protection Authority ▪ NSW Rural Fire Service ▪ Sydney Water ▪ NSW Heritage Council ▪ NSW Office of Environment and Heritage ▪ NSW Department of Premier and Cabinet	▪ Traffic and congestion on the local road system ▪ Adequate public transport options and access ▪ Ensuring new infrastructure meets standard requirements for safety and fire evacuation ▪ Ensuring the development is compliant ▪ Ensuring the development does not impact heritage items ▪ Easing overcrowding in local schools
Local Council – Mosman Council ▪ Mayor ▪ General Manager ▪ Councillors ▪ Bureaucrats	▪ Schedule for construction and opening of school ▪ Plans for enrolled students during the operation of the temporary school ▪ Impacts to the local community including noise, congestion and traffic ▪ Shared use of community spaces ▪ Providing amenities to meet increase population density
School community ▪ Principal ▪ Teachers ▪ Staff ▪ Parents and carers ▪ Students	▪ Safe pedestrian and traffic access to the temporary school during construction ▪ Construction impacts and how these will be minimised ▪ Quality of infrastructure and resources upon project completion ▪ How to access the new school once completed

Stakeholders	Interest and involvement
Local community ▪ All residents and businesses to surrounding the school including Military Road (between Gouldsbury Street and Raglan Street), Belmont Road and Avenue Road adjacent to the school and all of Gladstone Avenue	▪ Noise and truck movements during construction ▪ Increased traffic and congestion on nearby streets ▪ Local traffic and pedestrian safety ▪ Changed traffic conditions during pick-up and drop-off ▪ Shared use of school facilities and amenities
Nearby public schools ▪ Mosman PS ▪ Beauty Point PS ▪ Middle Harbour PS ▪ Neutral Bay PS ▪ Cammeraygal HS	▪ Impact on school resources ▪ Impact on current students ▪ Implications for teaching staff ▪ Possible impacts on enrolments ▪ Opportunities to view the new facilities
Adjoining affected landowners and businesses ▪ Shopkeepers along Military Road and Avenue Road ▪ Occupants of detached/attached dwellings on Gladstone Road, Belmont Road and Avenue Road ▪ Scots Kirk Presbyterian Church, Belmont Road ▪ Mosman Bowling Club, Belmont Road	▪ Noise and truck movements during construction ▪ Increased traffic and congestion on nearby streets ▪ Local traffic and pedestrian safety ▪ Changed traffic conditions during pick-up and drop-off ▪ Shared use of school facilities and amenities ▪ Environmental impacts during construction
Community groups ▪ Mosman Village Community ▪ Mosman Square Seniors Centre ▪ Mosman Combined Probus Club ▪ The Rotary Club of Mosman ▪ Mosman Historical Society ▪ Mosman RSL sub-branch ▪ Mosman Chamber of Commerce ▪ Mosman Village Community Group ▪ Mosman Youth ▪ Mosman Collective ▪ Mosman Community Gardeners ▪ Mosman Lions Club ▪ Mosman Public Speaking Club	▪ Noise and truck movements during construction ▪ Increased traffic and congestion on nearby streets ▪ Local traffic and pedestrian safety ▪ Changed traffic conditions during pick-up and drop-off ▪ Shared use of school facilities and amenities

6. Engagement Approach

From 30 March 2020, the way we communicate has temporarily changed due to social distancing requirements. Appendix A provides a detailed list of changed communication methods and tools. This particularly refers to face-to-face communication channels such as door knocks, information booths/sessions, face-to-face meetings and briefings.

The key consideration in delivering successful outcomes for this project is to make it as easy as possible for anyone with an interest to find out what is going on. In practice, the communication approach across all levels of engagement will involve:

- Using uncomplicated language
- Taking an energetic approach to engagement
- Encouraging and educating whenever necessary
- Engaging broadly including with individuals and groups that fall into harder to reach categories
- Providing a range of opportunities and methods for engagement
- Being transparent
- Explaining the objectives and outcomes of planning and engagement processes.

In addition to engagement with government departments, agencies and councils, two distinct streams of engagement will continue for the project:

- School community for existing schools being upgraded, or surrounding schools for new schools, and
- Broader local community.

This allows:

- School-centric involvement from school communities (including students, parents/caregivers, teachers, administration staff) unencumbered by broader community issues, and
- Broad community involvement unencumbered by school community wants and needs. Broad community stakeholders include local residents, neighbours and local community/action groups.

6.1. General community input

Members of the general public impacted by the construction phase are able to enquire and complain about environmental impacts via the following channels:

- Information booths and information sessions held at the school or local community meeting place, and advertised at least seven days before in local newspapers, on our website and via letterbox drops
- 1300 number that is published on all communication material
- School Infrastructure NSW email address that is published on all communication material
- Refer to Section 8.5 of this document for detail on our enquiries and complaints process.

A number of tools and techniques will be used to keep stakeholders and the local community involved as summarised in table three below.

For reference, project high level milestones during the delivery phase include:

- Site establishment/early works
- Commencement of main works construction
- Term prior to project completion
- Project completion
- First day of school following project completion
- Official opening

Table 3: School Infrastructure NSW Communications Tools

Communications Tool	Description of Activity	Frequency
1300 community information line	The free call 1300 482 651 number is published on all communication materials and is manned by staff from SINSW. All enquiries that are received are referred to the appointed C&E Manager and/or Senior Project Director as required and logged in our CRM. Once resolved, a summary of the conversation is updated in the CRM.	Throughout the life of the project and accessible for 12 months post completion
Advertising (print)	Advertising in local newspapers is placed with at least seven days' notice of significant construction activities, major disruptions and opportunities to meet the project team or attend a face-to-face event.	At project milestones or periods of disruption
Call centre scripts	High level, project overview information provided to external organisations who may receive telephone calls enquiring about the project, most namely stakeholder councils.	Throughout the project when specific events occur or issues are raised by stakeholders
Community contact cards	These are business card size with all the SINSW contact information. The project team/ contractors are instructed to hand out contact cards to stakeholders and community members enquiring about the project. Cards are offered to school administration offices as appropriate. The card directs all enquiries, comments and complaints through to our 1300 number and SINSW email address.	Throughout the life of the project and available 12 months post completion
CRM database	All projects are created in SINSW's Customer Relationship Management system Darzin at project inception. Interactions, decisions and feedback from stakeholders are captured, and monthly reports generated. Any enquiries and complaints are to be raised in the CRM and immediately notified to the Senior Project Director, Project Director and Community Engagement Manager.	Throughout the life of the project and updated for 12 months post completion
Display boards	A0 size full colour information boards are displayed at information sessions or can be permanently displayed in appropriate places (a school administration office for example).	As required
Door knocks	Provide timely notification to nearby residents of upcoming construction works, changes to pedestrian movements, temporary bus stops, expected impacts and proposed mitigation. Provide written information of construction activity and contact details.	As required prior to periods of construction impacts
Face-to-face meetings/briefings	Activities include meeting, briefings and "walking the site" to engage directly with key stakeholders, directly impacted residents and business owners and the wider community.	As required
FAQs	Set of internally approved answers provided in response to frequently asked questions. Used as part of relevant stakeholder and community communication tools. These are updated as required, and included on the website if appropriate.	Throughout the life of the project

Communications Tool	Description of Activity	Frequency
Information booths	Information booths are held locally and staffed by a project team member to answer any questions, concerns or complaints on the project. Info booths are scheduled from the early stages of project delivery through to project completion. Information booths are to be held both at the school/neighbouring school, as well for the broad community: ▪ School information booths are held at school locations at times that suit parents and caregivers, with frequency to be aligned with project milestones and as required. ▪ Community information booths are usually held at local shopping centres, community centres and places that are easily accessed by the community. They are held at convenient times, such as out of work hours on weekdays and Saturday's. Collateral to be provided include community contact cards, latest project notification or update, with internal FAQs prepared. All liaison to be summarised and loaded in the CRM. Notice of at least 7 days to be provided.	At project milestones and as required
Information sessions (drop in)	Information sessions are a bigger event than an information booth and are held at a key milestone or contentious period. These events feature detailed information on the project on display boards/ screens and an information pack handout which includes a project scope, planning approvals, any impacts on the school community or residents, a project timeline and a frequently asked questions section. Members from the project and communications team are available to answer questions about the project. These events occur after school hours on a week day (from 3pm – 7pm to cover working parents). All liaison summarised and loaded on the CRM.	As required
Information pack	This is a four page A4 colour, fold out flyer which includes: ▪ Project scope ▪ Project update ▪ FAQs ▪ Contact information ▪ Project timeline Information packs are distributed at information sessions or at other bigger events/milestones in hard copy and also made available on the SINSW website.	As required
Media releases/events	Media releases are distributed at announce media milestones. They promote major project milestones and activities and generate broader community awareness.	Media milestones: ▪ Project announcement ▪ Concept design

Communications Tool	Description of Activity	Frequency
		completed ▪ Planning approval lodged ▪ Planning approval granted ▪ Construction contract tendered ▪ Construction contract awarded ▪ SOD turning opportunity ▪ Handover ▪ Official opening
Newsletters	A monthly or quarterly newsletter providing updated information on project scope, benefits, construction progress, achievement of project milestones and other project related issues of interest. Similar to an information pack in content, but used as a regular high-level update for the community. They are available in hard copy and electronic format.	As required, related to high level project milestones
Notifications	A4, single or double sided, printed in colour that can include frequently asked questions, if required. Notifications are distributed under varying templates with different headings to suit different purposes: ▪ **Works notification** are used to communicate specific information/ impacts about a project to a more targeted section of the community. This template doesn't have an image, so it can be more appropriately targeted for matters like hazardous material. ▪ **Project update** is used when communicating milestones and higher-level information to the wider community i.e. project announcement, concept design/DA lodgement, construction award or project completion. A project update always includes a project summary, information booths/sessions if scheduled, a progress summary and contact information.	As required according to the construction program. Distributed via letterbox drop to local residents and via the school community at least 5-7 days prior to construction activities or other milestones throughout the life of the project. Specific timings indicated in table 5 – Section 8.
Photography, time-lapse photography and videography	Captures progress of construction works and chronicles particular construction activities. The images are used in notifications, newsletters, reports, the SINSW website, social media channels, at information sessions and in presentations. Once the project is complete, SINSW will organise photography of external and internal spaces to be used for a range of communications purposes.	Project completion (actual photography and video of completed project) Prior to project completion - artist impressions, flythrough, site plans and construction progress images are used

Communications Tool	Description of Activity	Frequency
Presentations	Details project information for presentations to stakeholder and community groups.	As required
Priority correspondence	Ministerial (and other) correspondence that is subject to strict response timeframes. Includes correspondence to the Premier, Minister, SINSW and other key stakeholders. SINSW is responsible for drafting responses as requested within the required timeframes.	As required
Project Reference Group	SINSW facilitated Project Reference Group sessions providing information on the design solution, construction activities, project timeframes, key issues and communication and engagement strategies.	Meets every month or as required More information on the PRG is detailed in Section 4
Project signage	A0 sized, durable aluminium signage has been installed at the Mosman High School Upgrade. Provides high level information including project scope, project image and SINSW contact information. Fixed to external fencing/entrances that are visible and are updated if any damage occurs.	Throughout the life of the project and installed for 12 months post completion
Site visits	Demonstrate project works and progress and facilitate a maintained level of interest in the project. Includes media visits to promote the reporting of construction progress.	As required
School Infrastructure NSW email address	Provide stakeholders and the community a direct communication channel to the Community Engagement team. Email address (schoolinfrastructure@det.nsw.edu.au) is published on all communication materials.	Throughout the life of the project
School Infrastructure NSW website	A dedicated project page for the Mosman High School Upgrade is located on the SINSW website: www.schoolinfrastructure.nsw.gov.au/projects/m/mosman-high-school-upgrade.html	Updated at least monthly and is live for at least 12 months post completion of the project
Welcome pack/ thank you pack	At project completion the following flyers are utilised: ▪ **Welcome pack** – A two to four page A4 flyer which is provided to the school community on the first day/week they return to school when new facilities are opening, or attending a new school. Includes project overview, map outlining access to the school and key locations, frequently asked questions and contact information. ▪ **Thank you pack** – A two to four page A4 flyer tailored to local residents to thank them for their patience and support of the project.	Project completion only

7. Engagement Delivery Timeline

From 30 March 2020, the way SINSW communicates has temporarily changed due to social distancing requirements. Please refer to Appendix A for more details on changed methods and tools. The table below outlines both traditional and alternative methods to be used in line with the changes.

The following engagement delivery timeline maps tailored communications tools and activities by key milestone.

Table 4: Engagement timeline

Project Phase / milestone	Target Audiences	Proposed communication tools / activities / purpose as per Table 3	Timing / implementation
Prior to main works (services work and installation of temporary buildings)	Near neighbours Local community	▪ Early works notification distributed to surrounding residents and businesses ▪ No doorknock – letterbox drop to adjacent landowners ▪ Website update ▪ SINSW email address and hotline	August and September 2021
Main construction works, including but not limited to: ▪ Works commenced ▪ Demolition work ▪ Key impacts – noise, dust, traffic, vibration ▪ Construction milestone	Local community Adjacent landowners Local Council State agencies Local teachers Prospective parents and students	**Planned** ▪ Main works notification distributed to surrounding residents and businesses ▪ No doorknock – letterbox drop to adjacent landowners ▪ Website update ▪ SINSW email address and hotline ▪ Media release **Alternative methods where applicable:** ▪ Digital information booth with information boards and pack with frequently asked questions	November 2021 (at key construction events as required, as per our notification process in Table 5)
Term prior to project completion	School community Local community Adjacent landowners Local Council Prospective parents and students	**Planned** ▪ Project update: letterbox drop ▪ Information booth and presentation ▪ Information packs ▪ Information boards ▪ Website update ▪ SINSW email address and	Mid 2023

Project Phase / milestone	Target Audiences	Proposed communication tools / activities / purpose as per Table 3	Timing / implementation
		hotline ▪ Site visits **Alternative methods where applicable:** ▪ Digital information booth (if required) with information boards and pack with frequently asked questions	
Handover and welcome to new school	School community Local community	**Planned** ▪ Project update ▪ Thank you pack ▪ Welcome pack ▪ Media release ▪ Website update ▪ SINSW email address and hotline ▪ Site visits	Mid 2023
Opening	All	**Planned** ▪ Media release ▪ Official opening ceremony	Mid 2023
Post-opening	All	**Planned** ▪ Website remains live ▪ Project signage remains installed ▪ 1300 phone and email still active, and CRM still maintained for complaints and enquiries.	Late 2023

8. Protocols

8.1. Media engagement

SINSW manages all media relations activities, and is responsible for:

- Responding to all media enquiries and instigating all proactive media contact.
- Media interviews and delegation to SINSW media spokespeople who are authorised to speak to the media on behalf of the project
- Informing the Minister's Office and SINSW project team members and communications representatives of all media relations activities in advance and providing the opportunity to participate in events where possible.

8.2. Site visits

SINSW in partnership with Schools Operations and Performance organises and hosts guided project site tours and media briefings as required by the Minister's Office. The Project Team will ensure the required visitor site inductions are undertaken and that all required Personal Protective Equipment (PPE) is worn.

For media site visits and events, SINSW creates, or contributes to, the production of an event pack. This will include an event brief, media release, speaking notes and Q&As.

8.3. Social, online and digital media

SINSW initiates and maintains all social and online media channels. These channels can include Facebook, Twitter, LinkedIn and the website. The SINSW Online Content Team upload to the SINSW website.

8.4. Notification process

Notifications (titled works notifications or project updates as per Table 3) are SINSW's prescribed notification requirement and are the primary mechanism to inform the community and key stakeholders about the impact of school construction on the local area. Notifications provide advance warning of activities and planned disruptions, as per the notice periods in Table 5 below, allowing stakeholders and community members to plan for the impacts and make alternative arrangements where required. Notifications are distributed in person via door knocks, via letterbox drop, via the school and electronically via email.

The C&E Manager advises the project team of the relevant notification requirements and timeframes to be met. The team obtains the information necessary to meet these timeframes by:

- Having oversight of the project delivery program
- Visiting site as required
- Attending and participating in construction meetings, planning meetings, and Risk and Opportunity workshops.

Table 5: Notifications periods

Works activity	Minimum community notification period
Notification to communities following major incident	Same day
Emergency works/unforeseen events	Same day
Contamination management and notification	Within 48 hours
Upcoming works notification (minimum disruption)	5 – 7 days
Invitation/notification of community event (e.g. info booth)	5 – 7 days
Notifications regarding traffic changes, parking impacts, road closures, major detours	10 – 14 days
Pedestrian route changes and other impacts	10 – 14 days

Works activity	Minimum community notification period
Notifications regarding operational changes for the school community (school drop-off points, entry and exit points)	10 –14 days
Major construction impacts (out of hours/ significant noise/ demolition)	10 – 14 days
Major impacts to school community e.g. relocation to temporary school	6 months

8.5. Enquiries and complaints management

SINSW manages enquiries (*called interactions in our CRM, Darzin*), and complaints in a timely and responsive manner.

Prior to project delivery, a complaint could be related to lack of community consultation, design of the project, lack of project progress, etc.

During project delivery, a complaint is defined as in regards to construction impacts such as safety, dust, noise, traffic, congestion, loss of parking, contamination, loss of amenity, hours of work, property damage, property access, service disruption, conduct or behaviour of construction workers, other environmental impacts, unplanned or uncommunicated disruption to the school.

If a phone call, email or face-to-face complaint is received during construction, they must be logged in our CRM, actively managed, closed out and resolved by SINSW within 24-48 hours.

As per our planning approval conditions, a complaints register is updated monthly and is publicly available on the project's website page on the SINSW website.

If the complainant is not satisfied with SINSW response, and they approach SINSW for rectification, the process will involve a secondary review of their complaint as per the outlined process.

Complaints will be escalated when:

- An activity generates three complaints within a 24-hour period (separate complainants)
- Any construction site receives three different complaints within a 24-hour period
- A single complainant reports three or more complaints within a three-day period
- A complainant threatens to escalate their issue to the media or government representative
- The complaint was avoidable
- The complaint relates to a compliance matter.

Complaints will be first escalated to the Senior Manager, Community and Engagement or Director of Communications for SINSW as the designated complaints handling management representatives for our projects. Further escalation will be made to the Executive Director, Office of the Chief Executive to mediate if required.

If a complaint still cannot be resolved by SINSW to the satisfaction of the complainant, we will advise them to contact the NSW Ombudsman: www.ombo.nsw.gov.au/complaints.

The below table summarises timeframes for responding to enquiries and complaints, through each correspondence method:

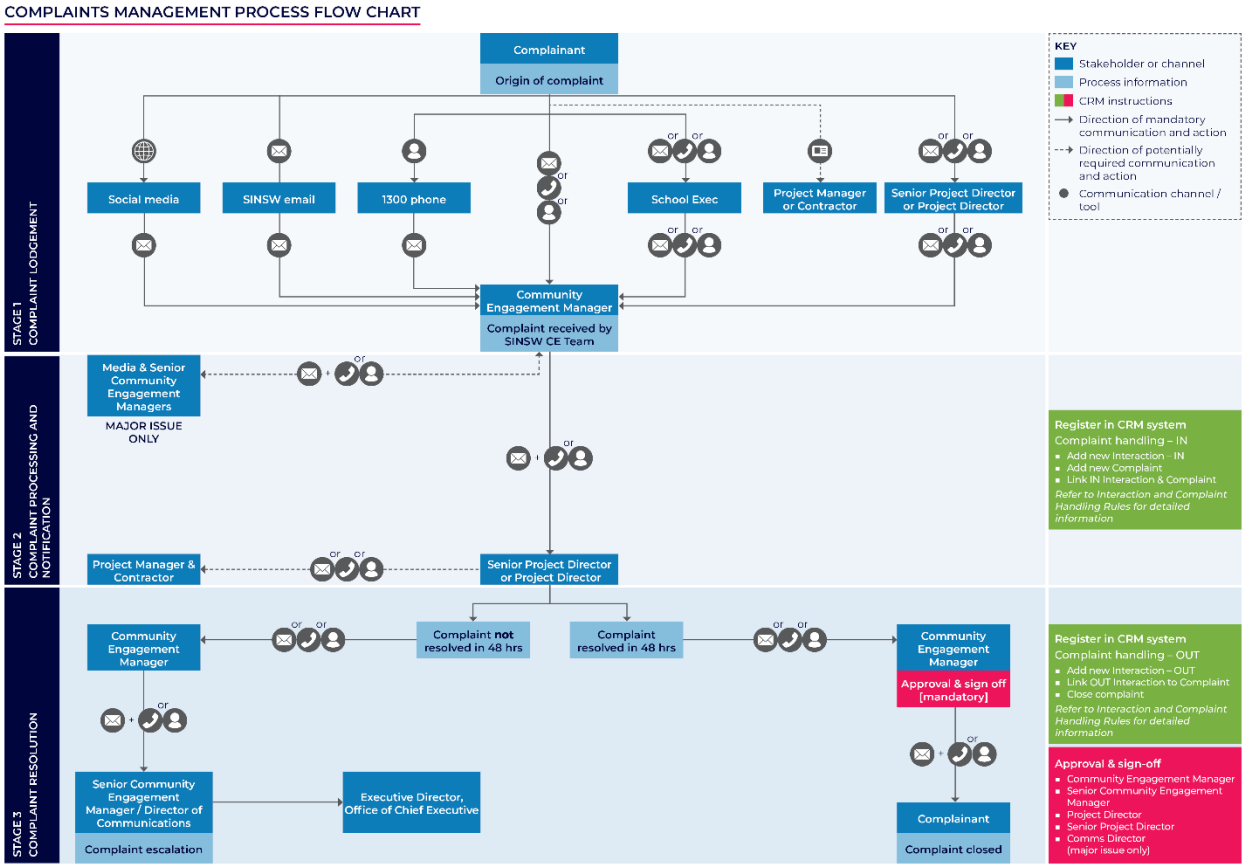
Table 6: Complaint and enquiry response time

Complaint	Acknowledgement times	Response times
Phone call during business hours	At time of call and agree with caller estimated timeframe for resolution.	Complaint to be closed out within 48 hours. If not possible, continue contact, escalate as required and resolve within seven business days.
Phone call after hours*	Within two hours of receiving message upon returning to office.	Following acknowledgement, complaint to be closed out within 48 hours. If not possible, continue contact,

Complaint	Acknowledgement times	Response times
		escalate as required and resolve within seven business days.
Email during business hours	At time of email (automatic response)	Complaint to be closed out within 48 hours. If not possible, continue contact, escalate internally as required and resolve within seven business days.
Email outside of business hours	At time of email (automatic response)	Complaint to be closed out within 48 hours (once return to business hours). If not possible, continue contact, escalate internally as required and resolve within seven business days.
Interaction/ Enquiry		
Phone call during business hours	At time of call and agree with caller estimated timeframe for response.	Interaction to be logged and closed out within seven business days.
Phone call after hours	Within two hours of receiving message upon returning to office.	Interaction to be logged and closed out within seven business days.
Email during business hours	At time of email (automatic response)	Interaction to be logged and closed out within seven business days.
Email outside of business hours	At time of email (automatic response)	Interaction to be logged and closed out within seven business days.
Letter	N/A	Interaction to be logged and closed out within 10 business days following receipt.

The below diagram outlines our internal process for managing complaints.

Figure 3 - Internal Complaints Process



8.5.1. Disputes involving compensation and rectification

SINSW is committed to working with the school and broader community to address concerns as they arise. Where disputes arise that involve compensation or rectification, the process for resolving community enquiries and complaints will be followed to investigate the dispute. Depending upon the results of the investigation, SINSW may seek legal advice before proceeding.

8.6. Incident management

An incident is an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance. Material harm is harm that:

(a) involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial; *or*

(b) results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).

8.6.1. Roles and responsibilities following an incident

In the event of an incident, once emergency services are contacted, the incident must be immediately reported to the SINSW Senior Project Director who will inform:

- SINSW Executive Director
- SINSW C&E Manager
- SINSW Senior Manager, C&E
- SINSW Communications Director

SINSW Communications Director will:

- Lead and manage all communications with the Minister's office in the event of an incident, with assistance as required

- Direct all communications with media to the SINSW Media Manager in the first instance for management
- Notify all other key project stakeholders of an incident.

The school and local community will be notified within 24 hours in the event of an incident, as per our notification timelines in Table 5.

The SINSW Senior Project Director will issue a written incident notification to Department of Planning, Industry & Environment (compliance@planning.nsw.gov.au) and local council immediately following the incident to set out the location and nature of the incident.

This must be followed within seven days following the incident of a written notification to the Department of Planning, Industry and Environment (compliance@planning.nsw.gov.au) that:

(a) identifies the development and application number;

(b) provides details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);

(c) identifies how the incident was detected;

(d) identifies when SINSW became aware of the incident;

(e) identify any actual or potential non-compliance with conditions of consent;

(f) describes what immediate steps were taken in relation to the incident;

(g) identifies further action(s) that will be taken in relation to the incident; and

(h) provides the contact information for further communication regarding the incident (the Senior Project Director).

Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, SINSW will provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below:

(a) a summary of the incident;

(b) outcomes of an incident investigation, including identification of the cause of the incident;

(c) details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and

(d) details of any communication with other stakeholders regarding the incident.

8.7. Reporting process

Throughout the project, data will be recorded on participation levels both face-to-face and online, a record of engagement tools and activities carried out in addition to queries received and feedback against emerging themes.

Stakeholder and community sentiment will be evaluated throughout to ensure effectiveness of the engagement strategy and to inform future activities.

Reporting will include, but not be limited to:

- Stakeholder engagement reporting – numbers of forums, participation levels and a summary of the outcomes Community sentiment reporting – outputs of all community engagement activities, including numbers in attendance at events, participation levels and feedback received against broad themes
- Online activity – through the project website and via social media
- Media monitoring – as part of the proactive media campaign
- Engagement risk register – to be updated regularly.

Appendix A – Changing the way we communicate – community engagement alternative methods

Below are proposed alternatives to our standard mandatory requirements for community engagement effective as of 30 March 2020. These alternatives are proposed to ensure we continue to comply with SSD and DA conditions and that our communities can remain informed about our projects while adhering to social distancing requirements and NSW Health advice.

Our engagement principles for this period should continue to ensure our communications are:

- Simple
- Streamlined
- Accessible

Summary of mandatory requirements and alternatives:

Items in **bold** have alternate delivery options.

SSD CONDITION	ALTERNATIVE
1300 community information line	No change
Advertising (print)	Promote online information session / generic single advert
Call centre scripts	No change
Community contact cards	Contractors to hand out as required
CRM database	No change
Display boards	Digital version
Door knocks	Door knocks are replaced by letterbox drops
Face-to-face meetings/briefings	Phone call or teleconferencing
FAQs	No change
Information booths	Information booths are replaced by project updates Virtual information sessions
Information sessions (drop in)	Drop in information sessions are replaced by virtual information sessions
Information pack	Digital version
Media releases/events	No change to media releases, no events to be held
Notifications	Distributed to school community via email from Principal Distributed to near neighbours via letterbox drop*

SSD CONDITION	ALTERNATIVE
Photography, time-lapse photography and videography	Source photography if health advice permits Use images and time-lapse from similar projects if unable to photograph site
Presentations	Digital version for PRGs/stakeholder meetings
Priority correspondence (RML)	No change
Project Reference Group	Skype meetings / teleconferencing
Project signage	No change if production and installation still possible; A4 print out delivered
Site visits	Site visits via phone/video/photography
School Infrastructure NSW email	No change
School Infrastructure NSW website	No change (may publish updates more frequently)
Welcome pack/ thank you pack	Welcome pack: Do not issue until school resumes Thank you pack: Issued when project is entirely complete

**Alternative may change depending on distributor operations*