Pendle Hill High School — Construction Noise Vibration Management Sub Plan (CNVMSP)

Taylor Construction Group

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1 INTRODUCTION

Pulse White Noise Acoustics (PWNA) has been engaged to prepare a Construction Noise and Vibration Management Sub Plan (CNVMSP) for the construction activities to be undertaken as part of the Pendle Hill High School project including item B14 of the SSD-9579147.

Onsite unattended and attended noise levels have previously been determined for the project and included in the Aurecon *Pendle Hill High School, SSD Application – Acoustic Assessment* dated 30 April 2021 and reference: 507914. The details of the acoustic survey included in the Aurecon report have been used in this assessment.

A glossary of acoustic terminology used throughout this report is included in Appendix A.

The author of this report is a director of Pulse White Noise Acoustics who is a member of the Australian Acoustic Society, details including Ben's CV and membership of the AAS are included in Appendix B.

1.1 Site Layout and Development Overview

The school currently operates as a high school for students from year 7 to 12 and includes 5 two-storey buildings (Buildings A, B, C, D & E). There are several active recreational areas associated with the school, which include, football fields, tennis courts, basketball courts, cricket nets and an oval. The existing on-site parking is located to the south-west of the site and is split into three parts with a total capacity of 72 spaces.

The total redevelopment of Pendle Hill High School is proposed for expansion to a Stream 12 high school, with the scope of works for this SSD-9579147 application proposed to include:

1. Construction of a new three-storey courtyard building on Binalong Road (Building H), comprising two (2) three-storey wings under a connected roof, which will accommodate a library, staff unit, lecture theatre, multimedia and senior learning spaces, administration unit and student amenities.
2. External transport infrastructure upgrade works.
3. New covered walkways and upgraded landscaping.
4. New hard stand areas for bicycle parking.
5. Removal of 15 non-compliant car parking spaces (primarily in the northern most part of the car park) reducing total capacity of on-site parking from 72 spaces to 57 spaces.

The site is located to the west of Binalong Road the works to be conducted as part of the constructions include buildings within the exiting school grounds. See Figure 1 below.

Residential receivers which are located within proximity to the site include a combination of single and two storey dwellings with windows overlooking the school property.

The nearest sensitive receivers to the site have been identified below.

Receiver 1: Single and two storey residential dwellings located to the east of the school located opposite on Binalong Road.

Receiver 2: Single and two storey residential dwellings located to the northeast of the school on Binalong Road and Bora Place.

Receiver 3: Single and two storey residential dwellings located to the north of the school on Favell Street and Kim Place.

Receiver 4: Single and two storey residential dwellings located to the northwest of the school on Illoca and Kim Place.

Receiver 5: Single and two storey residential dwellings located to the west of the school on Una Place, Cornock Avenue and Binalong Road.

Receiver 6: Single and two storey residential dwellings located to the south of the school on Knox Street.

1.2 SSD Compliance

This report has been undertaken in accordance with the requirements of Item B14 of the project's conditions of consent.

Details of conditions of consent and sections of the report which include the required items required by the consent are included in the table below.

Table 1 SSD Compliance Table

SSD Condition number	Requirement	Report Reference for Satisfaction
B14	*B14. 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;*	Ben white is a director of Pulse White Noise Acoustics, Ben's CV and membership of the Australian Acoustic Society is included in Appendix B.
(b)	*describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009);*	Sections 4.1
(c)	*describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;*	Section 6.1 and 6.2
(d)	*include strategies that have been developed with the community for managing high noise generating works;*	Section 6.5.4and Section 6.5.5.
(e)	*describe the community consultation undertaken to develop the strategies in condition B14(d);*	Section 6.5.2 and Appendix C
(f)	*include a complaints management system that would be implemented for the duration of the construction; and*	Section 6.6
(g)	*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 B11*	Section 6.2.2 and Section 6.3.2

Figure 1 Site Map, Measurement Locations and Surrounding Receivers

LEGEND

- Pendle hill High School project site
- Location of works to be undertaken on the site
- Location of previously undertaken noise monitoring locations
- Residential receivers

2 EXISTING ACOUSTIC ENVIRONMENT

Measured noise levels from the attended noise survey undertaken as part of the Aurecon *Pendle Hill High School, SSD Application – Acoustic Assessment* dated 30 April 2021 and reference: 507914 have been used in this assessment.

As part of the Aurecon *Pendle Hill High School, SSD Application – Acoustic Assessment an* assessment of background noise levels within the vicinity of the site has been undertaken. Aurecon *Pendle Hill High School, SSD Application – Acoustic Assessment* includes an assessment which has been stated to be in accordance with the NSW EPA's *Noise Policy for Industry* (NPI, 2017).

The Rating Background Noise Level (RBL) is the background noise level used for assessment purposes and includes the 90th percentile of the daily background noise levels during each assessment period, being day, evening and night. The RBL $L_{A90\ (15minute)}$ and L_{Aeq} noise levels presented within the Aurecon *Pendle Hill High School, SSD Application – Acoustic Assessment* are summarised in Table 2.

Table 2 Measured Ambient Noise Levels corresponding to the NPI's Assessment Time Periods

Measurement Location	Daytime[1] 7:00 am to 6:00 pm		Evening[1] 6:00 pm to 10:00 pm		Night-time[1] 10:00 pm to 7:00 am	
	L_{A90}[2] (dBA)	L_{Aeq}[3] (dBA)	L_{A90}[2] (dBA)	L_{Aeq}[3] (dBA)	L_{A90}[2] (dBA)	L_{Aeq}[3] (dBA)
Monitor Location: North of the site						
North of the site – See Figure 1	39	52	39	52	37	46
Monitor Location: South of the site						
South of the site – See Figure 1	40	53	40	52	36	48

Note 1: For Monday to Saturday, Daytime 7:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 7:00 am. On Sundays and Public Holidays, Daytime 8:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 8:00 am

Note 2: The L_{A90} noise level is representative of the "average minimum background sound level" (in the absence of the source under consideration), or simply the background level.

Note 3: The L_{Aeq} is the energy average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.

Measured noise levels in accordance with the time periods defined by the NSW EPA RNP 2011 are presented below.

Table 3 Measured Ambient Noise Levels corresponding to the "RNP" Assessment Time Periods

Measurement Location	Daytime [1] 7:00 am to 10:00 pm L_{Aeq} (whole period) [2] (dBA)	Night-time [1] 10:00 pm to 7:00 am L_{Aeq} (whole period) [2] (dBA)
Binalong Road	62	48

Note 1: For Monday to Sunday, Daytime 7:00 am – 10:00 pm; Night-time 10:00 pm – 7:00 am.

Note 2: The L_{Aeq} is the energy average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.

3 PROJECT SSD REQUIREMENTS

This CNVSP has been prepared in accordance with the SSDA 9579147 consent condition B14 which includes the states

> *B14. 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) include strategies that have been developed with the community for managing high noise generating works;*
> *(e) describe the community consultation undertaken to develop the strategies in condition B14(d);*
> *(f) include a complaints management system that would be implemented for the duration of the construction; and*
> *(g) 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 B11*

The project has included a *Community Communication Strategy* as require in Item B7 of the consent, details of the *Community Communication Strategy* are included in Appendix C.

4 NOISE AND VIBRATION CRITERIA

Relevant noise and vibration criteria for construction activities are detailed below.

4.1 Construction Noise Objectives

Relevant construction noise objectives applicable to this project are outlined below.

4.1.1 NSW EPA (Former DECC) Interim Construction Noise Guideline (ICNG) 2009

Noise objective for construction and demolition activities are discussed in the *Interim Construction Noise Guideline* (ICNG). The ICNG also recommends procedures to address potential impacts of construction noise on residences and other sensitive land uses. The main objectives of the ICNG are summarised as follows:

- Promote a clear understanding of ways to identify and minimise noise from construction works;
- Focus on applying all "feasible" and "reasonable" work practices to minimise construction noise impacts;
- Encourage construction to be undertaken only during the recommended standard hours unless approval is given for works that cannot be undertaken during these hours;
- Streamline the assessment and approval stages and reduce time spent dealing with complaints at the project implementation stage; and
- Provide flexibility in selecting site-specific feasible and reasonable work practices in order to minimise noise impacts.

The ICNG contains a quantitative assessment method which is applicable to this project. Guidance levels are given for airborne noise at residences and other sensitive land uses.

The quantitative assessment method involves predicting noise levels at sensitive receivers and comparing them with the Noise Management Levels (NMLs). The NML affectation categories for residential receivers have been reproduced from the guideline and are listed in the Table 4 below.

Table 4 NMLs for quantitative assessment at residences

Time of Day	Noise Management Level $L_{Aeq(15minute)}$ [1,2]	How to Apply
Recommended standard hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays	Noise affected RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. • Where the predicted or measured LAeq(15minute) is greater than 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 75 dBA	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 (consent, determining or regulatory) 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 (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences. 2. If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside the recommended standard hours above	Noise affected RBL + 5 dB	• A strong justification would typically be required for works 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 5 dB above the noise affected level, the proponent should notify the community.

Note 1 Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m of the residence. Noise levels may be higher at upper floors of the noise affected residence.

Note 2 The RBL is the overall single-figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours). The term RBL is described in detail in the NSW Industrial Noise Policy (EPA 2000).

Construction noise levels at other noise receivers are outlined below:

- Construction noise levels within classrooms other educational institutions is not recommended to exceed 45dBA $L_{Aeq,15minute}$, when measured internally.
- Construction noise levels at offices and retail outlets are not recommended to exceed 70dBA LAeq,15minute, when measured externally.

Based on the measured background noise levels summarised in Section 2, and the NMLs outlined above, the construction noise criteria to be used in this assessment are listed in Table 5.

Table 5 NMLs as basis for the acoustic assessment

Receiver Types	NML, dB $L_{Aeq(15minute)}$		
	Standard Hours **Monday to Friday: 7:00am to 6:00pm** **Saturday: 8:00am to 1:00pm**		**Outside Standard Hours** **All hours not listed in the adjacent column.**
Residential – Receiver 1 to the east on Binalong Road	**NAFL: 49** (RBL (39) + 10dB)	**HNAL: 75**	RBL + 5dB
Residential – Receiver 2 northeast of the school on Binalong Road and Bora Place	**NAFL: 49** (RBL (39) + 10dB)		
Residential – Receiver 3 to the north of the school on Kim Place	**NAFL: 49** (RBL (39) + 10dB)		
Residential – Receiver 4 to the northwest of the school on Illoca Place	**NAFL: 49** (RBL (39) + 10dB)		
Residential – Receiver 5 to the west of the school on Una Place, Cornock Avenue.	**NAFL: 49** (RBL (39) + 10dB)		
Residential – Receiver 6 the south of the school on Knox Street.	**NAFL: 50** (RBL (40) + 10dB)		

4.2 Vibration Criteria

Effects of ground borne vibration on buildings may be segregated into the following three categories:

- Human comfort – vibration in which the occupants or users of the building are inconvenienced or possibly disturbed.
- Effects on building contents – where vibration can cause damage to fixtures, fittings and other non-building related objects.
- Effects on building structures – where vibration can compromise the integrity of the building or structure itself.

4.2.1 Vibration Criteria – Human Comfort

Vibration effects relating specifically to the human comfort aspects of the project are taken from AV-TG. This type of impact can be further categorised and assessed using the appropriate criterion as follows:

- Continuous vibration – from uninterrupted sources.
- Impulsive vibration – up to three instances of sudden impact e.g., dropping heavy items, per monitoring period.
- Intermittent vibration – such as from drilling, compacting or activities that would result in continuous vibration if operated continuously.

Table 6 Continuous vibration acceleration criteria (m/s^2) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Critical working areas (e.g. hospital operating theatres, precision laboratories)	Day or night-time	0.0050	0.010	0.10	0.20
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Offices, schools, educational institutions and places of worship	Day or night-time	0.020	0.014	0.040	0.028
		0.04	0.029	0.080	0.058
Workshops	Day or night-time	0.04	0.029	0.080	0.058

Table 7 Impulsive vibration acceleration criteria (m/s^2) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Critical working areas (e.g. hospital operating theatres, precision laboratories)	Day or night-time	0.0050	0.010	0.10	0.20
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day or night-time	0.64	0.46	1.28	0.92
Workshops	Day or night-time	0.64	0.46	1.28	0.92

Table 8 Intermittent vibration impacts criteria (m/s$^{1.75}$) 1 Hz-80 Hz

Location	Daytime		Night-time	
	Preferred Values	Maximum Values	Preferred Values	Maximum Values
Critical working areas (e.g. hospital operating theatres, precision laboratories)	0.10	0.20	0.10	0.20
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

4.2.2 Vibration Criteria – Building Contents and Structure

The vibration effects on the building itself are assessed against international standards as follows:

- For transient vibration: British Standard BS 7385: Part 2-1993 *"Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration"* (BSI 1993); and
- For continuous or repetitive vibration: German DIN 4150: Part 3 – 1999 *"Effects of Vibration on Structure"* (DIN 1999).

4.2.3 Standard BS 7385 Part 2 - 1993

For transient vibration, as discussed in standard BS 7385 Part 2-1993, the criteria are based on peak particle velocity (mm/s) which is to be measured at the base of the building. These are summarised below.

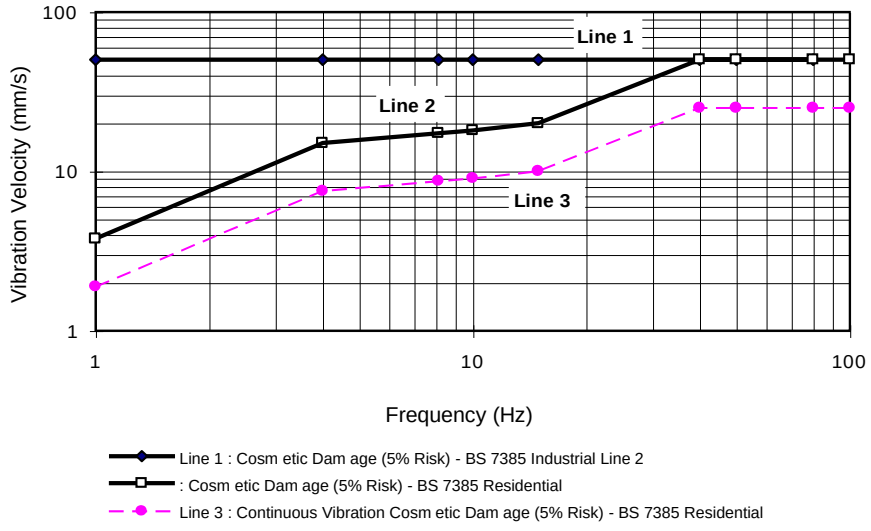
Table 9 Transient vibration criteria as per standard BS 7385 Part 2 - 1993

Line in Figure 2	Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
		4 Hz to 15 Hz	15 Hz and Above
1	Reinforced or framed structures Industrial and heavy commercial buildings.	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

Standard BS 7385 Part 2 – 1993 states that the values in Table 9 relate to transient vibration which does not cause resonant responses in buildings.

Where the dynamic loading caused by continuous vibration events is such that it results in dynamic magnification due to resonance (especially at the lower frequencies where lower guide values apply), then the values in Table 9 may need to be reduced by up to 50% (refer to Line 3 in Figure 2).

Figure 2 BS 7385 Part 2 – 1993, graph of transient vibration values for cosmetic damage



In the lower frequency region where strains associated with a given vibration velocity magnitude are higher, the recommended values corresponding to Line 2 are reduced. Below a frequency of 4 Hz, where a high displacement is associated with the relatively low peak component particle velocity value, a maximum displacement of 0.6 mm (zero to peak) is recommended. This displacement is equivalent to a vibration velocity of 3.7 mm/s at 1 Hz.

The standard also states that minor damage is possible at vibration magnitudes which are greater than twice those given in Table 9, and major damage to a building structure may occur at values greater than four times the tabulated values.

Fatigue considerations are also addressed in the standard and it is concluded that unless the calculation indicates that the magnitude and number of load reversals is significant (in respect of the fatigue life of building materials) then the values in Table 9 should not be reduced for fatigue considerations.

4.2.4 Standard DIN 4150 Part 3 - 1999

For continuous or repetitive vibration, standard DIN 4150 Part 3-1999 provides criteria based on values for peak particle velocity (mm/s) measured at the foundation of the building; these are summarised in Table 10. The criteria are frequency dependent and specific to particular categories of structures.

Table 10 Structural damage criteria as per standard DIN 4150 Part 3 - 1999

Type of Structure	Peak Component Particle Velocity, mm/s			
	Vibration at the foundation at a frequency of			Vibration of horizontal plane of highest floor at all frequencies
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz[1]	
Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
Structures that, because of their sensitivity to vibration, do not correspond to those listed in lines 1 and 2 and are of great intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

Note 1: For frequencies above 100Hz, at least the values specified in this column shall be applied.

5 NOISE AND VIBRATION ASSESSMENT

5.1 Construction Noise Assessment

Sound power levels have been predicted for the construction tasks identified in the project program. The equipment anticipated for use in each task is based on previous project experience. The sound power levels for the equipment likely to be used for each of the listed tasks are provided in Table 10 below.

Table 11 Summary of predicted sound power levels

Tasks	Equipment	Sound Power Levels (dBA re 1pW)	Aggregate Sound Power Level per Task (dBA re 1pW)
Site Establishment Works	Mobile crane	110	113
	Power hand tools	109	
	Semi Rigid Vehicle [1]	105	
Ground Works and Demolition	Excavator	112	119
	Hand held jack hammer [1]	111	
	Dump truck [1]	104	
	Concrete saw [1]	114	
	Skid steer	110	
	Power hand tools	109	
Structure	Hand held jack hammer [1]	106	117
	Concrete saw [1]	114	
	Power hand tools	109	
	Welder	101	
	Concrete pump truck	110	
	Concrete agitator truck	108	
Internal Works	Power hand tools	109	109
Common and External Works	Concrete agitator truck	108	117
	Saw cutter [1]	104	
	Dump truck [1]	104	
	Concrete saw [1]	114	
	Power hand tools	109	

Note 1: An assumed time correction has been applied, this being 5 minutes of operation in any 15-minute interval.

5.2 Predicted Construction Noise Levels

Predicted construction noise levels are presented below for each of the surrounding receivers in accordance with the NSW EPA ICNG.

Note:

- Predicted noise levels presented below are given in a range, this includes the expected minimums as well as the maximums.
- With regards to the maximum noise levels in the range, these are typically experienced when plant/works are within close proximity to a boundary. In our experience whilst these levels above NML's and considered intrusive they will only occur for a short time and is not a representation of noise levels during the entire construction period.

Table 12 Receiver 1 – Summary of preliminary predicted construction noise levels – Residence to the east of the site

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA $L_{Aeq\ 15\ minutes}$	Predicted Combined Noise Level at Receiver dBA $L_{Aeq\ 15\ minutes}$	Criteria dBA $L_{Aeq\ 15\ minutes}$	Summary of Result
Site Establishment Works	Mobile crane	113	56 to 68	60 to 71	**Standard Construction Hours** 39 + 10 = **49** **Highly Noise Affected Level** Standard Construction Hours **75**	Works indicatively predicted to have the potential to exceed the noise management level when working near a receiver. Mitigations of construction noise required to be undertaken including measures detailed in Section 6 of this report.
	Power hand tools		55 to 67			
	Semi Rigid Vehicle		52 to 63			
Ground Works and Demolition	Excavator	119	58 to 70	65 to 76		
	Handheld jack hammer		53 to 64			
	Dump truck		51 to 62			
	Concrete saw		61 to 72			
	Skid steer		56 to 68			
	Power hand tools		55 to 67			
Structure	Handheld jack hammer	117	53 to 64	64 to 76		
	Concrete saw		61 to 72			
	Power hand tools		55 to 67			
	Welder		47 to 59			
	Concrete pump truck		56 to 68			
	Concrete agitator truck		54 to 66			
Internal Works	Power hand tools	109	55 to 67	55 to 67		
Common and External Works	Concrete agitator truck	117	54 to 66	63 to 75		
	Saw cutter		51 to 62			
	Dump truck		51 to 62			
	Concrete saw		61 to 72			
	Power hand tools		55 to 67			

Table 13 Receiver 2 – Summary of predicted construction noise levels – Residence to the northeast of the site

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA $L_{Aeq\ 15\ minutes}$	Predicted Combined Noise Level at Receiver dBA $L_{Aeq\ 15\ minutes}$	Criteria dBA $L_{Aeq\ 15\ minutes}$	Summary of Result
Site Establishment Works	Mobile crane	113	58 to 76	61 to 79	**Standard Construction Hours** 39 + 10 = **49** **Highly Noise Affected Level** Standard Construction Hours **75**	Works indicatively predicted to have the potential to exceed the noise management level when working near a receiver. Mitigations of construction noise required to be undertaken including measures detailed in Section 6 of this report.
	Power hand tools		57 to 75			
	Semi Rigid Vehicle		53 to 71			
Ground Works and Demolition	Excavator	119	60 to 78	66 to 84		
	Handheld jack hammer		54 to 72			
	Dump truck		52 to 70			
	Concrete saw		62 to 80			
	Skid steer		58 to 76			
	Power hand tools		57 to 75			
Structure	Handheld jack hammer	117	54 to 72	65 to 83		
	Concrete saw		62 to 80			
	Power hand tools		57 to 75			
	Welder		49 to 67			
	Concrete pump truck		58 to 76			
	Concrete agitator truck		56 to 74			
Internal Works	Power hand tools	109	57 to 75	57 to 75		
Common and External Works	Concrete agitator truck	117	56 to 74	65 to 83		
	Saw cutter		52 to 70			
	Dump truck		52 to 70			
	Concrete saw		62 to 80			
	Power hand tools		57 to 75			

Table 14 Receiver 3 - Summary of predicted construction noise levels – Residence located to the north

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA $L_{Aeq\ 15\ minutes}$	Predicted Combined Noise Level at Receiver dBA $L_{Aeq\ 15\ minutes}$	Criteria dBA $L_{Aeq\ 15\ minutes}$	Summary of Result
Site Establishment Works	Mobile crane	113	54 to 60	57 to 63	**Standard Construction Hours** 39 + 10 = **49** **Highly Noise Affected Level** Standard Construction Hours **75**	Works indicatively predicted to have the potential to exceed the noise management level when working near a receiver. Mitigations of construction noise required to be undertaken including measures detailed in Section 6 of this report.
	Power hand tools		53 to 59			
	Semi Rigid Vehicle		49 to 55			
Ground Works and Demolition	Excavator	119	56 to 62	62 to 68		
	Handheld jack hammer		50 to 56			
	Dump truck		48 to 54			
	Concrete saw		58 to 64			
	Skid steer		54 to 60			
	Power hand tools		53 to 59			
Structure	Handheld jack hammer	117	50 to 56	62 to 68		
	Concrete saw		58 to 64			
	Power hand tools		53 to 59			
	Welder		45 to 51			
	Concrete pump truck		54 to 60			
	Concrete agitator truck		52 to 58			
Internal Works	Power hand tools	109	53 to 59	53 to 59		
Common and External Works	Concrete agitator truck	117	52 to 58	61 to 67		
	Saw cutter		48 to 54			
	Dump truck		48 to 54			
	Concrete saw		58 to 64			
	Power hand tools		53 to 59			

Table 15 Receiver 4 - Summary of predicted construction noise levels – Residence located to the northwest

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA $L_{Aeq\ 15\ minutes}$	Predicted Combined Noise Level at Receiver dBA $L_{Aeq\ 15\ minutes}$	Criteria dBA $L_{Aeq\ 15\ minutes}$	Summary of Result
Site Establishment Works	Mobile crane	113	52 to 58	56 to 61	**Standard Construction Hours** 39 + 10 = **49** **Highly Noise Affected Level** Standard Construction Hours **75**	Works indicatively predicted to have the potential to exceed the noise management level when working near a receiver. Mitigations of construction noise required to be undertaken including measures detailed in Section 6 of this report.
	Power hand tools		51 to 57			
	Semi Rigid Vehicle		48 to 54			
Ground Works and Demolition	Excavator	119	54 to 60	61 to 66		
	Handheld jack hammer		49 to 55			
	Dump truck		47 to 53			
	Concrete saw		57 to 63			
	Skid steer		52 to 58			
	Power hand tools		51 to 57			
Structure	Handheld jack hammer	117	49 to 55	61 to 66		
	Concrete saw		57 to 63			
	Power hand tools		51 to 57			
	Welder		43 to 49			
	Concrete pump truck		52 to 58			
	Concrete agitator truck		50 to 56			
Internal Works	Power hand tools	109	51 to 57	52 to 57		
Common and External Works	Concrete agitator truck	117	50 to 56	60 to 65		
	Saw cutter		47 to 53			
	Dump truck		47 to 53			
	Concrete saw		57 to 63			
	Power hand tools		51 to 57			

Table 16 Receiver 5 - Summary of predicted construction noise levels – Residence located to the west

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA $L_{Aeq\ 15\ minutes}$	Predicted Combined Noise Level at Receiver dBA $L_{Aeq\ 15\ minutes}$	Criteria dBA $L_{Aeq\ 15\ minutes}$	Summary of Result
Site Establishment Works	Mobile crane	113	56 to 70	59 to 73	**Standard Construction Hours** 39 + 10 = **49** **Highly Noise Affected Level** Standard Construction Hours **75**	Works indicatively predicted to have the potential to exceed the noise management level when working near a receiver. Mitigations of construction noise required to be undertaken including measures detailed in Section 6 of this report.
	Power hand tools		55 to 69			
	Semi Rigid Vehicle		51 to 65			
Ground Works and Demolition	Excavator	119	58 to 72	64 to 78		
	Handheld jack hammer		52 to 66			
	Dump truck		50 to 64			
	Concrete saw		60 to 74			
	Skid steer		56 to 70			
	Power hand tools		55 to 69			
Structure	Handheld jack hammer	117	52 to 66	63 to 77		
	Concrete saw		60 to 74			
	Power hand tools		55 to 69			
	Welder		47 to 61			
	Concrete pump truck		56 to 70			
	Concrete agitator truck		54 to 68			
Internal Works	Power hand tools	109	55 to 69	55 to 69		
Common and External Works	Concrete agitator truck	117	54 to 68	63 to 77		
	Saw cutter		50 to 64			
	Dump truck		50 to 64			
	Concrete saw		60 to 74			
	Power hand tools		55 to 69			

Table 17 Receiver 6 - Summary of predicted construction noise levels – Residence located to the south

Phase	Activity	Aggregate Sound Power Level (dBA re 1pW)	Predicted Individual Noise Level at Receiver dBA $L_{Aeq\ 15\ minutes}$	Predicted Combined Noise Level at Receiver dBA $L_{Aeq\ 15\ minutes}$	Criteria dBA $L_{Aeq\ 15\ minutes}$	Summary of Result
Site Establishment Works	Mobile crane	113	60 to 70	63 to 73	**Standard Construction Hours** 40 + 10 = 50 **Highly Noise Affected Level** Standard Construction Hours **75**	Works indicatively predicted to have the potential to exceed the noise management level when working near a receiver. Mitigations of construction noise required to be undertaken including measures detailed in Section 6 of this report.
	Power hand tools		59 to 69			
	Semi Rigid Vehicle		55 to 65			
Ground Works and Demolition	Excavator	119	62 to 72	68 to 78		
	Handheld jack hammer		56 to 66			
	Dump truck		54 to 64			
	Concrete saw		64 to 74			
	Skid steer		60 to 70			
	Power hand tools		59 to 69			
Structure	Handheld jack hammer	117	56 to 66	67 to 77		
	Concrete saw		64 to 74			
	Power hand tools		59 to 69			
	Welder		51 to 61			
	Concrete pump truck		60 to 70			
	Concrete agitator truck		58 to 68			
Internal Works	Power hand tools	109	59 to 69	59 to 69		
Common and External Works	Concrete agitator truck	117	58 to 68	66 to 77		
	Saw cutter		54 to 64			
	Dump truck		54 to 64			
	Concrete saw		64 to 74			
	Power hand tools		59 to 69			

5.3 Construction Traffic Noise Assessment

For existing residences and other sensitive land uses affected by additional traffic on existing roads, the NSW *Road Noise Policy (RNP)* states that for noise associated with increased road traffic generated by land use developments, any increase in the total traffic noise level should be limited to 2 dB during both day and night-time periods. An increase of 2 dB represents a minor impact that is considered barely perceptible to the average person.

It is proposed that the construction traffic would access the site via Binalong Road to the east of the site. All construction traffic will access the site and use the surrounding roadways in accordance with the site Construction Management plan.

5.4 Vibration Assessment

In order to maintain compliance with the human comfort vibration criteria discussed in Section 4.2, it is recommended that the indicative safe distances listed in table below should be maintained. These indicative safe distances should be validated prior to the start of construction works by undertaking measurements of vibration levels generated by construction and demolition equipment by the contractor.

Additionally, any vibration levels should be assessed in accordance with the criteria discussed in Section 4.2.

Table 18 Recommended indicative safe working distances for vibration intensive plant

Plant	Rating / Description	Safe Working Distances (m)	
		Cosmetic Damage (BS 7385: Part 2 DIN 4150: Part 3)	Human Comfort (AVTG)
Vibratory roller	< 50 kN (Typically 1 – 2 tonnes)	5	15 – 20
	< 100 kN (Typically 2 – 4 tonnes)	6	20
	< 200 kN (Typically 4 – 6 tonnes)	12	40
	< 300 kN (Typically 7 – 13 tonnes)	15	100
	> 300 kN (Typically more than 13 tonnes)	20	100
Small hydraulic hammer	300 kg, typically 5 – 12 tonnes excavator	2	7
Medium hydraulic hammer	900 kg, typically 12 – 18 tonnes excavator	7	23
Large hydraulic hammer	1600 kg, typically 18 – 34 tonnes excavator	22	73
Vibratory pile driver	Sheet piles	2 – 20	20
Jackhammer	Hand held	1	Avoid contact with structure and steel reinforcements

6 NOISE AND VIBRATION MANAGEMENT PLAN

6.1 Acoustic Management Procedures

Table 19 below summarises the management procedures recommended for airborne noise and vibration impact. These procedures are also further discussed in the report as well as recommended mitigation measures. Hence, where applicable, links to further references are provided in Table 19.

Table 19 Summary of mitigation procedures

Procedure	Abbreviation	Description	Further Reference
General Management Measures	GMM	Introduce best-practice general mitigation measures in the workplace which are aimed at reducing the acoustic impact onto the nearest affected receivers.	Refer to Section 6 For noise impact, also refer to Section 6.1 For vibration impact, also refer to Section 6.3.1
Project Notification	PN	Issue project updates to stakeholders, discussing overviews of current and upcoming works. Advanced warning of potential disruptions can be included. Content and length to be determined on a project-by-project basis.	Refer to Section 6.
Verification Monitoring	V	Monitoring to comprise attended or unattended acoustic surveys. The purpose of the monitoring is to confirm measured levels are consistent with the predictions in the acoustic assessment, and to verify that the mitigation procedures are appropriate for the affected receivers. If the measured levels are higher than those predicted, then the measures will need to be reviewed and the management plan will need to be amended.	For noise impact, refer to Section 6 and Section 6.2.3. For vibration impact, refer to Section 6.3.2
Complaints Management System	CMS	Implement a management system which includes procedures for receiving and addressing complaints from affected stakeholders	Refer to Section 6.6
Specific Notification	SN	Individual letters or phone calls to notify stakeholders that noise levels are likely to exceed noise objectives. Alternatively, contractor could visit stakeholders individually in order to brief them in regards to the noise impact and the mitigation measures that will be implemented.	Refer to Section 6.
Respite Offer	RO	Offer provided to stakeholders subjected to an ongoing impact.	-
Alternative Construction Methodology	AC	Contractor to consider alternative construction options that achieve compliance with relevant criteria. Alternative option to be determined on a case-by-case basis. It is recommended that the selection of the alternative option should also be determined by considering the assessment of on-site measurements (refer to Verification Monitoring above).	-

The application of these procedures is in relation to the exceedances over the relevant criteria. For airborne noise, the criteria are based on NMLs. The allocation of these procedures is discussed in Section 6.1.1

For vibration, the criteria either correspond to human comfort, building damage or scientific and medical equipment. The application of these procedures is discussed in Section 6.1.2.

6.1.1 Allocation of Noise Management Procedures

For residences, the management procedures have been allocated based on noise level exceedances at the affected properties, which occur over the designated NMLs (refer to section 3). The allocation of these procedures is summarised in Table 20 below.

Table 20 Allocation of noise management procedures – residential receivers

Construction Hours	Exceedance over NML (dB)	Management Procedures (see definition above)
Approved Construction Hours Mon – Fri: 7:00 am to 7:00 pm Sat: 8:00 am – 1:00 pm	0 - 3	GMM
	4 - 10	GMM, PN, V [1], CMS, AC
	> 10	GMM, PN, V, CMS, SN, AC
Outside Standard Hours Mon – Fri: 7:00 am to 8:00 am Sat: 7:00 am to 8:00 am	0 - 10	GMM, AC
	11 - 20	GMM, PN, V [1], CMS, AC
	> 20	GMM, PN, V, CMS, SN, RO, AC

Notes
1. Verification monitoring to be undertaken upon complaints received from affected receivers

Please note the following regarding the allocation of these procedures:

- In addition to the above the projects *Conditions of Consent* require works to include the following:
    - Rock Breaking, rock hammering, sheet piling and similar activities may only be carried out between the following hours:
        - 9am to 12 midday – Monday to Friday.
        - 2 pm to 5pm – Monday to Friday.
        - 9am to 12 midday – Saturday's.
- The exceedances have been estimated as part of the acoustic assessment, and these are summarised in Section 5.2.
- The allocation of procedures is based on the assumptions used for noise level predictions (refer to Section 5.1). Consequently, these allocations can be further refined once additional details of the construction program become available.

6.1.2 Allocation of Vibration Management Procedures

Table 21 below summarises the vibration management procedures to be adopted based on exceedance scenarios (i.e., whether the exceedance occurs over human comfort criteria, building damage criteria, or criteria for scientific and medical equipment). Please note these management procedures apply for any type of affected receiver (i.e., for residences as well as non-residential receivers).

Table 21 Allocation of vibration management procedures

Construction Hours	Exceedance Scenario	Management Procedures
Approved Construction Hours Mon – Fri: 7:00 am to 7:00 pm Sat: 8:00 am – 1:00 pm	Over human comfort criteria (refer to Section 3)	GMM, PN, V, RO
	Over building damage criteria (refer to Section 3)	GMM, V, AC
Outside Standard Hours Mon – Fri: 7:00 am to 8:00 am Sat: 7:00 am to 8:00 am	Over human comfort criteria (refer to Section 3)	GMM, SN, V, RO, CMS
	Over building damage criteria (refer to Section 3)	GMM, V, AC

6.2 Site Specific Noise Mitigation Measures (including High Noise Affected Levels)

Predicted noise levels outlined in section 5.1 indicate exceedances above the Noise Management Levels (NMLs) as well as the Highly Noise Affected Level (HNAL) when in proximity to a boundary. To militate against any exceedances, the site will need to introduce periods of respite for activities which are creating noise levels above the HNAL and including activities such as piling, hydraulic hammering and the like (i.e. greater than 75dBA). See below.

Table 22 Recommended Respite Periods

Monday to Friday	Saturday
7:00am to 8:00am – No noisy works (Respite Period)	8:00am to 9:00am – No noisy works (Respite Period)
8:00am to 11:30am – Works	9:00am to 12:00pm – Works
11:30am to 12:30pm – No noisy works (Respite Period)	12:00pm to 1:00pm – No noisy works (Respite Period)
12:30pm to 3:30pm – Works	
3:30pm to 4:30pm – No noisy works (Respite Period)	
4:30pm to 6:00pm – Works	

6.2.1 General Mitigation Measures

The contractor will, where reasonable and feasible, apply best practice noise mitigation measures. These measures shall include the following:

- Maximising the offset distance between plant items and nearby noise sensitive receivers.
- Preventing noisy plant working simultaneously and adjacent to sensitive receivers.
- Minimising consecutive works in the same site area.
- Orienting equipment away from noise sensitive areas.
- Carrying out loading and unloading away from noise sensitive areas.

In order to minimise noise impacts during the works, the contractor will take all reasonable and feasible measures to mitigate noise effects.

The contractor will also take reasonable steps to control noise from all plant and equipment. Examples of appropriate noise control include efficient silencers and low noise mufflers.

Construction works are to be conducted in accordance with the Conditions of Consent, which includes item C14 and include the following:

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

The contractor should apply all feasible and reasonable work practices to meet the NMLs and inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels, duration of noise generating construction works, and the contact details for the proposal. Works will be undertaken in conjunction with the Community Communication Strategy, as required by Item B7 of the Conditions of Consent.

All construction vehicles (including concrete agitator trucks) do not arrive at the site or surrounding residential precincts outside of the construction hours of works outlined in the consent conditions, including:

- 7am to 7pm Monday to Friday
- 8am to 1pm Saturdays

6.2.2 Noise Monitoring

Noise monitoring will be performed by an acoustical consultant directly engaged by the contractor.

Noise monitoring is recommended to be undertaken by attended noise measurements at the start of any new phase of works (i.e. demolition, excavation or remediation works etc.). The statistical parameters to be measured should include the following noise descriptors: L_{Amin}, L_{A90}, L_{A10}, L_{A1}, L_{Amax} and L_{Aeq}. Unattended noise measurements should be conducted over consecutive 15 minute periods at the commencement of demolition and ground works on the site.

This monitoring should also be complemented by undertaking attended noise measurements in order to:

- Differentiate between construction noise sources and other extraneous noise events (such as road traffic and aircraft noise)
- Note and identify any excessive noise emitting machinery or operation.

In addition to the above detailed measurements, should any complaints be received which have not been determined previously, it should be confirmed by conducting additional attended noise measurements.

The survey methodology and any equipment should comply with the requirements discussed in Standard AS 1055.1-1997.

6.2.3 Noise Mitigation Measures for Non-Residential Receivers

Where exceedances have been identified in Section 3, the following mitigation measures are recommended:

- Undertake general mitigation measures as discussed in Section 6.
- Issue project updates to tenants in affected premises. The updates can include overview of current and upcoming works, as well as advanced warning of potential disruptions. These updates can also be issued through an email distribution list or via social media and in accordance with consent condition B7 requiring a Community Communication Strategy.
- Signage to be posted in order to provide stakeholders information regarding project details, emergency contacts and enquiry contact information in accordance with consent condition C1 requiring a site notice.

6.2.4 Alternate Equipment or Process

Exceedance of the site's NMLs should result in an investigation as to whether alternate equipment could be used, or a difference process could be undertaken. The assessment is required to be undertaken in coordination with the contractors undertaking the works to be conducted.

6.2.5 Acoustic Enclosures/Screening

Typically, on a construction site there are three different types of plant that will be used: mobile plant (i.e., excavators, skid steers, etc.), semi mobile plant (i.e., hand tools generally) or static plant i.e. (diesel generators).

For plant items which are static it is recommended that, in the event exceedances are being measured due to operation of the plant item, an acoustic enclosure/screen is constructed to reduce impacts. These systems can be constructed from Fibre Cement (FC) sheeting or, if airflow is required, acoustic attenuators or louvres.

For semi mobile plant, relocation of plant should be investigated to either be operated in an enclosed space or at locations away from a receiver.

With mobile plant it is generally not possible to treat these sources. However, investigations into the machine itself may result in a reduction of noise (i.e., mufflers/attenuators etc) and proactive mechanical maintenance.

6.3 Vibration Mitigation Measures

6.3.1 General Mitigation Measures

As part of the CNVMP, the following vibration mitigation measures should be implemented:

- Any vibration generating plant and equipment is to be in areas within the site in order to lower the vibration impacts to surrounding receivers.
- Investigate the feasibility of rescheduling the hours of operation of major vibration generating plant and equipment to within the allowable time set within the consent conditions which include 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.
- Use lower vibration generating items of construction plant and equipment; that is, smaller capacity plant.
- Minimise conducting vibration generating works consecutively in the same area (if applicable).
- Schedule a minimum respite period of at least 30 minutes after a period of continuous 2 hours of work.
- Use only dampened rock breakers and/or "city" rock breakers to minimise the impacts associated with rock breaking works.
- Conduct attended measurements of vibration generating plant at commencement of works in order to validate the indicative safe working distances advised in Table 18 and, consequently, to establish safe working distances suitable to the project. Measurements should be conducted at the nearest affected property boundary. These safe working distances should be defined by considering the vibration criteria discussed in Section 4 (i.e., criteria for structural damage, human comfort and impact to scientific or medical equipment).

6.3.2 Vibration Monitoring

Vibration monitoring should be undertaken continuously at the nearest most affected structures.

The monitoring location would be on a stiff part of the structure (at the foundation) on the side of the structure adjacent to the subject demolition and construction works.

The vibration monitoring system will be configured to record the peak vibration levels and to trigger an alarm when predetermined vibration thresholds are exceeded. The thresholds correspond to an "Operator Warning Level" and an "Operator Halt Level", where the Warning Level is 75% of the Halt Level. The Halt Level should be determined based on the vibration criteria for building contents and structure (detailed in section 4.2).

Exceedance of the "Operator Warning Level" would not require excavation or demolition work to cease, but rather, alerts the site manager to proceed with caution at a reduced force or load.

An exceedance of the "Operator Halt Level" would require the contractor to implement an alternative excavation technique pending further analysis of the vibration frequency content in order to determine any potential exceedance of the criteria.

The vibration monitoring equipment would be downloaded and analysed by the acoustical consultant monthly including reporting of the collected data.

Reports of the measured vibration levels and their likely impacts would be prepared by the acoustical consultant and issued to the contractor monthly.

Vibration monitoring should be undertaken including the following:

1. Vibration Monitoring to include long term continuous vibration logging.
2. Monitors set to record maximum vibration levels including Peak Particle Velocity (PPV) magnitudes.
3. Monitors are required to be SMS enabled such that any events recorded above 'alert levels can be instantaneously sent to suitable builder, acoustic consultant and contractor representatives.
4. In the event results re received above 'alert levels the following response to events are required as detailed in the table below.
5. Vibration monitoring should be undertaken for the periods including demolition, exaction and construction of the building structure including installation of concrete to ground floor as a minimum or on agreement with neighbouring stake holders in the event monitoring details no negative impacts during the construction of the project.

Table 23 Required Response to Vibration Events

Location/ Receiver Type	Event Type		
	Trigger	Alert	Alarm, Stop Work
Surrounding Residential Dwellings	6 mm/s	7 mm/s	8 mm/s
See Section below for response to Event Types			

The required response to recorded event types detailed in the table above are included in the following table.

Table 24 Required Response to Vibration Events

Event Type	Required Response
Trigger level	All events above the trigger level are required to be recorded by the vibration monitors.
Alert	Temporarily cease the vibration generating activity and assess the reason for vibration exceedances. Modify the related construction practice to prevent future exceedances. Keep records of subsequent breaches to demonstrate that vibrations for modified activity do not reach Alert Level. All *Alert* events are to be SMS messaged to the building contractor site manager, subcontractor and acoustic consultant.
Alarm	**Stop Work Event** All *Alarm* events are to be SMS messaged to a relevant Richard Crookes, subcontractor and acoustic consultant. The activity generating the vibration levels is to be stopped immediately. Suitable representatives of the building contractor, the relevant Subcontractor, Heritage Consultant and acoustic consultant. Vibration monitoring report to be completed. Visual assessment of affected property will be conducted to assess whether damage is evident. The item/s of work generating the vibration events is not be recommenced until an action plan is agreed and implemented.

6.4 Noise and Vibration Monitoring

As part of the management of noise from the proposed construction activities to be undertaken on the site the following noise and vibration monitoring is to be undertaken:

1. Noise Monitoring– Attended noise monitoring of excavation and construction activities is to be undertaken during the following periods:
    a. Commencement of any rock breaking or sawing on the site.
    b. In response to any ongoing complaints received from neighbours.

2. Vibration – Based on the proximity of the surrounding receivers to the works magnitudes of vibration resulting from construction activities required to be undertaken on the site are not expected to approach vibration limits detailed in Section 4.2 of this report, therefore permanent continuous vibration monitoring is not recommended.

    Attended vibration monitoring is to be undertaken at the following periods:
    a. Commencement of any high vibration generating activities including hydrail hammering, rock breaking or vibration rolling on the site.
    b. receiver location in the event complaints resulting from construction activities resulting from the perception of vibration are experienced by the occupants of buildings within the vicinity of the site.

6.5 SINSW Complaints management process as outlined in the Community Communication Report (CCR)

6.5.1 Enquiries and complaints management

SINSW manages enquiries, and complaints in a timely and responsive manner and detailed in the SINSW Community Consolation Summary report.

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 regard 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.

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. The complaints register will record the number of complaints received, the nature of the complaints and how the complaint was resolved as detailed in the complaints handling procedure is set out in the Community Communication Strategy.

6.5.2 Complaints management process

All complaints will be conducted using the SINSW Community Communication Strategy for the project.

Any face to face complaints will be directed to the hotline as detailed in the Community Communication Strategy.

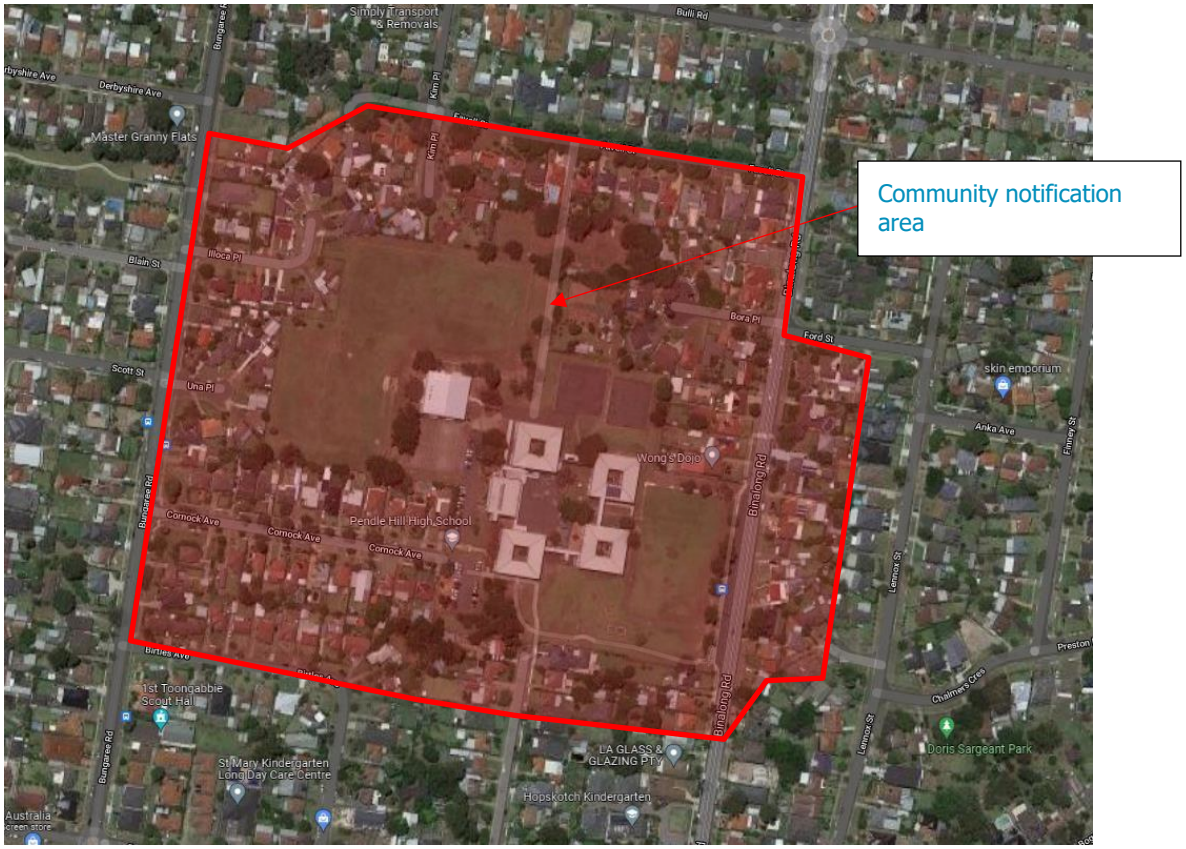
6.5.3 Complaints in common community languages

Complaints can be made in common community languages using the Translating and Interpreting Service (TIS), managed by the Department of Home Affairs. Community members can be connected to an interpreter by calling TIS on 131 450. TIS contact details are included on all project communications. Once TIS has the interpreter on the line, the interpreter and community member are connected to School Infrastructure and phone interpretation can begin. School Infrastructure NSW receives the complaint via the translator and begins the complaints management process as outlined above.

6.5.4 Community Notifications

Prior to the works onsite being undertaken, it is recommended that community consultation with the neighbouring affected parties be undertaken. These include the locations detailed in the figure below.

Figure 3 Required Community Notification Area



Communication notification, should not be limited to the beginning of the onsite works but throughout, providing the community with constant updates on the progress and upcoming works. In our experience these could include:

- Project website.
- Email notifications; and
- Letterbox drops.

6.5.5 Community Engagement

It is proposed that throughout the duration of the project, continued meetings with both the school principals will be undertaken on a regular basis to monitor and mitigate any impacts of construction noise and vibration on the school community.

Community engagement has been undertaken during the design and approvals basis of the project and detailed in the Community Communication Strategy in accordance with condition B14e.

6.6 Complaints Management System

Should complaints arise they must be dealt with in a responsible and uniform manner, therefore, a management system to deal with complaints is detailed above.

Complaints will be undertaken in conjunction with the SINSW complaints management system as detailed in the Community Consultant Summary Report and the Community Communication Strategy documents developed by SINSW to ensure compliance with Condition B14f and including in Appendix C.

6.7 Contingency Plans

Contingency plans are required to address noise or vibration problems if excessive levels are measured at surrounding sensitive receivers and/or if justified complaints occur. Such plans include:

- Stop the onsite works.
- Identify the source of the main equipment within specific areas of the site which is producing the most construction noise and vibration at the sensitive receivers; and
- Review the identified equipment and determine if an alternate piece of equipment can be used or the process can be altered.
- In the event an alternate piece of equipment or process can be used, works can re-commence.
- In the event an alternate piece of equipment or process cannot be determined implement a construction assessment to be performed by a suitably qualified acoustic consultant.

The building contractor shall have access to view the Contractor's noise measurement records on request. The Superintendent may undertake noise monitoring if and when required.

6.8 General Mitigation Measures (Australia Standard 2436-2010)

As well as the above project specific noise mitigation controls, AS 2436-2010 "*Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites*" sets out numerous practical recommendations to assist in mitigating construction noise emissions. Examples of strategies that could be implemented on the subject project are listed below, including the typical noise reduction achieved, where applicable.

6.8.1 Additional Recommendations

- Regular reinforcement (such as at toolbox talks) of the need to minimise noise and vibration.
- Regular identification of noisy activities and adoption of improvement techniques.
- Avoiding the use of portable radios, public address systems or other methods of site communication that may unnecessarily impact upon nearby sensitive receivers.
- Where possible, avoiding the use of equipment that generates impulsive noise.
- Minimising the need for vehicle reversing for example (particularly at night), by arranging for one-way site traffic routes.
- Use of broadband audible alarms on vehicles and elevating work platforms used on site.
- Minimising the movement of materials and plant and unnecessary metal-on-metal contact.
- Minimising truck movements.

6.8.2 Plant and Equipment

- Choosing quieter plant and equipment based on the optimal power and size to most efficiently perform the required tasks.
- Selecting plant and equipment with low vibration generation characteristics.
- Operating plant and equipment in the quietest and most efficient manner.

6.8.3 On Site Noise Mitigation

- Maximising the distance between noise activities and noise sensitive land uses.
- Installing purpose-built noise barriers, acoustic sheds and enclosures.

6.8.4 Work Scheduling

- Providing respite periods which could include restricting very noisy activities to time periods that least affect the nearby noise sensitive locations, restricting the number of nights that after-hours work is conducted near residences or by determining any specific requirements.
- Scheduling work to coincide with non-sensitive periods.
- Planning deliveries and access to the site to occur quietly and efficiently and organising parking only within designated areas located away from the sensitive receivers.
- Optimising the number of deliveries to the site by amalgamating loads where possible and scheduling arrivals within designated hours.
- Including contract conditions that include penalties for non-compliance with reasonable instructions by the principal to minimise noise or arrange suitable scheduling.

6.8.5 Source Noise Control Strategies

Some ways of controlling noise at the source are:

- Where reasonably practical, noisy plant or processes should be replaced by less noisy alternatives.
- Modify existing equipment: Engines and exhausts are typically the dominant noise sources on mobile plant such as cranes, graders, excavators, trucks, etc. In order to minimise noise emissions, residential grade mufflers should be fitted on all mobile plant utilised on site.
- Siting of equipment: locating noisy equipment behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or orienting the equipment so that noise emissions are directed away from any sensitive areas, to achieve the maximum attenuation of noise.
- Regular and effective maintenance.

6.8.6 Miscellaneous Recommendations

Deliveries should be undertaken, where possible, during standard construction hours.

Maximise hammer penetration (and reduce blows) by using sharp hammer tips. Keep stocks of sharp profiles at site and monitor the profiles in use.

It is advised that mobile plant and trucks operating on site for a significant portion of the project are to have reversing alarm noise emissions minimised. This is to be implemented subject to recognising the need to maintain occupational safety standards without compromising the safety of construction staff and members of the public.

No public address system should be used on site (except for emergency purposes).

7 CONCLUSION

This report details the Construction Noise and Vibration Management Sub Plan for the construction of the Pendle Hill High School project.

An assessment of noise and vibration impacts from the required processes to be undertaken during the construction period of the project (including ground works and construction) has been undertaken and suitable treatments, management controls, perioding measurements and community engagement has been detailed in this report.

Providing the recommendations in this report are included in the construction of the site, compliance with the relevant EPA's *Interim Construction Noise Guideline* and the projects *Consent* will be achieved.

For any additional information please do not hesitate to contact the person below.

Regards

Ben White
Director

Pulse White Noise Acoustics

APPENDIX A: ACOUSTIC GLOSSARY

The following is a brief description of the acoustic terminology used in this report:

Ambient Sound	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.
Audible Range	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.
Character, acoustic	The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.
Decibel [dB]	The level of noise is measured objectively using a Sound Level Meter. The following are examples of the decibel readings of every day sounds; 0dB the faintest sound we can hear 30dB a quiet library or in a quiet location in the country 45dB typical office space. Ambience in the city at night 60dB Martin Place at lunch time 70dB the sound of a car passing on the street 80dB loud music played at home 90dB the sound of a truck passing on the street 100dB the sound of a rock band 115dB limit of sound permitted in industry 120dB deafening
dB(A)	*A-weighted decibels* The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise.
Frequency	Frequency is synonymous to *pitch*. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Loudness	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on
LMax	The maximum sound pressure level measured over a given period.
LMin	The minimum sound pressure level measured over a given period.
L1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L10	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L90	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L_{90} noise level expressed in units of dB(A).
Leq	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
dB (A)	'A' Weighted overall sound pressure level
Sound Pressure Level, LP dB	A measurement obtained directly using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the rms sound pressure to the reference sound pressure of 20 micro Pascals.
Sound Power Level, Lw dB	Sound power level is a measure of the sound energy emitted by a source, does not change with distance, and cannot be directly measured. Sound power level of a machine may vary depending on the actual operating load and is calculated from sound pressure level measurements with appropriate corrections for distance and/or environmental conditions. Sound power levels is equal to 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 picoWatt

NAFL	Noise Affected Level - As referred to in the EPA's *Interim Construction Noise Guideline* as the affected noise level for the trigger of construction noise mitigation requirements.
HNAL	High Noise Affected Level – As referred to in the EPA's *Interim Construction Noise Guideline.*
AV-TG	NSW EPA *Assessing Vibration Technical Guideline.*

APPENDIX B – BEN WHITE CV AND AAS MEMBERSHIP

Curriculum Vitae – Benjamin White

Employment Experience:

Director – Pule White Noise Acoustics November 2020 – Present

Director - White Noise Acoustics: March 2019 – Present

Director/Engineer - Acoustic Logic Consultancy: March 2001 – July 2018

Experience:

Ben White the Director of White Noise has over 17 years of experience in acoustic.

Ben has significant experience in providing acoustic services and expert advice in the following areas:

- Residential acoustic reports including aircraft noise (AS2021) assessments, traffic noise, train noise and vibration assessments.
- Noise emission assessments for various projects including assessments with planning requirements using EPA, Department of Planning, Council DCP's and similar regulatory requirements.
- Planning approvals including Development Applications for multi dwelling residential developments, commercial developments, hotels and boarding houses, places of entertainment, carparks, mixed use developments, shopping centres and the like.
- Expert court witness including Land and Environment Court and other expert witness work.
- Project planning and specifications for types of projects including residential, commercial, retail, hotel accommodation, warehouses and industrial developments and mixed-use projects.
- Project delivery for all types of projects including, design advice and project delivery requirements at all stages of projects during design and construction.
- Certification works including on site testing for the provision of certification of all types of projects including items required to comply with Part F5 of the BCA as well as project specific acoustic requirements.
- Mechanical design and advice for the treatments of mechanical services with project requirements.
- External façade design and specification.
- Specialised acoustic design advice including areas of projects.
- Issues with existing building include site surveys and audits as well as advice regarding rectification if required.

AUSTRALIAN ACOUSTICAL SOCIETY

This is to certify that

BENJAMIN WHITE

was admitted to the grade of

MEMBER

of the Australian Acoustical Society

on 27th October 2020

and is entitled to use the letters

M.A.A.S.

issued on 26th November 2020

S. Moore

President

General Secretary

AUSTRALIAN ACOUSTICAL SOCIETY A.C.N. 000 712 658 The Common Seal Of

This certificate remains the property of the Australian Acoustical Society

APPENDIX C – COMMUNITY AND ENGAGEMENT SUMMARY REPORT

NSW GOVERNMENT Education

April 2021

School Infrastructure NSW

Communication and Engagement Summary Report

Pendle Hill High School

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Document History

Version	Date of Approval	Summary of Changes
0.1	9 March 2021	Margie Vorillas
0.2	18 March 2021	Katy Johnson and Mardi Christian Updates
0.3	4 May 2021	Katy Johnson and Mardi Christian Updates
0.4		

Introduction

School Infrastructure NSW (SINSW) has been established by the NSW Government to deliver its multi-billion-dollar schools' investment program.

As part of the program, School Infrastructure NSW is committed to engaging with stakeholders and the wider community through the entire project lifecycle: from planning, design and delivery, through to operations and maintenance.

School Infrastructure NSW's (SINSW) mission is to provide solutions by working collaboratively with all stakeholders to create learning environments across NSW that serve future needs and make us proud. As part of our transformation in the way we plan, develop and deliver schools across the State. Part of this transparency means that we will let the community know which schools will be worked on and at what time.

As we develop a range of options for addressing school infrastructure requirements, members of the community will provide comment on our proposal before it is finalised. Feedback is important and helps us refine our planning and design process. Engaging with the broader community ensures we've considered necessary information and balanced this with practicality and cost to deliver sustainable and relevant solutions for schools.

This report summarises the consultation and communication activities that have been undertaken concerning the proposed upgrades to Pendle Hill High School. It forms part of the Environmental Impact Statement required for the State Significant Development (SSD) application specified in the Secretary's Environmental Assessment Requirements (SEARs). This report summarises the engagement undertaken for this stage of the proposed upgrades by outlining:

- the SEARs for stakeholder and community consultation
- the consultation process was undertaken, including key meetings with stakeholders
- a summary of feedback received and issues raised by specific stakeholders, and
- how feedback has been considered in the development of the SSD application.

Background

Secretary's Environmental Assessment Requirements

The Secretary's Environmental Assessment Requirements (SEARs) for the State Significant Development were received on 26 October 2020. An excerpt can be found below.

"During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups, residents, special interest groups including local Aboriginal land councils and registered Aboriginal stakeholders and affected landowners.

In particular, you must consult with:

- City of Parramatta Council
- Government Architect NSW
- Transport for NSW

The EIS must describe the consultation process and the issues raised and identify where the development's design has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.

Consultation Approach

As set out in the Community Engagement Plan, the following community engagement objectives have been identified for this proposal:

- Promote the benefits of the project
- Build key schools 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 the negative third-party intervention
- Leave a positive legacy in each community.

1.1. Description of Consultation and Communication Channels and Activities

The table below describes the consultation and communication channels and activities that have been undertaken and the strategic intent of each activity.

Activity	Strategic Intent
(Project Reference Group), meetings, workshops, school site inspections	Project Reference Group meetings compromise of representatives from the Public-School communities. The PRG includes the school Principal and a P&C representative to discuss aspects of the design, consultation, and construction approaches. The PRG is an opportunity to seek feedback and input from group members.
Communications (Project Webpage, Project Updates and Works Notifications)	Distribution of project information to stakeholders delivered by letterbox drop, school newsletters, and Pendle Hill School Infrastructure website. A screen print of the Pendle Hill webpage can be found in Appendix 1. A sample of a Project Update can be found in Appendix 2. An example of a works notification can be found in Appendix 3.
Contact Channels (Emails and 1300 project information number)	Direct responses to stakeholder and community contacts.
School community communication (School newsletters, P&C meeting announcements)	Project updates and direct responses to questions.
Online Survey	Design and launch a short five to ten-minute survey to enable participation of and gather feedback from students, teachers and parents of Pendle Hill High School which included local residents.
Parramatta LGA Online Survey	Design and launch a short five to ten minute survey to gather feedback from nearby community members and residents.
Parramatta Council Stakeholder Interview	Identify key council impacts, mitigation and enhancements. Review local governments policy and city plans. Understand how the SINSW development aligns with Parramatta Councils strategic direction.
Pendle Hill School Principal Interview	Understand strategic context about the project, school community and local community. This included historic challenges and need for the project.

1.2. Consultation Activities

A key consultation activity to the project is the governance provided through the Project Reference Group (PRG), which includes feedback on critical design elements and the overall project direction.

PRG meetings for Pendle Hill commenced on 25 February 2021, and are being held on a monthly basis. PRG members include school Principals and a representative of the P&C committee.

Other community facing communications that have occurred to date are outlined in the below table.

Dates	Targeted stakeholders	Consultation Activity	Channel	Attendance/ Reach
w/c 22 February	School community Visitors to SINSW website School catchment area residents	Announcement of the project funding approval. Status Update on the tender process for construction contractor appointment. Outlined the SSDA process and SIA consultation conducted by Elton.	Letterbox Drop Website Update Project Update emailed to Principal and to share with the school community	Approx. 25,400 residents
w/c 1 March	16 Knox Street Resident Pendle Hill	Provided written information on upcoming construction activity and what this will mean for the resident's property. Provided Project Team contact details.	Door Knock Notification	One resident
w/c 1 March	Surrounding school residents	Provided timely notification to	Letterbox Drop	Approx. 50 residents

		nearby residents of upcoming site preparation works.		
12-26 February	Online Survey	Designed and developed a short online survey to test potential issues and topics of excitement related to the project. An introductory email text was also developed for distribution with the survey link. The survey link was sent to students, teachers and parents of Pendle Hill High School.	Pendle Hill High School community Online Survey	96 responses
w/c 8 March	Parramatta Council Stakeholder Interview	Key stakeholder interview with Parramatta Council to discuss concerns and benefits of the project, including Council response to the SEARs.	Interview	Four representatives from Council
w/c 15 February	Pendle Hill High School Principal	Key stakeholder interview with the Principal of Pendle Hill High School to understand enrolment, school and broader community, key challenges, and general context for the project.	Interview	One representative from Pendle Hill High School
w/c 1 March	School Infrastructure NSW Stakeholder Interview	Key stakeholder interview with a representative from School Infrastructure NSW to discuss rational for the project, enrolment trends, school planning approach and key opportunities and challenges of the project.	Interview	One representative from School Infrastructure NSW

1.3. Stakeholder and Community Feedback

Stakeholder and community feedback are a critical element to the development of this project. Initial feedback was sought from stakeholders and communities through the consultation activities and communication channels listed in Section 1.2. The project team has conducted eight consultation pieces thus far with a comprehensive plan for further community engagement to occur during the statutory exhibition of the SSDA. Consultation identified key issues of community interest for consideration during the preparation of the Environmental Impact Statement.

Key issues included:

- Construction noise impacts on local residents
- Construction noise impacts on the learning environment at Pendle Hill High School
- Increased demand for open space and recreational facilities in the local area
- Parking in the local area
- Traffic management
- Reputation of Pendle Hill High School
- Amenity impact on neighbours.

Key themes have emerged from the feedback and are described below.

- Construction: impacts associated with the construction stage of the project
- Learning experience and teaching: existing challenges associated with the current quality of facilities at Pendle Hill High School and the opportunities identified with the project
- Access to open space and recreation: current and future challenge of meeting demand for open space in the local area and across the Parramatta LGA more broadly
- Employment and job creation: opportunities for employment
- Local amenity and experience: impact and concerns of how the project will affect local residents.

1.4. Stakeholder Meetings and Correspondence to Date

This section outlines a summary of the key consultation undertaken with stakeholders, as defined and required by the SEARs.

Stakeholder	Dates	Feedback and Topics Discussed	Outcome
Transport for NSW (TfNSW) City of Parramatta Council SINSW TSA Management TTW (Traffic Engineers)	02 November 2020	Meeting: Transport Working Group (TWG) The project was introduced to the Transport Working Group, and the overall strategic concept of moving away from traditional car-based assessment towards more sustainable transport options. Key feedback included concerns about impacts to residents and on-street parking, a request for travel mode surveys to be completed, a request for a road safety audit, an agreement to consider pedestrian crossing locations, and the need for car/bus conflicts to be resolved.	This is an ongoing working group meeting that was initiated by SINSW. Consultation stakeholders is ongoing.
Aboriginal Community	17 December 2020	Correspondence: Aboriginal Cultural Heritage Assessment Report (ACHAR) In accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010, an invitation was sent to the list of Aboriginal organisations and names provided by LALC (Local Aboriginal Land Council), inviting Aboriginal people who hold cultural knowledge relevant to determining the significance of Aboriginal object(s) and/or places(s) in the project area, to register an interest. A copy of the notification and a list of names of Aboriginal persons who registered an interest, was sent to Heritage NSW and Deerubbin Local Aboriginal Land Council in accordance with of the Aboriginal cultural heritage consultation requirements for proponents 2010.	There were 18 organisations/people that responded to the advertisement

Transport for NSW (TfNSW) City of Parramatta Council SINSW Hills Bus Services TTW (Traffic Engineers)	11 November 2020	Meeting: Transport Working Group (TWG) Current Bus services in place for the school. School community feedback on existing transport services and capacity of travel modes.	This is an ongoing working group meeting that was initiated by SINSW. Consultation stakeholders is ongoing.
Aboriginal Community	15 January 2021	Correspondence: Aboriginal Cultural Heritage Assessment Report (ACHAR) As specified in the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010, an ACHA methodology was sent to the registered parties for feedback on the 15th of January 2021. Registered Aboriginal parties were provided information about the scope of the proposed project and the proposed cultural heritage assessment process.	Knowledge holders were given 28 days to provide feedback.
Transport for NSW (TfNSW) SINSW City of Parramatta Council TSA Management TTW (Traffic Engineers)	27 January 2021	Meeting: Transport Working Group (TWG) Proposed Kiss and Ride locations. Council requested all parking spaces to be compliant to AS2890. TFNSW note that green travel and PT services may be flexible for purposes of DA submission.	This is an ongoing working group meeting that was initiated by SINSW. Consultation stakeholders is ongoing.
Transport for NSW (TfNSW) SINSW City of Parramatta Council TSA Management Planix Projects Cumberland City Council	17 February 2021	Meeting: Transport Working Group (TWG) Pedestrian upgrades Kiss & Ride locations Carparking locations Bus bay adjustments (i.e. footpath widening into the existing indented bay) was agreed offline with Transport for NSW and CDC representatives following the meeting (via email dated 2	This is an ongoing working group meeting that was initiated by SINSW. Consultation stakeholders is ongoing.

		March 2021).	
City of Parramatta Council	03 February 2021	Meeting: Pre-SSD Lodgement Meeting Meeting with Council to discuss the proposed new building at Pendle Hill High School. The proposal is subject to an application to the NSW Department of Planning, Infrastructure and Environment (DPIE) as an SSD.	Council thanked the participants and minutes were issued by Council noting actions from the meeting.
SINSW Government Architect NSW (GANSW) TSA Management Fulton Trotter Architects Architectus	3 March 2021	Meeting: State Design Review Panel (SDRP) Connection with Country (CWC) Masterplan and Landscape	Minutes were issued by the GANSW noting actions from the meeting. GANSW noted the material presented was both thorough, detailed and focused on the masterplan of the proposed new additions to the school.
Transport for NSW (TfNSW) SINSW City of Parramatta TSA Management	3 March 2021	Meeting: Transport Working Group (TWG) Due to time constraints at the 17 February meeting, the same concepts were revisited in more detail. Key feedback included advice on staged bicycle parking, concerns on potential parking. Impacts to streets and residents, general discussion of the final pedestrian improvements. Kiss & Ride strategy, and approval by TfNSW of the ability to refer to Council warrants for zebra crossings. The overall Transport Working Group process was noted as an improvement over previous projects and a benefit to the DA process.	This is an ongoing working group meeting that was initiated by SINSW. Consultation stakeholders is ongoing.

1.5. Project Response

The feedback received during consultation has been considered in the preparation of the Environmental Impact Statement. The table below provides a detailed summary of the key issues that emerged and the corresponding project response.

Key Feedback Received	Project Response	Relevant Report
Heavy vehicle traffic	The Construction Traffic and Pedestrian Management Plan considers a range of measures to reduce the impact of heavy vehicle traffic.	Traffic and Accessibility Impact Assessment
Student safety during construction	The Construction Management Plan should include measures to ensure student safety and prevention of student access to the project site. These recommendations are outlined in the Social Impact Assessment Report.	Preliminary Construction and Environment Management Plan (CEMP)
Construction noise – teachers and staff	The Community Communication Strategy should include clear information for teachers and students about construction noise. The Construction Management Plan should be guided by the NSWEPA Draft Construction Noise Guidelines to ensure noise management is aligned with industry standards.	Preliminary Construction and Environment Management Plan (CEMP)
Construction noise – neighbours	The Community Communication Strategy should distribute clear information for local residents about construction noise. The Construction Traffic and Pedestrian Management Plan outlines proposed construction times and days, including no night works or Sunday works.	Social Impact Assessment Report Traffic and Accessibility Impact Assessment Preliminary Construction and Environment Management Plan (CEMP)

Key Feedback Received	Project Response	Relevant Report
	The Construction Management Plan should be guided by the NSWEPA Draft Construction Noise Guidelines to ensure noise management is aligned with industry standards.	
Stress and distress associated with anticipated change	The Community Communication Strategy should provide clear and regular information about the project and expected temporary impacts.	Social Impact Assessment Report
Environmental impacts, e.g. dust, light pollution, runoff	Construction Traffic and Pedestrian Management Plan. Construction Management Plan.	Preliminary Construction and Environment Management Plan (CEMP)
Parking for construction workers	Management of parking for construction workers is outlined in the Construction Traffic and Pedestrian Management Plan.	Traffic and Accessibility Impact Assessment Preliminary Construction and Environment Management Plan (CEMP)
Interruption to outreach and out of hours services provided by Pendle Hill High School	Internal plan.	Social Impact Assessment Report
Improved classrooms and teaching facilities	Delivery of new facilities at Pendle Hill High School which are fit for purpose.	Social Impact Assessment Report
Improved learning experience	Delivery of new facilities at Pendle Hill High School which are fit for purpose.	Social Impact Assessment Report
Increased student capacity	Delivery of new facilities at Pendle Hill High School which support an increase in enrolment.	Social Impact Assessment Report
Improved access to secondary education infrastructure	Delivery of new facilities at Pendle Hill High School which support an increase in enrolment.	Social Impact Assessment Report
Improved image and reputation of school	Delivery of new facilities at Pendle Hill High School which are fit for purpose.	Social Impact Assessment Report
Community use of new facilities	Opportunity for share use agreement of new facilities.	Social Impact Assessment Report

Key Feedback Received	Project Response	Relevant Report
Reduced opportunity for sport and recreation on school site	The Social Impact Assessment Report recommends Pendle Hill High School considers embellishing existing open space on site to increase its function.	Social Impact Assessment Report
Increased demand for recreational facilities	The Social Impact Assessment Report recommends Parramatta Council, School Infrastructure NSW Pendle Hill High School seek to establish share use agreements for community use of school facilities at Pendle Hill High School.	Social Impact Assessment Report
Increase in local teaching jobs	A product of increasing enrolment capacity	Social Impact Assessment Report
Visual amenity and privacy	A combination of fixed screening and landscaping have been included in the design of the new building to reduce visual and privacy impacts on local residents.	The Architectural Design Report
Overshadowing	The new building has been designed to ensure there is no overshadowing of neighbouring properties.	The Architectural Design Report
Traffic	Alternative transport planning will help reduce cumulative traffic impacts in the local area. This includes promoting carpooling, public transport access guides and active transport events.	Traffic and Accessibility Impact Assessment
Parking		

1.6. Next Steps

In preparing the SSD application for the upgrades to Pendle Hill High School, the project team will continue engagement with stakeholders and communities leading into and during the statutory exhibition of the SSDA, as well as during future stages of the planning and development process. Specifically, School Infrastructure NSW will continue to work closely with the schools' communities and Parramatta Council to plan and coordinate potential future construction, should consent be granted. School Infrastructure NSW will continue to update the project webpage and produce updates at key project stages for stakeholders and communities. The table below summarises the upcoming key engagement that will occur during the statutory exhibition period of the SSDA.

Date	Targeted	Consultation	Channel
w/c 29 March 2021	School community Surrounding residents Visitors to SINSW website	▪ Advise the school and surrounding communities of the early works and site preparations to occur during the school holidays, including work times, type of work taking place, how noise and dust will be mitigated and management of any hazardous remediation on-site.	Work Notification
w/c 9 April 2021	School community Local Community	▪ Share 3D render images publicly. ▪ Invitation to information booth sessions.	Media Release Information Pack
w/c 9 April	Nearby Resident – 82 Binalong Rd	▪ Provide written information on proposed designs and what these mean to the residents. Provide Project Team contact details. ▪ There is a 'We Missed You' template available for use. ▪ While social distancing measures are in place, we will not knock on doors to talk about the project. This information will instead be provided in a 'door knock notification' delivered to letterboxes.	Door Knock Notification
w/c 26 April 2021	Local community	▪ Information booths to be held locally, staffed by a project team member to answer	Information booth held on school grounds

Date	Targeted	Consultation	Channel
	Nearby residents School community	any questions, concerns or complaints on the project. ▪ Information booths are to be held both at the school/ neighbouring school, as well for the broad community. ▪ Collateral to be provided include calling cards, latest project notification or update, with internal FAQs prepared. ▪ All liaison to be summarised and loaded in the CRM.	Information Pack
May 2021	School community Surrounding residents Visitors to SINSW website	• SSD public exhibition requirements (hosted on DPIE website) and linked to SINSW website.	SINSW Website Project Update Media Release
May 2021	School community Surrounding residents Visitors to SINSW website	• Project update on SSDA submission and early works progress.	SINSW Website Project Update Media Release
November 2021 (pending SSD approval)	SSDA consent issued if approved.	• Notify that the development consent has been granted.	SINSW Website Project Update and FAQs Media Release
Ongoing	All	• Members of the community may call the community information line to ask a question or register a comment or complaint. • CEM must manage this interaction and record any complaints on the SINSW	1300 community information line

Date	Targeted	Consultation	Channel
		website as part of the SSP requirements.	
Ongoing	All	• Members of the community may email our team to ask a question or register a comment or complaint. • CEM must manage this interaction and record any complaints on the SINSW website as part of the SSP requirements.	SINSW Email address
Ongoing	School community Surrounding residents Visitors to SINSW website	• communicate specific information/ impacts about a project to targeted community sections. • communicate milestones and higher-level information to the wider community i.e. project announcement, concept design/DA lodgement, construction award, completion.	SINSW Website Updates Work Notifications Project Updates and FAQs Media Releases Information Sessions
▪ **Monthly** ***Every Fourth Thursday of the month***	School Principal DEL PD SPD Contractors CEM	• All stakeholder to talk about the work which has taken place, the current work plan, any issues and risks, also an opportunity to acknowledge any communications activities which need to take place.	Project Team Meeting

Appendix : Communication and Engagement Tools and Activities

Typical communication/consultation plans for SINSW capital works projects will include but not be limited to two distinct streams of consultation with the:

- School community for existing schools or surrounding schools for new school projects, and
- Broader local community.

This allows

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

Agencies are required to use a range of engagement tools tailored to stakeholder and community groups and their specific communication and engagement requirements by selecting from the table below. Note the mandatory requirements which will need to be included for each project.

Note that ALL external communication about a project MUST be approved by School Infrastructure NSW and be under School Infrastructure branding.

Any liaison with the Local Member or media must go via the CE Manager and be managed by SINSW.

SINSW's communication and engagement tools and activities are described below.

Social distancing communications measures

The health and safety of our students, staff and community is our priority.

There will be temporary changes to some of the ways we keep students, staff and the community informed about the project into account for social distancing measures.

How we will keep you informed

While social distancing measures are in place, we will:

■ No longer knock on your doors to talk about local projects. We will instead provide this information in a 'door knock notification' delivered to letterboxes
■ Continue to deliver project updates and works notifications to letterboxes
■ Share information with our communities online instead of in person.

Our information hotline and email address will continue to operate as normal.

Communications Tool	Description of Activity
1300 community information line (Mandatory requirement)	A free call community information line (1300 482 651) providing access to the community engagement team during business hours. This number is published on all communication materials and is staffed by SINSW. All enquiries received will be directed to the relevant Agency contact and recorded and resolved in the CRM.
Advertising (print) (Mandatory requirement booked by SINSW)	Advertising in the local newspaper to advertise major disruptions and/or events such as information booths. All general project advertising is paid for by SINSW project team, managed by SINSW CE team and booked through media buying and planning agency Blaze.
Call centre scripts	The high-level project overview information provided to external organisations may receive telephone calls enquiring about the project, most namely stakeholder councils.
Community contact cards	These are business card size with all the SINSW contact information and are kept at SINSW head office.

Communications Tool	Description of Activity
(Mandatory requirement)	The project team/ contractors will hand out contact cards to stakeholders and community members enquiring about the project. Cards should also be offered to school administration offices as appropriate. Directs all enquiries, comments and complaints through one centralised point.
CRM database (Mandatory requirement)	All projects are created in SINSW's Customer Relationship Management system – Darzin - at project inception. Interactions, complaints, resolutions to be captured, and weekly reports generated. Any issues or complaints are raised in the CRM and immediately notified the project director, project director, and Community Engagement Manager.
Display boards	A0 size full-colour information boards are used at info sessions or permanently displayed in appropriate places (school admin office, for example).
Door knocks (Mandatory requirement)	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 on construction activity and Project Team contact details. There is a 'We missed you' template available for use.
Face-to-face meetings/briefings	Activities include meeting, briefing, and "walking the site" to engage directly with key stakeholders, directly impacting residents and business owners and the wider community.
FAQs (Mandatory requirement)	Set of approved answers in response to frequently asked questions, used as part of the relevant stakeholder and community communication tools. These should be updated as required and included on the website if appropriate.
Information booths (Mandatory requirement)	Information booths are held locally, staffed by a project team member to answer any questions, concerns or complaints on the project. An agency representative should also attend. Info booths should be scheduled from the early stages of the project. 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 that suit parents and caregivers, with frequency aligned with project milestones and as required. ▪ Community information booths are usually held at local shopping centres, community centres, and easily accessed places by the community. They are to be held conveniently, such as out of work hours on weekdays and Saturday's. Collateral to be provided include calling cards, latest project notification or update, with internal FAQs prepared. All liaison to be summarised and loaded in the CRM. Notice of at least seven days to be provided.
Information sessions (drop-in)	Information sessions are a more significant event than an info booth, held at a key milestone or contentious period. We will have more information on the project available on display boards/ screens and an information pack handout – including project scope, planning approvals, impacts on the school community or residents, project timeline, FAQs. Members from the project and communications team will be available to answer questions about the project. An agency representative should attend. Depending on the

Communications Tool	Description of Activity
	project stage, the architect could also be invited to answer questions from a design perspective. These events should occur after school hours on a weekday (from 3pm – 7pm to cover working parents). All liaison will need to be summarised and loaded on the CRM. Notice of at least 7 days to be provided. NB - This is not a town hall style meeting.
Information pack	A 4-page fold-out flyer that can include: ▪ Project scope ▪ Project update ▪ FAQs ▪ Contact information ▪ Project timeline To be distributed at info sessions or other more significant events/ milestones.
Media releases/events (managed by SINSW) (mandatory requirement)	Media releases are distributed upon media milestones (see appendix XX for milestones). They contribute to SINSW media activities to promote significant project milestones and activities and generate broader community awareness. SINSW is responsible for all media management. Media milestones are as follows: ▪ Project announcement ▪ Concept design completed ▪ Planning approval lodged ▪ Planning approval granted ▪ Construction contract tendered ▪ Construction contract awarded ▪ SOD turning opportunity ▪ Handover ▪ Official opening
Notifications and updates (Mandatory item)	A4, single or double-sided, printed in a colour that can include FAQs if required According to the project construction program and our minimum notification periods outlined in Appendix C, it should be distributed as required. Notifications can be distributed under varying templates with different headings to suit other purposes: ▪ Works notification are used to communicate specific information/ impacts about a project to targeted community sections. This template doesn't have an image to 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, completion. Always includes the project summary, information booths/ sessions if scheduled, progress summary and contact info. ▪ Summer works notifications are used to communicate works to occur over

Communications Tool	Description of Activity
	Christmas/early January shutdown and advise possible delays in response times.
Photography, time-lapse photography and videography (managed and paid for by SINSW)	Captures progress of construction works and chronicles particular construction activities. Images to be used in notifications, newsletters and reports, on the website and Social Media channels, at information sessions and presentations. Once the project is complete, SINSW will organise photography of external and internal spaces for various communications purposes.
Presentations	Details project information for presentations to stakeholder and community groups. There is a template to be used.
Priority correspondence (Managed by SINSW)	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.
Project Reference Group (Mandatory requirement)	DoE/SINSW facilitated Project Reference Group sessions providing information on the design solution, construction activities, project timeframes, key issues and communication and engagement strategies. Communications Agency to attend and participate.
Project signage (mandatory requirements, managed by SINSW)	A0 sized, printed in the aluminium composite for durability. Provides high-level information, including project scope (if public), project image (if approved), generic image (if not approved) and SINSW contact information. Fixed to external fencing/ entrances etc. that are visible. A school may have multiple signs.
Site visits (managed by SINSW and Schools Ops)	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.
School Infrastructure NSW email address (mandatory requirement)	Provide stakeholders and the community an email address linking directly to the Community Engagement team. Email address (schoolinfrastructure@det.nsw.edu.au) is published on all communications materials.
Social distancing communications measures (effective March 2020 until further notice)	The health and safety of our students, staff and community is our priority. There may be temporary changes to some of the ways we keep students, staff and the community informed about the project into account for social distancing measures. How we will keep you informed While social distancing measures are in place, we will: • No longer knock on your doors to talk about local projects. We will instead provide this information in a 'door knock notification' delivered to letterboxes • Continue to deliver project updates and works notifications to letterboxes • Share information with our communities online instead of in person. Our information hotline and email address will continue to operate as normal. The SINSW website will continue to have up-to-date information about the project, and the community information line will remain operational.
Website (Managed by SINSW)	A dedicated project page located on the SINSW website.

Communications Tool	Description of Activity
(mandatory requirement)	Communications Agencies to liaise with the project team to provide monthly updates to SINSW about the works, including scope, impacts, stakeholder and community engagement activities or events, video and photography.
Welcome pack/ thank you pack (Mandatory requirement)	At project completion, the following flyers are utilised: ▪ Welcome pack –a 2 to 4-page A4 flyer provided to the school community on the first day/week they are returning to school when new facilities are opening or attending a new school. Includes project overview, a map outlining access to the school and key locations, FAQs, contact information. ▪ Thank you pack –a 2 to 4-page A4 flyer tailored to the residents to thank them for their patience and support of the project.

Appendix 1: Pendle Hill High School Project Update

NSW Department of Education – School Infrastructure

Example of contemporary school environments being delivered across NSW

Pendle Hill High School

Project update

February 2021

Investing in our schools

The NSW Government is investing $7 billion over the next four years, continuing its program to deliver more than 200 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.

Pendle Hill High School upgrade

A project is underway to upgrade Pendle Hill High School to support the growing student and community needs.

The project proposes to include:

- a new three storey building with 14 new, modern flexible learning spaces
- a range of new core facilities and student amenities
- a new lecture theatre and library spaces
- a prototype learning area and staff development space.

Next steps

Funding has been allocated to proceed with the upgrade to Pendle Hill High School. Next steps include the development of the Schematic Design as well as progression of the statutory planning pathway.

A State Significant Development Application will be lodged in the coming months, allowing the community and other stakeholders to make comments on the proposal.

As part of this process, we have engaged a consultant to conduct a Social Impact Assessment (SIA) for the proposed upgrades to Pendle Hill High School. As part of the SIA, community and stakeholder consultation on the proposed project will take place over the coming weeks.

Once the development application has been approved, construction work can start. The tender process to appoint the chosen construction work contractor will close at the end of January and is expected to be awarded in March 2021.

Keeping you informed

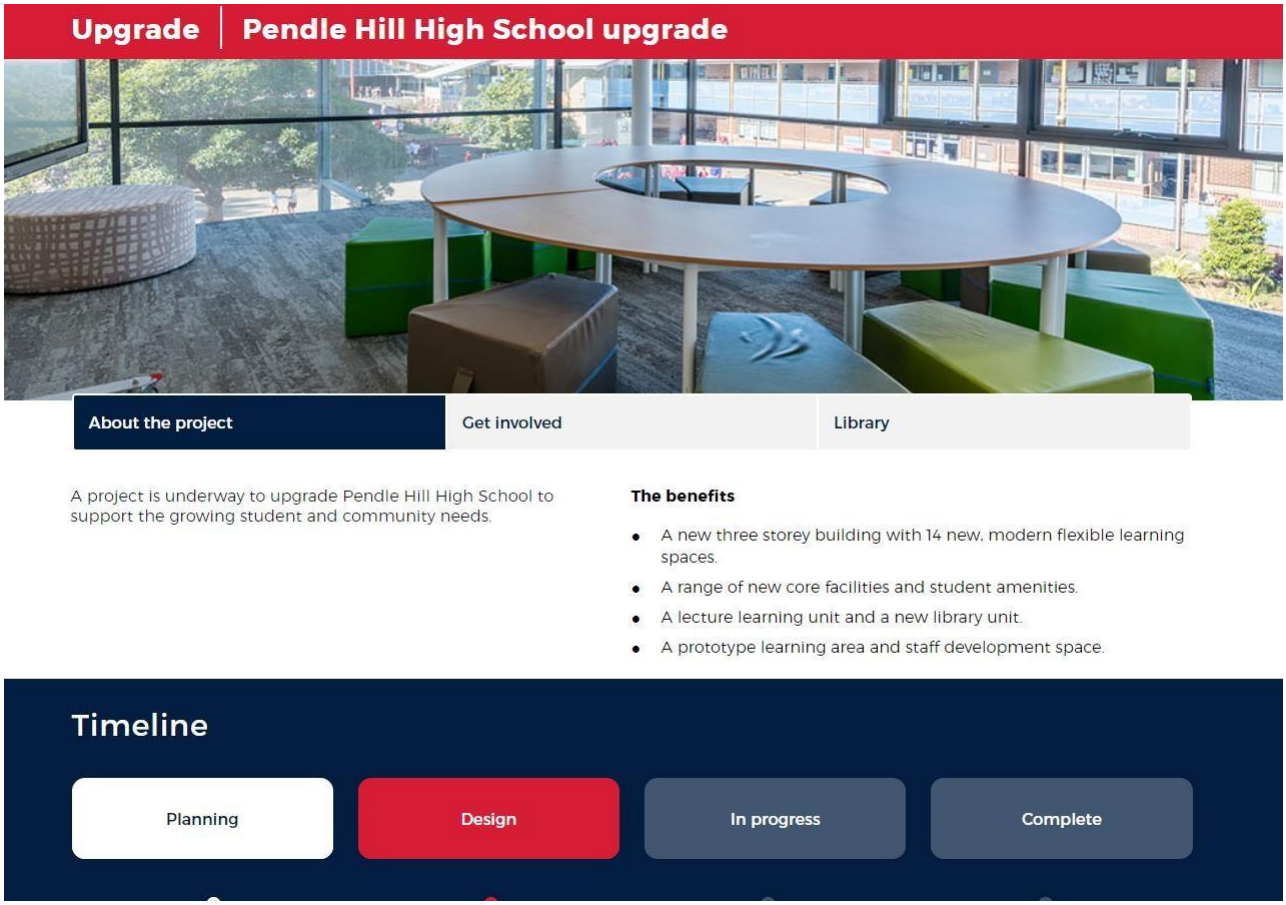
We will keep you updated and provide more information as the project progresses.

For more information contact:

School Infrastructure NSW
Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au

NSW GOVERNMENT

Appendix 2: Pendle Hill SINSW Webpage



Appendix 3: Work Notification Example

NSW Department of Education – School Infrastructure

Pendle Hill High School Upgrade

Works notification

3 March 2021

Dear Residents,

A project is underway to upgrade Pendle Hill High School to support the growing student and community needs.

Preparation work will commence on Monday 8 March 2021 to prepare the site for future construction. This will include installation of temporary demountables to accommodate the Library and Administration school operations throughout the future construction period. The work will take up to two weeks to complete, weather permitting.

The works to install the demountables will include:

- Installing piers and footings
- Crane lifting the demountables into place
- Connecting services and installing furniture
- Reinstating work areas and removal of temporary fencing.

Construction will only commence once the planning pathway has been formally approved by the Department of Planning Industry and Environment.

Vehicle movements

Large vehicle movements, including cranes and trucks will take place on Knox Street outside peak school hours. Traffic controllers will be in place to direct movements and pedestrians where required.

The crane will remain on school grounds for one to two days, weather permitting.

Working hours for these preparation works are 7:00am to 5:00pm. Monday to Saturday in accordance with the Education State Environmental Planning Policy. We apologise for any noise disruption during this period. No works will be undertaken on public holidays.

We are here to make sure that work is completed safely and efficiently and we will minimise impacts on the community at every opportunity.

Thank you for your patience while we deliver this important school infrastructure.

For more information contact:

School Infrastructure NSW
Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au