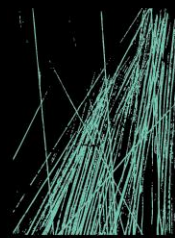


CONSTRUCTION NOISE AND VIBRATION MANAGEMENT PLAN
NEWCASTLE HIGH SCHOOL REDEVELOPMENT (NHSR)
ACOUSTIC SERVICES



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1 INTRODUCTION

1.1 OVERVIEW

This Construction Noise and Vibration Management Plan (CNVMP) has been prepared by JHA Consulting Engineers on behalf of Hansen Yuncken for School Infrastructure NSW (SINSW) for the construction works associated with the Newcastle High School Redevelopment, 25A National Park Street, Newcastle West 2302.

The project involves the construction of two new buildings, alterations and additions to two existing buildings and associated landscaping works for Newcastle High School (NHS).

- **New 3-storey Library, General Learning, Science and Hospitality Learning Hub** – located in the SW corner of the site south of Heritage Building C
 - Ground Floor: Hospitality Trade Training, Canteen, General Learnings Spaces (Support x 7), and Library
 - Level 1: Food & Textile learning Hub (4 GLS), General Learning Hub (12 GLS)
 - Level 2: Science including 4 Labs, 8 x GLS and associated facilities
- **New Multipurpose Facility** – 2-storey building located in the NE corner of the site and fronting Smith Street
 - Ground Floor: Gymnasium with stage, storage, change rooms, end of trip facilities and 2 x GLS
 - Level 1: Health/PE Learning Hub - (2 x GLS, fitness lab, change) part Performing Arts Learning Hub - (2 x GLS) + practice rooms; control room and 2 additional General Learning Spaces
- **Building C** – No proposed works. Art, Wood, Metal & Materials Technology to remain
- **Building A** – refurbished existing Heritage building housing the Administration and main entry facing Parkway Avenue.
 - Ground Floor: The western end will be refurbished to create a student entry and Student support facilities
- **Building K** – refurbished and modified existing Heritage building located in the middle of the site.
 - Ground Floor: Existing library refurbished and converted to staff amenities
 - Level 1: No proposed works
- **Building L** – no proposed works
- **New Sports Courts** – located in the NE corner of the site and next to the new Multipurpose Facility.

Figure 1 below shows the location of the proposed new buildings plus the other buildings in the scope of works.



Figure 1: Site layout (Source: EJE Architecture).

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

1.2 PURPOSE OF THE CNVMP

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

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

This CNVMP identifies the Contractor's obligations and the requirements to manage noise and vibration during construction such that the necessary allowances within the construction costs, programmes and work methodologies can be made. Relevant legislation, guidelines and standards are identified in this CNVMP. All works are to be conducted as per Consent Conditions SSD-41814831. Table 1 summarize the SSD requirements and the report references.

<i>SSD Condition number</i>	<i>Requirement</i>	<i>Report Reference for Satisfaction</i>
B16	<i>The Construction Noise and Vibration Management Sub-Plan must address, but not be limited to, the following</i>	-
(a)	<i>Be prepared by a suitably qualified and experienced noise expert;</i>	<i>Sean Matthews is a senior acoustic engineers in JHA, Sean's CV and is eligible for membership with the AAS</i>
(b)	<i>Describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009);</i>	<i>Section 4.3 and Section 7</i>
(c)	<i>Describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;</i>	<i>Section 7.1, Section 7.2</i>
(d)	<i>Include strategies that have been developed with the community for managing high noise generating works;</i>	<i>Section 7.4, Section 7.6, and Refer to Appendix C and Community Communication Strategy provided by Hansen Yuncken</i>
(e)	<i>Describe the community consultation undertaken to develop the strategies in condition B16(d)</i>	<i>Refer to Appendix C and Community Communication Strategy provided by Hansen Yuncken</i>
(f)	<i>Include a complaints management system that would be implemented for the duration of the construction; and</i>	<i>Refer to Appendix C and Community Communication Strategy provided by Hansen Yuncken</i>
(g)	<i>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 B13.</i>	<i>Section 7.8</i>

Table 1: SSD Compliance Table

Hansen Yuncken have advised the following:

A Works Notification was sent to 160 houses surrounding Newcastle High School and emailed to the parents of all students attending Newcastle High School on 4 April 2024.

The Works Notification sent out:

Feedback on managing construction impacts

DPHI has issued conditions of consent for the project which require a Construction Noise and Vibration Management Sub-Plan (CNVMSP) to be prepared by a suitably qualified and experienced noise expert. The CNVMSP needs to include strategies that have been developed with the community for managing high noise generating works.

There are noise mitigation strategies that are already planned as part of the construction works, such as:

- maximising the distance between construction noise sources and nearby residences
- compliance with the 'Construction Hours' included in the State Significant Development application consent conditions to minimise noise and vibration impacts of the development
- reducing the line-of-site noise transmission to residences or other sensitive receivers through the construction of barriers
- constructing barriers such as walls that are part of the redevelopment works earlier than required
- installing purpose-built noise barriers, shielding and enclosures where practical to minimise noise from the site.

Work hours

Under the conditions of approval, all work, including building/demolition and excavation work, and activities in the vicinity of the site generating noise, must only be carried out between 7 am and 6 pm, Mondays to Fridays inclusive and between 8 am and 1 pm, Saturdays. No work may be carried out on Sundays or public holidays.

Provided noise levels do not exceed the existing background noise level plus 5 decibels, works may also be undertaken between 6 pm and 7 pm, Mondays to Fridays and between 1 pm and 4 pm, Saturdays.

If you would like to provide any feedback on these measures or contribute any recommendations, that you feel would be beneficial and feasible for the project to implement, please contact School Infrastructure NSW by emailing schoolinfrastructure@det.nsw.edu.au or calling 1300 482 651 by Thursday 11 April 2024.

All residents and the school community were invited to provide feedback by Thursday 11 April 2024. No feedback was provided.

1.3 NOISE AND VIBRATION ISSUES

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

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

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

1.4 RESPONSIBILITIES

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

The Main Contractor is responsible for:

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

2 DESCRIPTION OF THE PROPOSAL

2.1 SITE DETAILS

Newcastle West is a suburb of Newcastle, New South Wales, located 2 kilometres west of Newcastle's central business district. The existing Newcastle High School site is located at 25A National Park Street, Newcastle West 2302 and legally known as Lot 1 DP150725, Lot 1 DP575171 & Lot 1 DP794827.

The site contains the existing Newcastle High School and is currently surrounded by low density residential receivers and public recreational areas. The surrounding land uses are as follows:

- *North*: low density residential and public recreational area.
- *East*: low density residential and public recreational area.
- *South*: low density residential.
- *West*: low density residential.

Figure 2 shows the site boundary of the NEC site.



Figure 2: Newcastle High School site boundary (orange shading).

2.2 NOISE SENSITIVE RECEIVER DETAILS

A summary of the nearest noise sensitive receivers surrounding the site is shown in Table 2 and Figure 3, including assumed approximate distances from the buildings with noise sources to the receiver boundaries, noting the type of noise receiver and if the receiver is existing or future.

ID	Sensitive Receiver	Receiver Status	Receiver Type	Approx. Distance, m
1	60 - 80 National Park Street	Existing	Residential	30
2	82 - 94 National Park Street	Existing	Residential	50
3	27 - 37 National Park Street 167 - 189 Parkway Avenue	Existing	Residential	30
4	1 - 9 Smith Street	Existing	Residential	60
5	3 - 17 Dumaresq Street 140 - 158 Parkway Avenue	Existing	Residential	40
6	Corner of Parry & Smith Street	Existing	Active recreation	20
7	53 Parry Street	Existing	Active recreation	20

Table 2: Nearest sensitive receivers surrounding the site.



Figure 3: Nearest noise sensitive receivers surrounding the site location.

It is noted that if noise impacts associated with the proposed development are controlled at the nearest noise-sensitive receivers (as identified above) then compliance with the recommended criteria at all noise-sensitive receivers will be achieved. The nearest residential receiver will be used for assessment purposes for the residential and public recreation catchments.

3 SITE MEASUREMENTS

Attended and unattended noise surveys were conducted at the locations shown in Figure 4 to establish the ambient and background noise levels of the site. Noise surveys were carried out in accordance with Australian Standard AS/NZS 1055:2018. The noise survey locations were selected as they are representative of the noise levels at the nearby affected noise sensitive receivers. The noise surveys have been used to establish the noise assessment level criteria for the proposed development.



Figure 4: Noise survey locations and boundary of the site.

From observations during the noise survey, it is noted that ambient noise levels are dominated by vehicular movement on Parkway Avenue and infrequent vehicular movement on National Park Street and Smith Street. Low pedestrian activity was also observed.

The noise monitoring locations were selected based on all surrounding locations of residential receivers, therefore the monitoring has comprehensively captured the background noise levels at all receivers, including the lowest background levels in order to take the more conservative approach.

3.1 SHORT-TERM NOISE MONITORING

Short-term noise monitoring was carried out to obtain representative third-octave band noise levels of the site on Tuesday 29th November and Thursday 8th December 2022, during the day-time period. Short-term noise measurements were carried out with a NTi XL-2 hand-held Sound Level Meter (SLM) (Serial Number A2A-13742-E0). The calibration of the SLM was checked before and after each use, and no deviations were recorded.

The SLM microphone was mounted 1.5 metres above the ground, and a windshield was used to protect the microphone. Measurements were undertaken in the free field – i.e., more than 3 metres away from any building façade or vertical reflective surface. Weather conditions were calm and dry during the attended noise monitoring.

A summary of the results of the short-term noise monitoring is shown in Table 3.

Location	Date and Time	Parameter	Sound Pressure Level, dB (re 20µPa)								
			Overall dB(A)	Octave Band Centre Frequency, Hz							
				63	125	250	500	1k	2k	4k	8k
M1	29/11/2022 12:12pm – 12:27pm	L _{90,15min}	53	57	53	49	45	47	45	39	32
		L _{eq,15min}	63	69	65	60	58	59	55	51	44
		L _{10,15min}	67	71	66	63	61	62	59	54	47
M2	08/12/2022 12:10pm – 12:25pm	L _{90,15min}	53	56	53	49	46	48	45	39	30
		L _{eq,15min}	64	70	72	66	59	58	56	50	42
		L _{10,15min}	65	70	67	62	59	60	57	51	44

Table 3: Results of short-term noise monitoring.

3.2 LONG-TERM NOISE MONITORING

Long-term noise monitoring was carried out from Tuesday 29th November to Thursday 8th December 2022 with Rion NL-52 noise loggers (Serial Numbers: 175549, 01254316, and 553892). The noise loggers recorded L_{A1}, L_{A10}, L_{Aeq} and L_{A90} noise parameters at 15-minute intervals during the measurement period. The calibration of the noise loggers was checked before and after use and no deviations were recorded.

The noise logger locations are shown in Figure 4. The locations were secured and are considered to be representative of the typical ambient and background noise levels. The noise logger microphones were mounted 1.5 metres above the ground and windshields were used to protect the microphones. Weather conditions were monitored during the unattended noise monitoring period and generally were calm and dry during the unattended monitoring.

The detailed results of the long-term noise monitoring are presented graphically in Appendix A. As stated in the NSW EPA Noise Policy for Industry (NPI) 2017, any data likely to be affected by rain, wind or other extraneous noise has been excluded from the calculations (shadowed in the Appendix A graphs).

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

These RBLs are shown in Table 4, together with the ambient noise levels (L_{Aeq}) measured for each period.

<i>Location</i>	<i>Rating Background Levels, dB(A)</i>			<i>Ambient Noise Levels, dB(A)</i>		
	<i>Day 7am-6pm</i>	<i>Evening 6pm-10pm</i>	<i>Night 10pm-7am</i>	<i>Day 7am-6pm</i>	<i>Evening 6pm-10pm</i>	<i>Night 10pm-7am</i>
<i>L1</i>	44	37	30	58	57	51
<i>L2</i>	45	41	33	59	55	50

Table 4: Results of long-term noise monitoring.

4 NOISE AND VIBRATION CRITERIA

4.1 RELEVANT CODES AND STANDARDS

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

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

4.2 REGULATORY FRAMEWORK

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

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

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

4.2.2 PROTECTION OF THE ENVIRONMENTAL OPERATIONS (POEO) ACT 1997

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

“...

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

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

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

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

..."

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

4.3 NSW INTERIM CONSTRUCTION NOISE GUIDELINE

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

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

Time of Day	NML $L_{Aeq,15min}$	How to Apply
ICNG Criteria for Recommended Standard Hours: Mon-Fri 7am-6pm Sat 8am-1pm No work on Sundays or public holidays	Noise affected: RBL + 10dB	The noise affected level represents the point above which there may be some community reaction to noise. <ul style="list-style-type: none"> Where predicted or measured $L_{Aeq,15min}$ 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: 75dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. <ul style="list-style-type: none"> Where noise is above this level, the relevant authority may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: <ol style="list-style-type: none"> Times identified by the community when they are less sensitive to noise. If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

Time of Day	NML $L_{Aeq,15min}$	How to Apply
ICNG Criteria for Outside Recommended Standard Hours	Noise affected: RBL + 5dB	<ul style="list-style-type: none"> A strong justification would typically be required for work outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5dB(A) above the noise affected level, the proponent should negotiate with the community.
<i>Refer to approved hours from the Consent Conditions</i>		

Table 5: ICNG construction airborne noise criteria for residential receivers surrounding the construction site.

In order to establish the airborne construction noise criteria, noise levels from the unattended noise monitoring have been used for the noise sensitive receivers – refer to Section 3. Table 6 below summarises the airborne construction noise criteria for most affected noise sensitive receivers surrounding the development site.

Sensitive Receiver	Airborne Construction Noise Criteria, L_{Aeq} dB(A)	
	Within Standard Hours	Outside Standard Hours
Residential Receivers	Noise affected / External	55
	Highly noise affected / External	75
Active Recreation	External	65
Existing Classrooms	Internal	45

Table 6: ICNG construction airborne noise criteria for noise sensitive receivers surrounding the site.

Note that for rooms with open windows, the external noise criteria for existing classrooms can be 10dB higher than the internal noise criteria.

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

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

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

4.4 VIBRATION CRITERIA

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

4.4.1 HUMAN COMFORT

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

Vibration and its associated effects are usually classified as follows:

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

Vibration criteria for continuous and impulsive vibration are presented in Table 7, in terms of vibration velocity levels. The values are assessed for the most critical frequency range (higher than 8 Hz assuming sinusoidal motion). When assessing intermittent vibration comprising a number of events, it is recommended that the Vibration Dose Value (VDV) is used Table 8 shows the acceptable VDV values for intermittent vibration.

Receiver Type	Time	RMS velocity, mm/s [dB ref 10 ⁻⁶ mm/s]			
		Continuous Vibration		Impulsive Vibration	
		Preferred	Maximum	Preferred	Maximum
Residences	Day-time	0.20 [106 dB]	0.40 [112 dB]	6.00 [136 dB]	12.00 [142 dB]
	Night-time	0.14 [103 dB]	0.28 [109 dB]	2.00 [126 dB]	4.00 [132 dB]
Offices, schools, educational and worship	When in use	0.40 [112 dB]	0.80 [118dB]	13.00 [142dB]	26.00 [148 dB]

Table 7: Continuous and impulsive vibration criteria applicable to the site. Note: Day-time is 07:00am to 10:00pm and night-time is 10:00pm to 07:00am.

Place	Time	Vibration Dose Values, m/s ^{1.75}	
		Preferred	Maximum
Residences	Day-time	0.20	0.40
	Night-time	0.13	0.26
Offices, schools, educational and worship	When in use	0.40	0.80

Table 8: Intermittent vibration criteria applicable to the site.

4.4.2 STRUCTURAL BUILDING DAMAGE

4.4.2.1 Structural Building Damage

Ground vibration from construction activities can damage surrounding buildings or structures. For occupied buildings, the vibration criteria given in the previous section for Human Comfort shall generally for the limiting criteria for the Project.

For unoccupied buildings, or during periods where the buildings are unoccupied, the vibration criteria for building damage suggested by German Standard DIN 4150.3:2016 '*Structural Vibration – Effects of Vibration on Structures*' and British Standard BS 7385.2:1993 '*Evaluation and Measurement for Vibration in Buildings*' are to be adopted. Guideline values from DIN 4150.3:2016 and BS 7385.2:1993 are presented in Table 9 and Table 10 respectively.

Structural type	Vibration velocity, mm/s (Peak Particle Velocity – PPV)				
	Foundation			Plane of floor uppermost full storey	Floor slabs, vertical direction
	Less than 10Hz	10 to 50Hz	50 to 100Hz	All frequencies	All frequencies
Type 1: Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20 to 40	40 to 50	40	20
Type 2: Residential buildings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20	15	20
Type 3: Structures that because their particular sensitivity to vibration, cannot be classified under Type 1 and 2 and are of great intrinsic value (e.g. heritage buildings)	3	3 to 8	8 to 10	8	20

Table 9: DIN 4150.3:2016 Guideline values of vibration velocity for evaluating the effects of short-term vibration.

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

Table 10: BS 7385.2:1993 Guideline values of vibration velocity for evaluating cosmetic damage.

5 CONSTRUCTION ACTIVITIES

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

5.1 DESCRIPTION OF WORKS

The stages of work as provided by the Contractor that have been assessed, and which construction activities will occur during those stages are detailed in the following table.

Stage	Duration	Phase	Activities	Plant
1	13 weeks	Demolition	Removal of trees, landscape, Building B and Sports courts	Manitou, excavator, mobile crane
		Civil	Relocate Building H	Flatbed trucks, cranes
		Internal	Services infrastructure upgrades	Trucks, EWP
2 & 3	47 weeks	Demolition	Removal of Building P	Manitou, excavator, mobile crane
		Civil	Construction of new Learning Hub, Multipurpose Facility, Excavation, trenching, backfilling	Excavators, trucks and dog, manitou, roller
		Structure	Formwork, reinforcement fix, concrete place, structural steel	Concrete boom trucks, concrete pump, manitou, mobile crane
		Internal plus Façade	Cladding, framing, sheeting, services rough in, fit off, floor coverings, scaffolding	EWP, boom lift, trucks, manitou, mobile crane
		External	landscaping, walkways, external works with Multipurpose Facility and Learning Hub	Trucks, manitou, mobile crane
4	14 weeks	Demolition	Removal of Building J and walkway	Manitou, excavator, mobile crane
		Internal	Refurbish Building A and K	EWP, boom lift, trucks, manitou, mobile crane
		External	Landscaping and site works	Trucks, manitou, mobile crane
5	16 weeks	Demolition	Removal of Building D, E, I	Manitou, excavator, mobile crane
		Civil	Construction of new Sports Courts, Excavation, trenching, backfilling, concrete place	Excavators, trucks and dog, manitou, roller, concrete pump, concrete boom trucks
		External	landscaping, walkways	Trucks, manitou, mobile crane

Table 11: Anticipated maximum airborne noise levels for construction plant used during the different stages of the works.

5.2 PROPOSED CONSTRUCTION WORKING HOURS

The proposed construction hours as per the Consent Conditions are 7am to 6pm, Mondays to Fridays inclusive; and 8am to 1pm on Saturdays. The proposed restricted hours of work, provided that noise levels do not exceed the existing background noise level plus 5dB, are 6pm to 7pm, Mondays to Fridays inclusive, and 1pm to 4pm on Saturdays as per the consent conditions.

5.3 TYPICAL EQUIPMENT AND NOISE LEVELS

In accordance with the information provided and to assess the potential noise and vibration impacts during works from a quantitative point of view, the construction noise sources for the works occurring during the project and the associated equipment noise levels are listed in Table 12.

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

<i>Stage of works</i>	<i>Item</i>	<i>Typical Sound Power Level L_{WAeq} (dB ref 1pW)</i>	<i>Typical Sound Pressure Level L_{Aeq} at 10m (dB ref 20μPa)</i>
<i>Demolition</i>	Excavator with breaker	116	88
	Manitou	111	83
	Mobile crane	101	73
<i>Civil</i>	Excavator with bucket	104	76
	Truck and dog	105	77
	Manitou	111	83
	Roller	105	77
<i>Structure</i>	Concrete Pump	105	77
	Manitou	111	83
	Mobile crane	101	73
	Concrete Truck	109	81
<i>Internal plus Façade</i>	Truck	105	77
	EWP	102	74
	Boom Lift	102	74
	Manitou	111	83
	Mobile crane	101	73
<i>External</i>	Truck	105	77
	Manitou	111	83
	Mobile crane	101	73

Table 12: Anticipated maximum airborne noise levels for construction plant used during the different stages of the works.

6 CONSTRUCTION NOISE AND VIBRATION ASSESSMENT

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

6.1 ASSESSMENT METHODOLOGY

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

- Construction activities considered in the noise impact are detailed in Section 5.1.
- Proposed construction hours as per Section 5.2.
- Typical noise source levels considered in the noise impact are detailed in Section 5.3.
- Project specific noise and vibration criteria at sensitive receivers as outlined in Section 3.1.

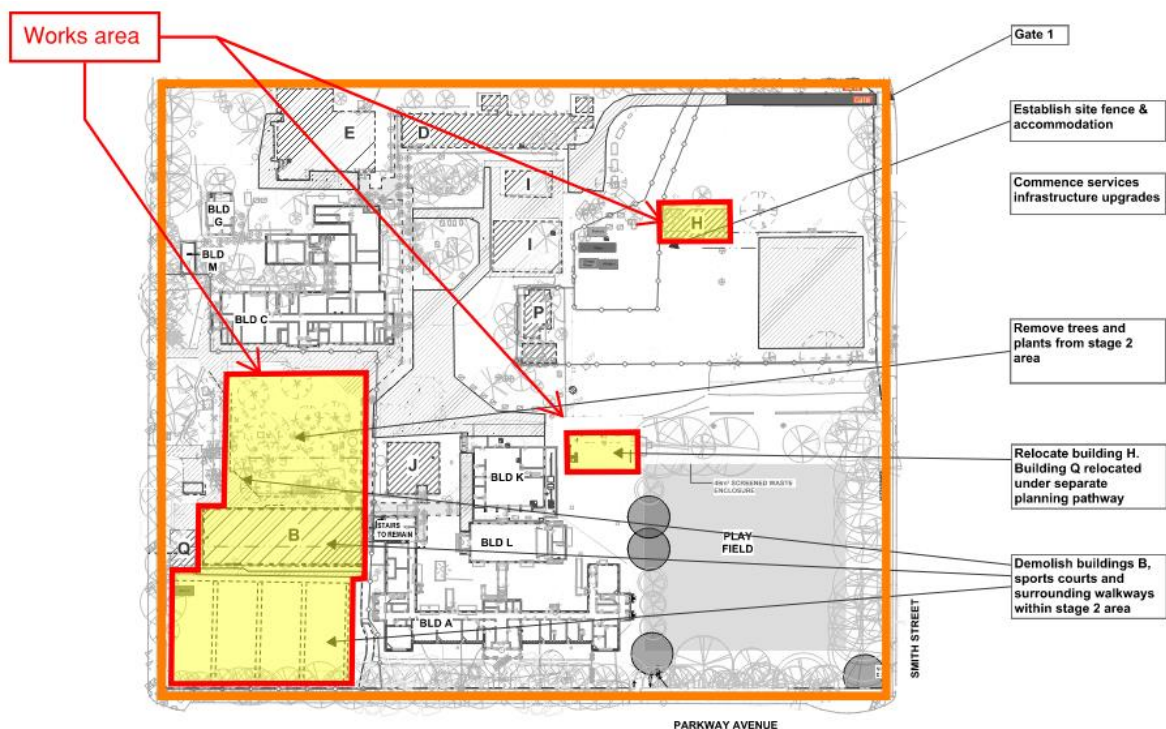


Figure 5: Stage 1 – Indicative site plan with site boundary plus works area highlighted.

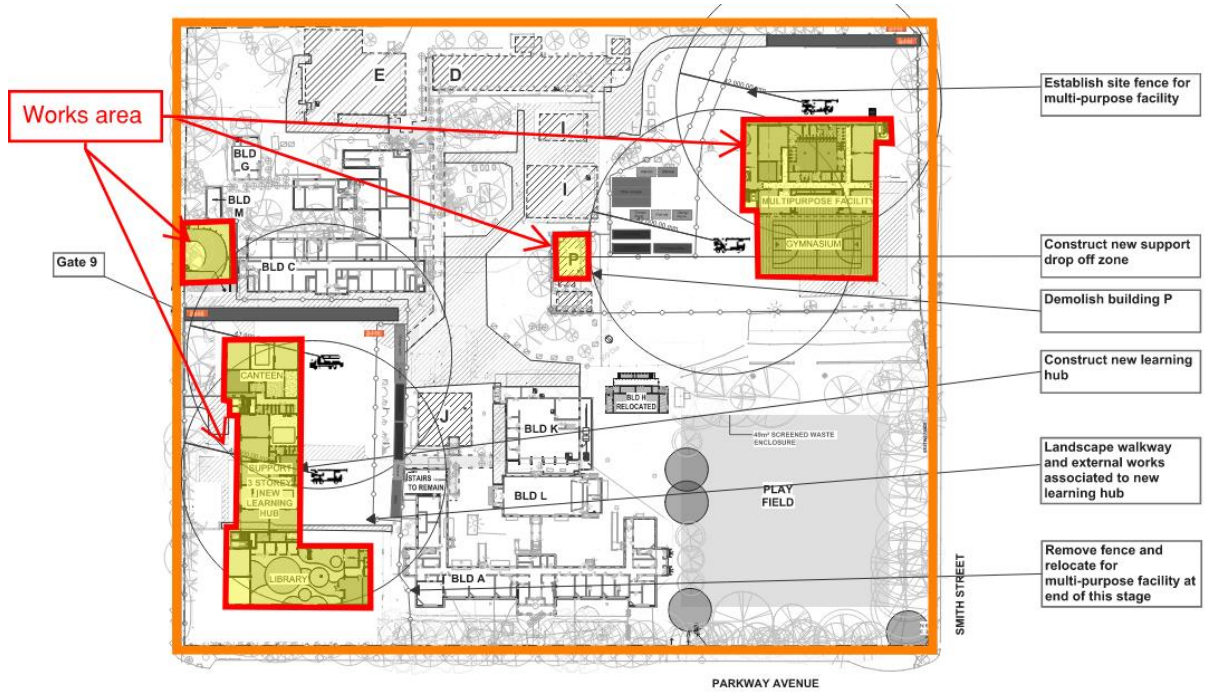


Figure 6: Stage 2&3 - Indicative site plan with site boundary plus works area highlighted.

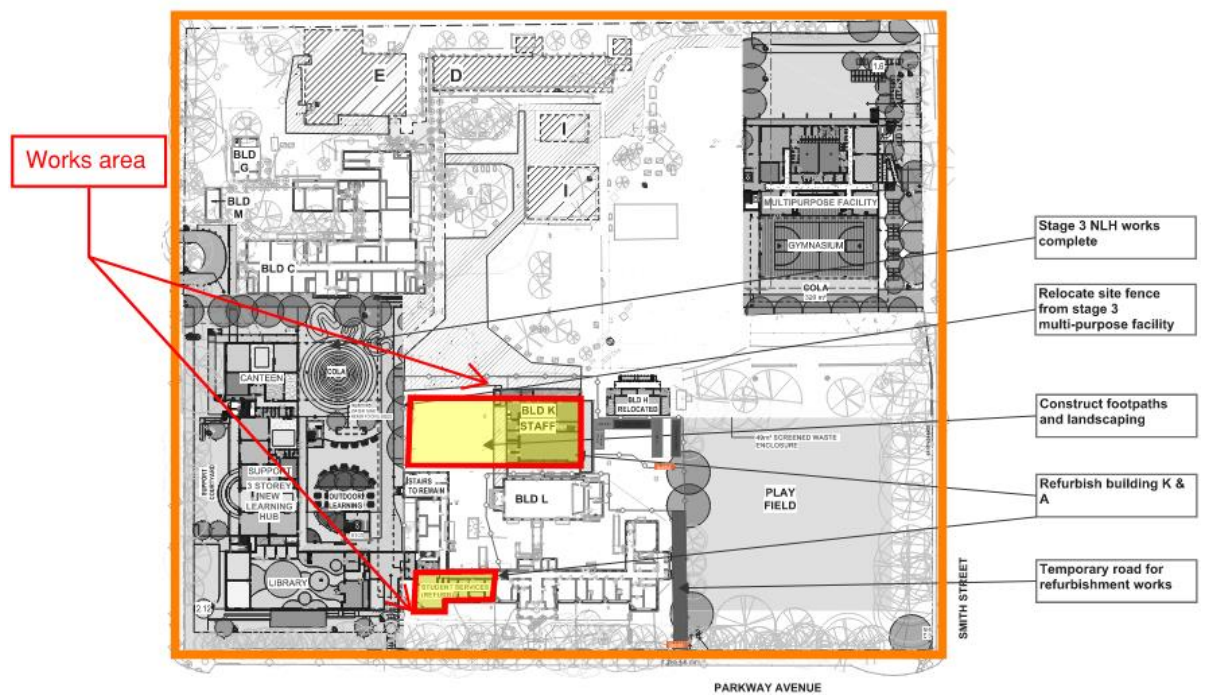


Figure 7: Stage 4 - Indicative site plan with site boundary plus works area highlighted.

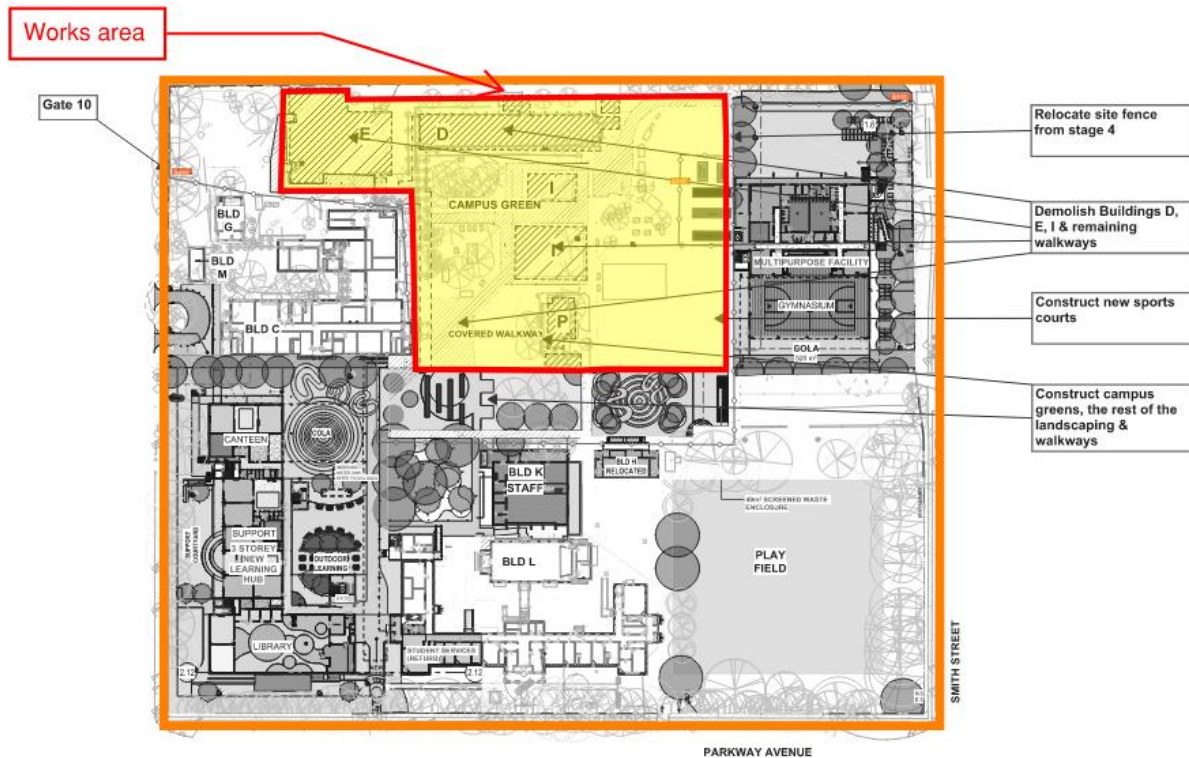


Figure 8: Stage 5 - Indicative site plan with site boundary plus works area highlighted.

The predicted noise levels at the surrounding sensitive receivers have been based on the assumptions and aforementioned sound power levels of the equipment. The results of the predicted noise levels are presented in the following Sections.

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

- Final selection of plant and equipment which could differ from the plant presented in Table 12.
- Exact location of equipment and plant on site – relative to the noise sensitive receivers.
- Reflections provided by existing structures on and around the site.

6.2 NOISE ASSESSMENT

The predicted noise levels for the stages of work detailed in Table 12 are presented in the following Sections. These predicted noise levels are typically representative of the worst case 15 minutes that would be expected. The predicted noise levels at receiver locations are calculated to 1.5m above ground level, at the most affected point externally to each receiver that has been identified as the most affected.

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

6.2.1 STAGE 1

This section presents the results for the components of work for Stage 1.

6.2.1.1 Demolition

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

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$ dB(A) (re. 20 μ Pa)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
Excavator with breaker	116	71	68	69	57	57	57	62
Manitou	111	66	63	64	52	52	52	57
Mobile Crane	101	56	53	54	42	42	42	47
Total		72	69	71	59	59	59	64

Table 13: Predicted airborne noise levels for the proposed demolition at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Results show that predicted construction noise levels are expected to exceed the NMLs (orange text) for NCA's 1, 2, 3, 4 and 5 during operation of all machinery and equipment in proximity of the boundaries close to the receivers. The predicted exceedance of the NMLs in the surrounding receivers will trigger the contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the Demolition phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 72dB(A) and 79dB(A) at the façade of Building A, C, M, K, G and L during the Demolition stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.2.1.2 Civil

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

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$ dB(A) (re. 20 μ Pa)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
Excavator	104	59	56	57	48	51	53	56
Truck	105	60	57	58	49	52	54	57
Manitou	111	66	63	64	55	58	60	63
Roller	105	60	57	58	49	52	54	57
Total		69	65	67	57	61	62	65

Table 14: Predicted airborne noise levels for the proposed civil works at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Results show that predicted construction noise levels at residential receivers are expected to exceed (orange text) up to 14dB whilst all plant is operational concurrently. These expected exceedances of the NMLs in the surrounding receivers will trigger the Contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the Civil phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 69dB(A) and 75dB(A) at the façade of Building A, C, M, K and L during the Civil stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.2.1.3 Internal

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

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$, dB(A) (re. $20\mu Pa$)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
EWP	102	45	43	48	46	49	46	46
Truck	105	48	46	51	49	52	49	49
Manitou	111	54	52	57	55	58	55	55
Mobile Crane	101	44	42	47	45	48	45	45
Boom lift	102	45	43	48	46	49	46	46
Total		56	54	59	57	60	57	57

Table 15: Predicted airborne noise levels for the proposed internal works at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Results indicate that all residential receivers, except NCA 2, are expected to exceed (orange text) standard hours NMLs. These expected exceedances of the NMLs in the surrounding receivers will trigger the Contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the Internal plus Façade phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 68dB(A) and 74dB(A) at the façade of Building A, C, K and L during the Internal plus Façade stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.2.2 STAGE 2 & 3

This section presents the results for the components of work for Stage 2 & 3.

6.2.2.1 Demolition

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

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$ dB(A) (re. 20 μ Pa)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
Excavator with breaker	116	65	59	65	63	66	60	63
Manitou	111	55	51	55	52	56	55	58
Mobile Crane	101	45	41	45	42	46	45	48
Total		66	63	67	64	67	62	65

Table 16: Predicted airborne noise levels for the proposed demolition at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Results show that predicted construction noise levels are expected to exceed the NMLs (orange text) for NCA's 1, 2, 3, 4 and 5 during operation of all machinery and equipment in proximity of the boundaries close to the receivers. The predicted exceedance of the NMLs in the surrounding receivers will trigger the contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the Demolition phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 72dB(A) and 79dB(A) at the façade of Building A, C, K, and L during the Demolition stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.2.2.2 Civil

Table 17 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed civil works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$ dB(A) (re. 20 μ Pa)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
Excavator	104	59	54	57	45	53	59	58
Truck	105	60	55	58	46	54	60	59
Manitou	111	66	61	64	52	60	66	65
Roller	105	60	55	58	46	54	60	59
Total		69	64	67	55	62	69	67

Table 17: Predicted airborne noise levels for the proposed excavation and piling works at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Results show that predicted construction noise levels are expected to exceed (orange text) up to 14dB whilst all plant is operational concurrently. These expected exceedances of the NMLs in the surrounding receivers will trigger the Contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the Civil phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 69dB(A) and 75dB(A) at the façade of Building A, C, M, K and L during the Civil stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.2.2.3 Structure

Table 18 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed structure works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$, dB(A) (re. $20\mu Pa$)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
Concrete Pump	105	60	55	58	46	54	60	59
Manitou	111	66	61	64	52	60	66	65
Mobile crane	101	56	51	54	42	50	56	55
Concrete Truck	109	64	59	62	50	58	64	63
Total		69	64	67	55	63	69	68

Table 18: Predicted airborne noise levels for the proposed structure works at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Predicted noise levels are expected to exceed (orange text) at all receivers except NCA 4, with exceedances up to 14dB. These expected exceedances of the NMLs in the surrounding receivers will trigger the Contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the Structure phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 69dB(A) and 75dB(A) at the façade of Building A, C, K and L during the Structure stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.2.2.4 Internal plus Façade

Table 19 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed façade works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$ dB(A) (re. $20\mu Pa$)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
EWP	102	57	52	55	43	51	57	56
Truck	105	60	57	58	46	54	60	59
Manitou	111	66	63	64	52	60	66	65
Mobile Crane	101	56	53	54	42	50	56	55
Boom lift	102	57	54	55	43	49	55	56
Total		68	65	66	54	62	68	67

Table 19: Predicted airborne noise levels for the proposed façade works at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Results indicate that all residential receivers, except NCA 4, are expected to exceed (orange text) standard hours NMLs. These expected exceedances of the NMLs in the surrounding receivers will trigger the Contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the Internal plus Façade phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 68dB(A) and 74dB(A) at the façade of Building A, C, K and L during the Internal plus Façade stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.2.2.5 External

Table 20 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed landscaping works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$ dB(A) (re. $20\mu Pa$)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
Truck	105	60	55	58	46	54	60	59
Manitou	111	66	61	64	52	60	66	65
Mobile Crane	101	56	51	54	42	50	56	55
Total		68	63	66	54	61	68	66

Table 20: Predicted airborne noise levels for the proposed landscaping works at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Results indicate that all residential receivers except receivers within NCA 4 are expected to exceed (orange text) standard hours NMLs when works will be carried out in proximity of the boundaries close to the receivers. The predicted exceedance of the NMLs in the surrounding receivers will trigger the contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the External phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 68dB(A) and 74dB(A) at the façade of Building A, C, K and L during the External stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.2.3 STAGE 4

This section presents the results for the components of work for Stage 4.

6.2.3.1 Demolition

Table 21 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed demolition works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$ dB(A) (re. $20\mu Pa$)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
Excavator with breaker	116	64	61	64	57	59	58	59
Manitou	111	59	56	59	52	54	53	54
Mobile Crane	101	49	46	49	42	44	43	44
Total		65	62	65	59	60	59	60

Table 21: Predicted airborne noise levels for the proposed demolition at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Results show that predicted construction noise levels are expected to exceed the NMLs (orange text) for NCA's 1, 2, 3, 4 and 5 during operation of all machinery and equipment in proximity of the boundaries close to the receivers. The predicted exceedance of the NMLs in the surrounding receivers will trigger the contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the Demolition phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 72dB(A) and 85dB(A) at the façade of Building C and L during the Demolition stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.2.3.2 Internal plus Façade

Table 22 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed façade works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$, dB(A) (re. $20\mu Pa$)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
EWP	102	50	47	50	43	45	44	45
Truck	105	53	50	53	46	48	47	48
Manitou	111	59	56	59	52	54	53	54
Mobile Crane	101	49	46	49	42	44	43	44
Boom lift	102	50	47	50	43	45	44	45
Total		61	58	61	54	56	55	56

Table 22: Predicted airborne noise levels for the proposed façade works at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Results indicate that all residential receivers, except NCA 4, are expected to exceed (orange text) standard hours NMLs. These expected exceedances of the NMLs in the surrounding receivers will trigger the Contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the Internal plus Façade phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 68dB(A) and 80dB(A) at the façade of Building A, C, K and L during the Internal plus Façade stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.2.3.3 External

Table 23 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed landscaping works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$, dB(A) (re. $20\mu Pa$)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
Truck	105	53	50	53	46	48	47	48
Manitou	111	59	56	59	52	54	53	54
Mobile Crane	101	49	46	49	42	44	43	44
Total		60	57	60	54	55	54	55

Table 23: Predicted airborne noise levels for the proposed landscaping works at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Results indicate that the residential receivers NCA 1, 2, 3 are expected to exceed (orange text) standard hours NMLs when works will be carried out in proximity of the boundaries close to the receivers. The predicted exceedance of the NMLs in the surrounding receivers will trigger the contractor to apply reasonable and

feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the External phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 68dB(A) and 80dB(A) at the façade of Building K and L during the External stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.2.4 STAGE 5

This section presents the results for the components of work for Stage 5.

6.2.4.1 Demolition

Table 24 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed demolition works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$, dB(A) (re. $20\mu Pa$)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
Excavator with breaker	116	68	57	59	57	60	61	77
Manitou	111	63	52	54	52	55	56	72
Mobile Crane	101	53	42	44	42	45	46	62
Total		69	58	60	59	62	62	79

Table 24: Predicted airborne noise levels for the proposed demolition at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Results show that predicted construction noise levels are expected to exceed the NMLs (orange text) for NCA's 1, 2, 3, 4, 5 and 7 during operation of all machinery and equipment in proximity of the boundaries close to the receivers. The predicted exceedance of the NMLs in the surrounding receivers will trigger the contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the Demolition phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 72dB(A) and 79dB(A) at the façade of Building C and L during the Demolition stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.2.4.2 Civil

Table 25 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed civil works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$ dB(A) (re. 20 μ Pa)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
Excavator	104	52	45	47	46	50	52	65
Truck	105	53	46	48	47	51	53	66
Manitou	111	59	52	54	53	57	59	72
Roller	105	53	46	48	47	51	53	66
Total		61	54	56	55	60	61	75

Table 25: Predicted airborne noise levels for the proposed excavation and piling works at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Results show that predicted construction noise levels are expected to exceed (orange text) up to 6dB whilst all plant is operational concurrently. These expected exceedances of the NMLs in the surrounding receivers will trigger the Contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the Civil phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 69dB(A) and 75dB(A) at the façade of Building A, C, M, K and L during the Civil stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.2.4.3 External

Table 26 shows the predicted sound pressure levels at the boundary of the nearest NCA's due to the construction plant for the proposed landscaping works. Allowances have been made for distance attenuation, shielding and reflections.

Item	Typical Noise Level L_{WA} dB	Predicted Noise Levels $L_{Aeq,15min}$ dB(A) (re. 20 μ Pa)						
		Residential Receivers					Other Receivers	
		ID 1	ID 2	ID 3	ID 4	ID 5	ID 6	ID 7
Truck	105	53	46	48	47	51	53	66
Manitou	111	59	52	54	53	57	59	72
Mobile Crane	101	49	42	44	43	47	49	62
Total		60	53	55	54	59	60	74

Table 26: Predicted airborne noise levels for the proposed landscaping works at the nearest noise receivers. Exceedances to criteria (refer to Table 6) indicated in orange and highly noise affected residential criteria in red text.

Results indicate that the residential receivers NCA 1 and 5 are expected to exceed (orange text) standard hours NMLs when works will be carried out in proximity of the boundaries close to the receivers. The predicted exceedance of the NMLs in the surrounding receivers will trigger the contractor to apply reasonable and feasible work practices to minimise the noise as much as possible, as per the requirements of the ICNG. Refer to Section 7 for details.

Noise from works associated with the External phase of works are expected to impact existing school receivers. Worst case noise impacts are predicted to range between 68dB(A) and 74dB(A) at the façade of Building K and L during the External stage of works. It is recommended to keep windows shut when there are high noise generating works occurring outside.

6.3 VIBRATION ASSESSMENT

The vibration intensive plant used during the construction works may impact on adjacent sensitive receivers. In order to assess the construction vibration impact due to heavy construction plant, the NSW RMS 'Construction Noise and Vibration Guideline' provides safe working distances for vibration intensive plant and are quoted for both 'cosmetic' damage (in accordance with BS 7385.2:1993) and human comfort (in accordance with DEC's 'Assessing Vibration: A Technical Guideline'). The recommended safe working distances are provided in Table 27.

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

Table 27: Recommended minimum working distances for vibration intensive plant from sensitive receivers.

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

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

In relation to human comfort (response), the minimum working distances in Table 27 relate to intermittent vibration (VDV parameter) as for most construction activities, vibration emissions are intermittent in nature. Where the predicted vibration levels will exceed the human comfort objectives, the procedures in Section 7.2.2 are to be followed in order to mitigate the potential impacts at sensitive receivers.

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

7 NOISE AND VIBRATION CONTROL RECOMMENDATIONS

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

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

7.1 RESPITE PERIODS

Respite periods should be provided and should generally be implemented into the work methodology in order to reduce the impact onto the surrounding NCA's, as detailed in Section 7.6. High noise generating activities such as rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

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

7.2 GENERAL CONTROLS FOR NOISE AND VIBRATION

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

7.2.1 NOISE

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

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

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

7.2.2 VIBRATION

Vibration can be more difficult to control than noise, and there are few generalizations that can be made about its control. It should be kept in mind that vibration may cause disturbance by causing structures to vibrate and radiate noise in addition to perceptible movement. Impulsive vibration can, in some cases, provide

a trigger mechanism that could result in the failure of building components that had previously been in a stable state.

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

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

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

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

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

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

7.3 UNIVERSAL WORK PRACTICES

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

- Regularly train workers and contractors (such as a toolbox talks) to use equipment in ways to minimise noise.
- Ensure site managers periodically check the site and nearby residences and other sensitive land use for noise problems so that solutions can be quickly applied.
- Include in tenders, employment contracts, subcontractor agreements and work method statements clauses that require minimisation of noise and compliance with directions from management to minimise noise.
- Avoid the use of radios or stereos outdoors where neighbours can be affected.
- Avoid shouting, and minimise talking loudly and slamming vehicle doors.
- Keep truck drivers informed of designated vehicle routes, parking locations, acceptable delivery hours or other relevant practices.

- Develop a one-page summary of approval or consent conditions that relate to relevant work practices, and pin it to a noticeboard so that all site operators can quickly reference noise information.
- Workers may at times need to discuss or negotiate practices with their managers.

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

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

7.4 CONSULTATION AND NOTIFICATION

The community is more likely to be understanding and accepting of noise if the information provided is frank, does not attempt to understate the likely noise level, and if commitments are firmly adhered to. Community Consultation shall be as per EIS requirements and prepared accordingly. Refer to Appendix C for a Community Communication Strategy provided by Hansen Yuncken.

7.5 MANAGING NOISE LEVELS AND MAINTENANCE PROGRAM FOR PLANT AND EQUIPMENT

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

- Use quieter methods:
 - Examine and implement, where feasible and reasonable, alternatives to rock-breaking work methods, such as hydraulic splitters for rock and concrete, hydraulic jaw crushers, chemical rock and concrete splitting, and controlled blasting such as penetrating cone fracture. The suitability of alternative methods should be considered on a case-by-case basis.
 - Use alternatives to diesel and petrol engines and pneumatic units, such as hydraulic or electric controlled units where feasible and reasonable. Where there is no electricity supply, use an electrical generator located away from residences.
- Use quieter equipment:
 - Examine different types of machines that perform the same function and compare the noise level data to select the least noisy machine. For example, rubber wheeled tractors can be less noisy than steel tracked tractors.
 - Noise labels are required by NSW legislation for pavement breakers, mobile compressors, chainsaws and mobile garbage compactors. These noise labels can be used to assist in selecting less noisy plant.
 - Pneumatic equipment is traditionally a problem – select super silenced compressors, silenced jackhammers and damped bits where possible.
 - When renting, select quieter items of plant and equipment where feasible and reasonable.

- When purchasing, select, where feasible and reasonable, the most effective mufflers, enclosures and low-noise tool bits and blades. Always seek the manufacturer's advice before making modifications to plant to reduce noise.
- Operate plant in a quiet and efficient manner:
 - Reduce throttle setting and turn off equipment when not being used.
 - Examine and implement, where feasible and reasonable, the option of reducing noise from metal chutes and bins by placing damping material in the bin.

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

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

7.6 WORKS TIMING RESTRICTIONS AND SCHEDULING

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

- Provide respite periods.
- Schedule activities to minimise noise impacts:
 - Organise work to be undertaken during the recommended standard hours where possible.
 - When works outside the recommended standard hours are planned, avoid scheduling on Sundays or public holidays.
 - Schedule work when neighbours are not present.
 - Schedule noisy activities around times of high background noise (local road traffic or when other local noise sources are active) where possible to provide masking or to reduce the amount that the construction noise intrudes above the background.
 - Consult with affected neighbours about scheduling activities to minimise noise impacts.
- Organise deliveries and access:
 - Nominate an off-site truck parking area, away from residences, for trucks arriving prior to gates opening.
 - Amalgamated loads can lead to less noise and congestion in nearby streets.
 - Optimise the number of vehicle trips to and from the site – movements can be organised to amalgamate loads rather than using a number of vehicles with smaller loads.

- o Inform, and consult where possible, the potentially noise-affected residences or other sensitive land uses of designated access routes to and from site, and make drivers aware of nominated vehicle routes.
- o Schedule deliveries to nominated hours only.

7.7 ADDITIONAL NOISE AND VIBRATION CONTROLS

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

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

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

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

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

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

7.8 MONITORING PROGRAM

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

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

Noise and vibration monitoring can take two forms:

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

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

The following may be included in a noise monitoring report:

- The type of monitoring conducted (for example, at a particular project stage or following complaints) and a brief statement of the measurement method.
- The noise / vibration conditions on the consent / licence, or the relevant noise management objectives.
- Descriptions of the nearest affected residences and other sensitive land uses or, in the case of complaints, description of the complainant location and complaint.
- Plan or diagram showing the location of the monitoring and the noise generating works.
- Description of the instrumentation used.
- Name and relevant qualifications or professional memberships of monitoring personnel.
- The weather conditions during monitoring.
- The time(s) and duration(s) of monitoring, including dates – in the case of complaints.
- A clear description of the construction activities taking place during the monitoring.
- The results of monitoring at each monitoring location, including a comparison with the consent conditions or relevant noise management objectives.
- A clear statement outlining the project's compliance or non-compliance with the conditions or objectives.
- Where the monitored level is higher than the conditions or objectives, the reasons for non-compliance should be stated, strategies for minimising noise identified and stated, and the appropriate actions to implement the strategies.

7.9 WORKERS' TRAINING AND AWARENESS

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

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

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

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

7.10 OCCUPATIONAL HEALTH AND SAFETY

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

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

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

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

7.11 CONSTRUCTION TRAFFIC ROUTES

The Contractor shall establish and implement traffic routes for deliveries to the site, which minimise the noise impact on surrounding noise sensitive receivers as best possible.

8 CONCLUSIONS

A construction noise and vibration assessment has been carried out for the proposed works for the Newcastle High School Redevelopment (NHSR).

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

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

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

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

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

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

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

APPENDIX A – LONG TERM NOISE MONITORING

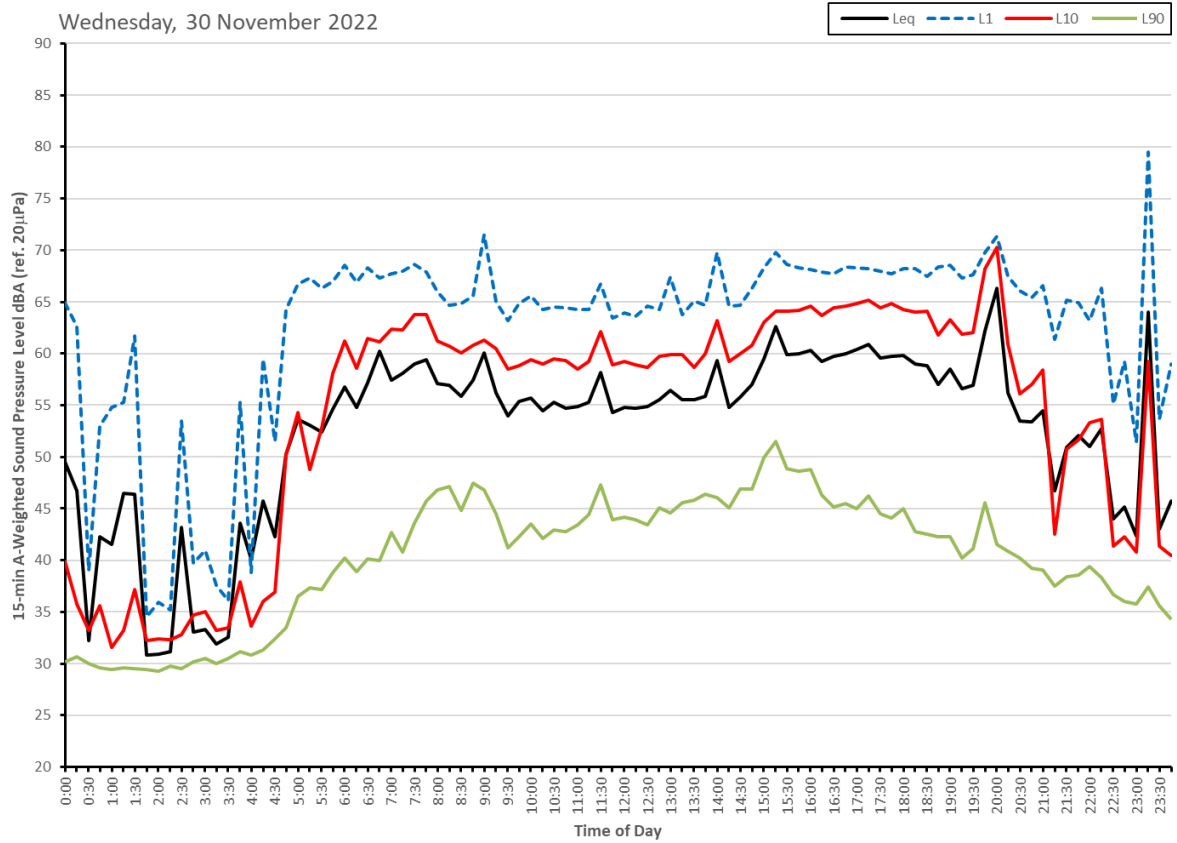
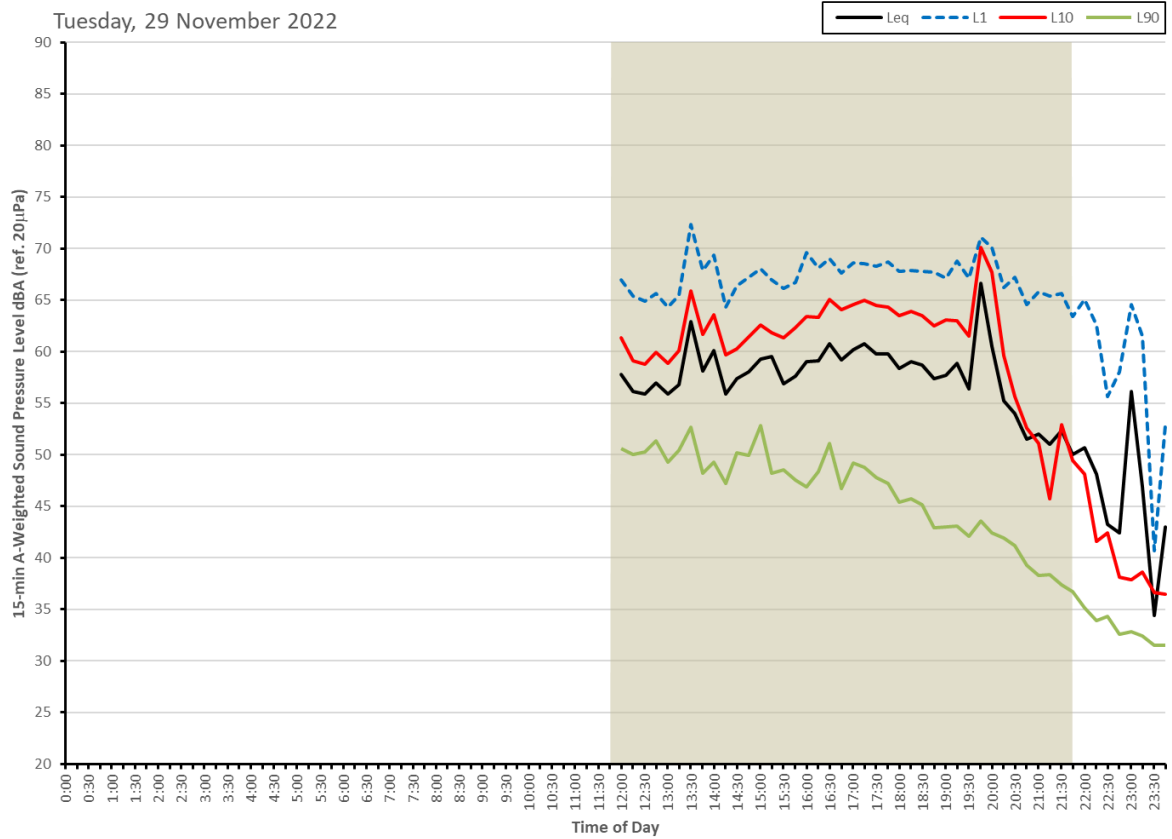
L_{A1} – The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.

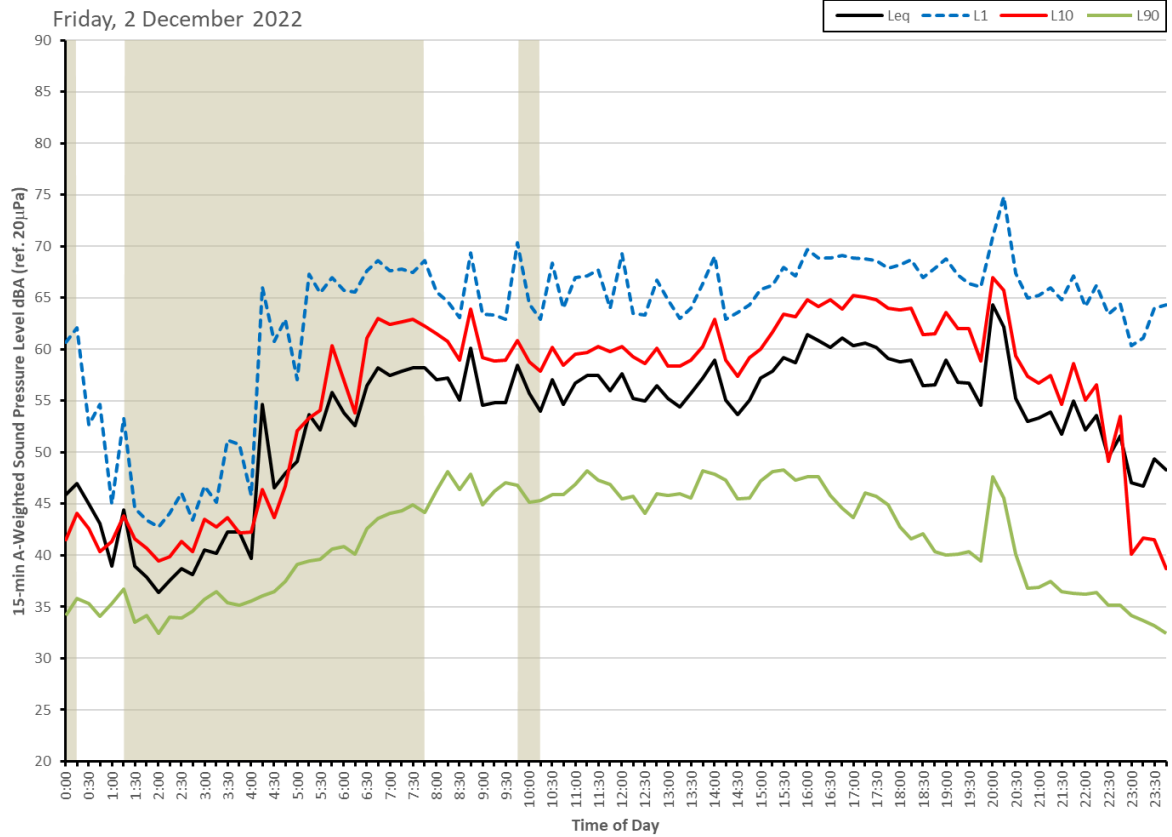
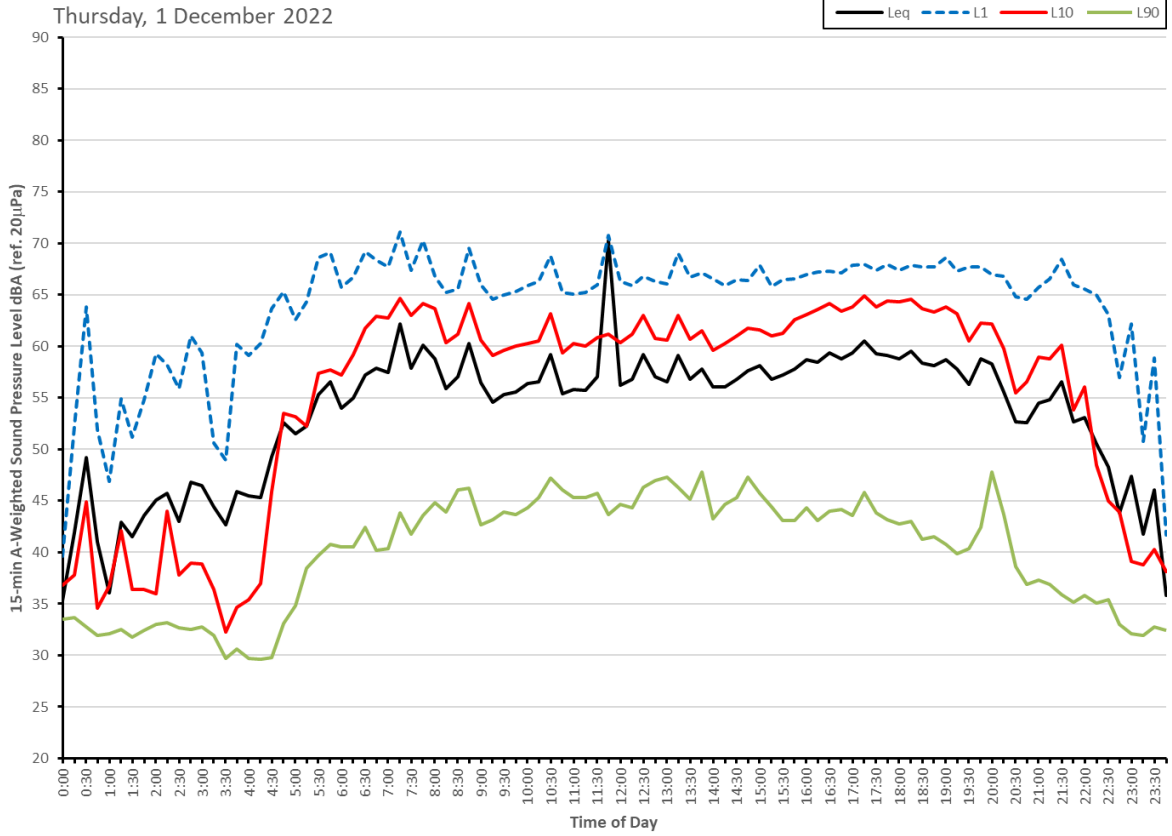
L_{A10} – The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} is a common noise descriptor for environmental noise and road traffic noise.

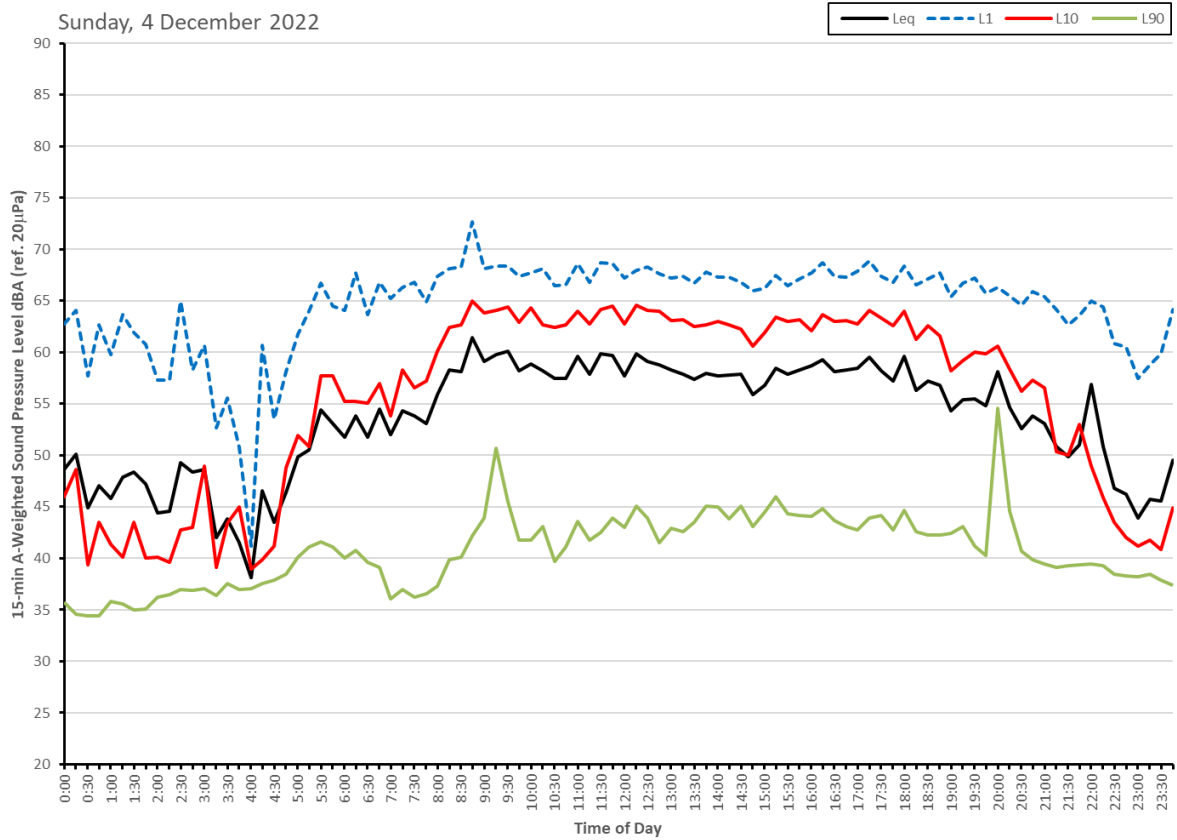
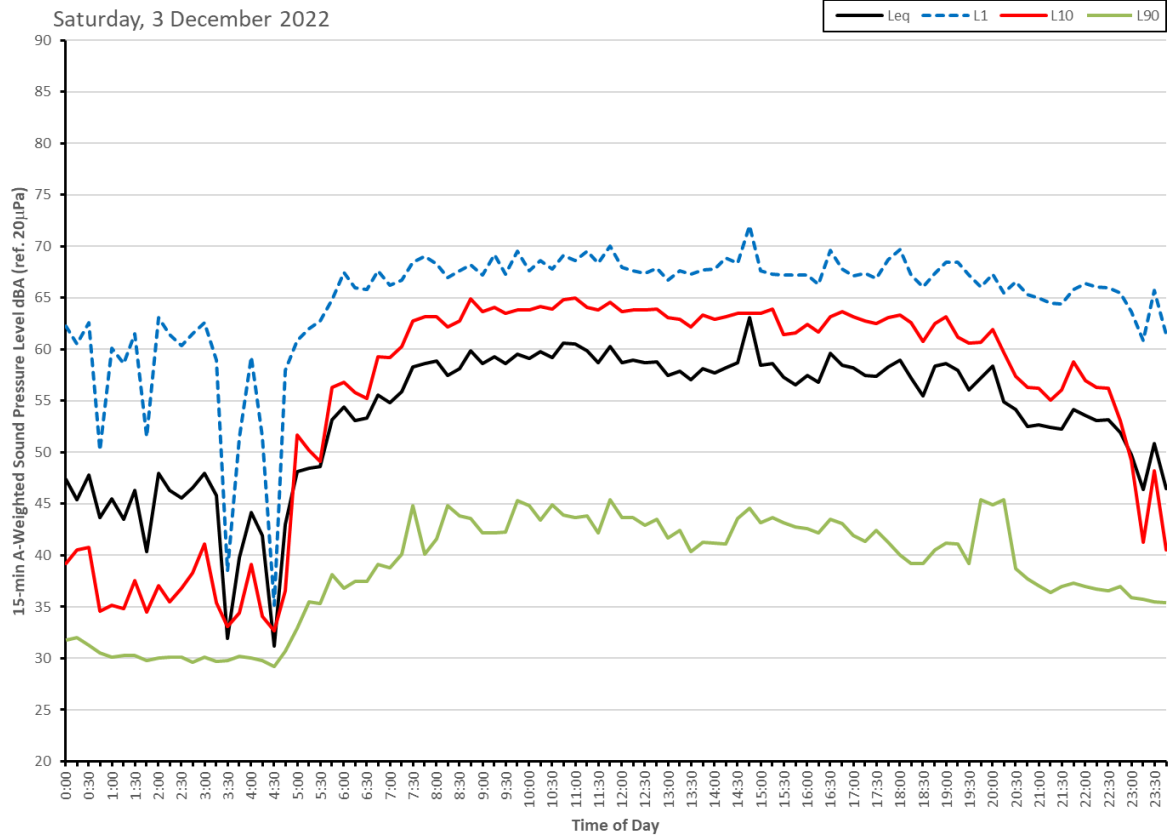
L_{A90} – The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

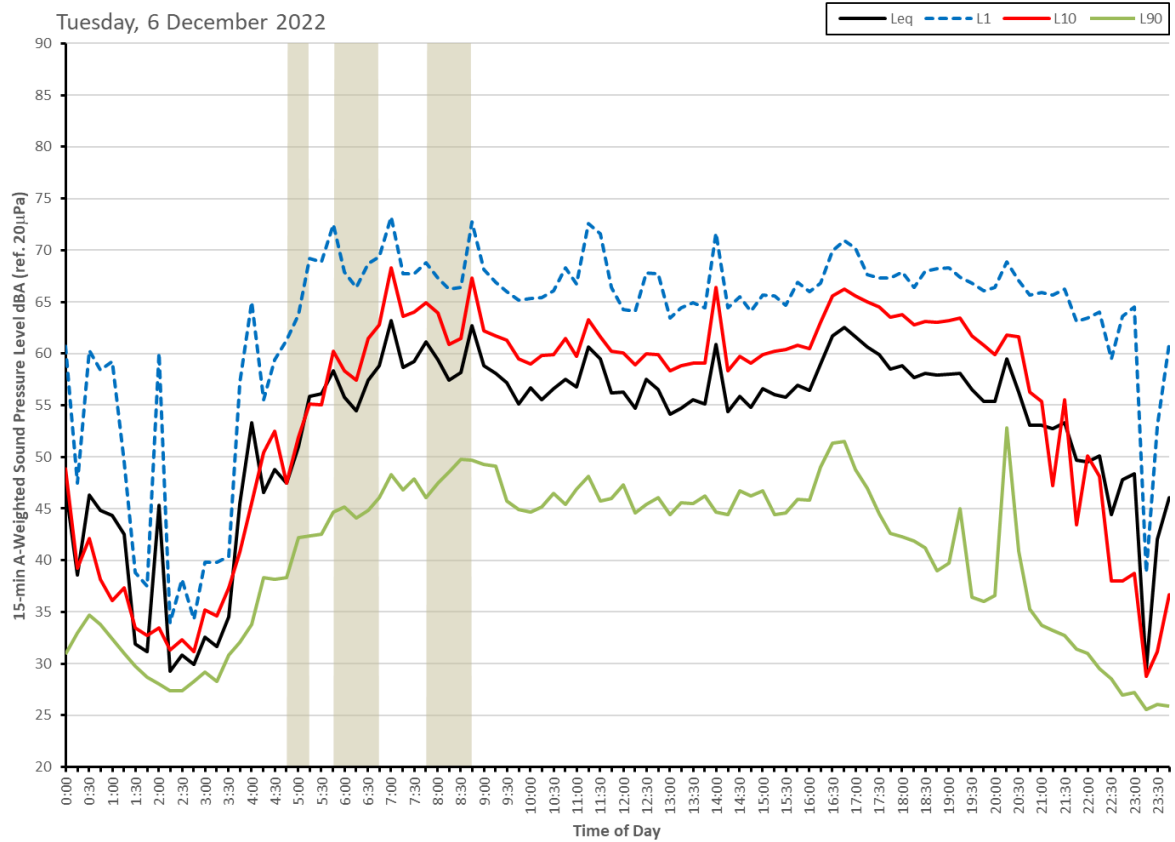
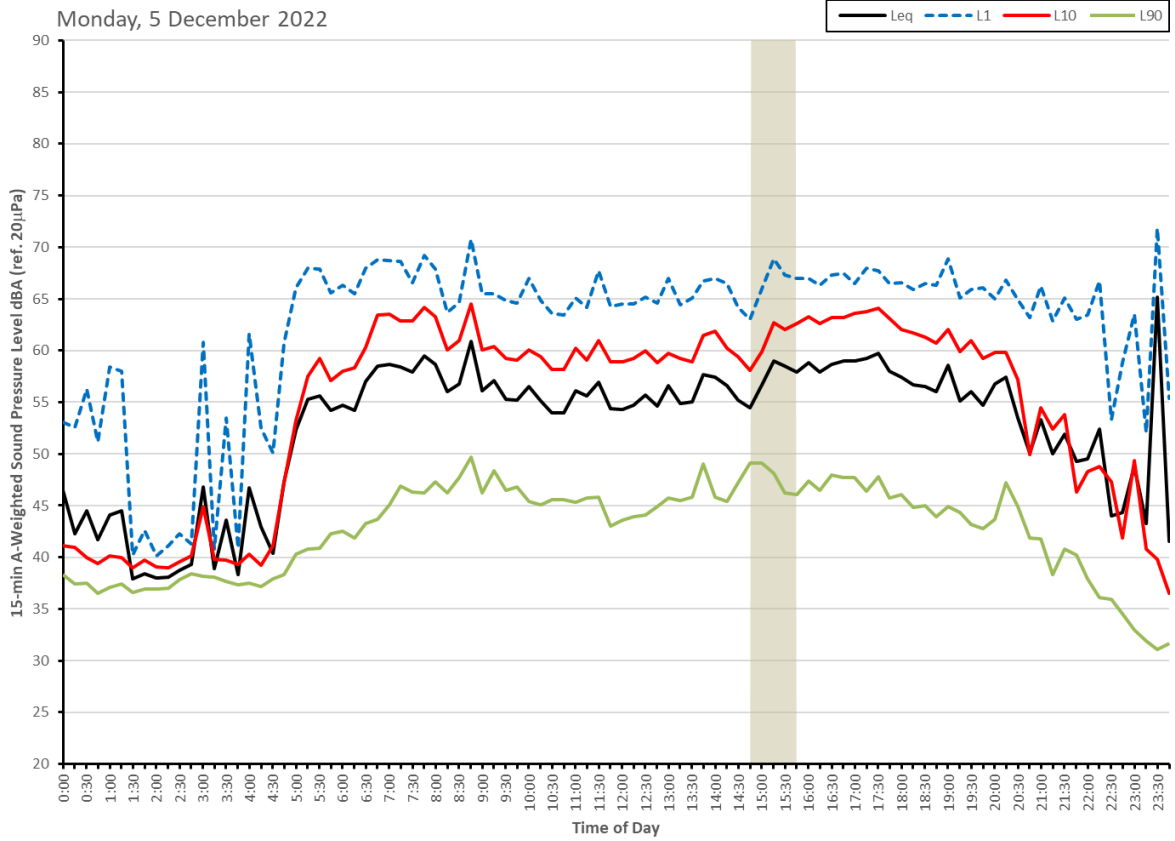
L_{Aeq} – The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

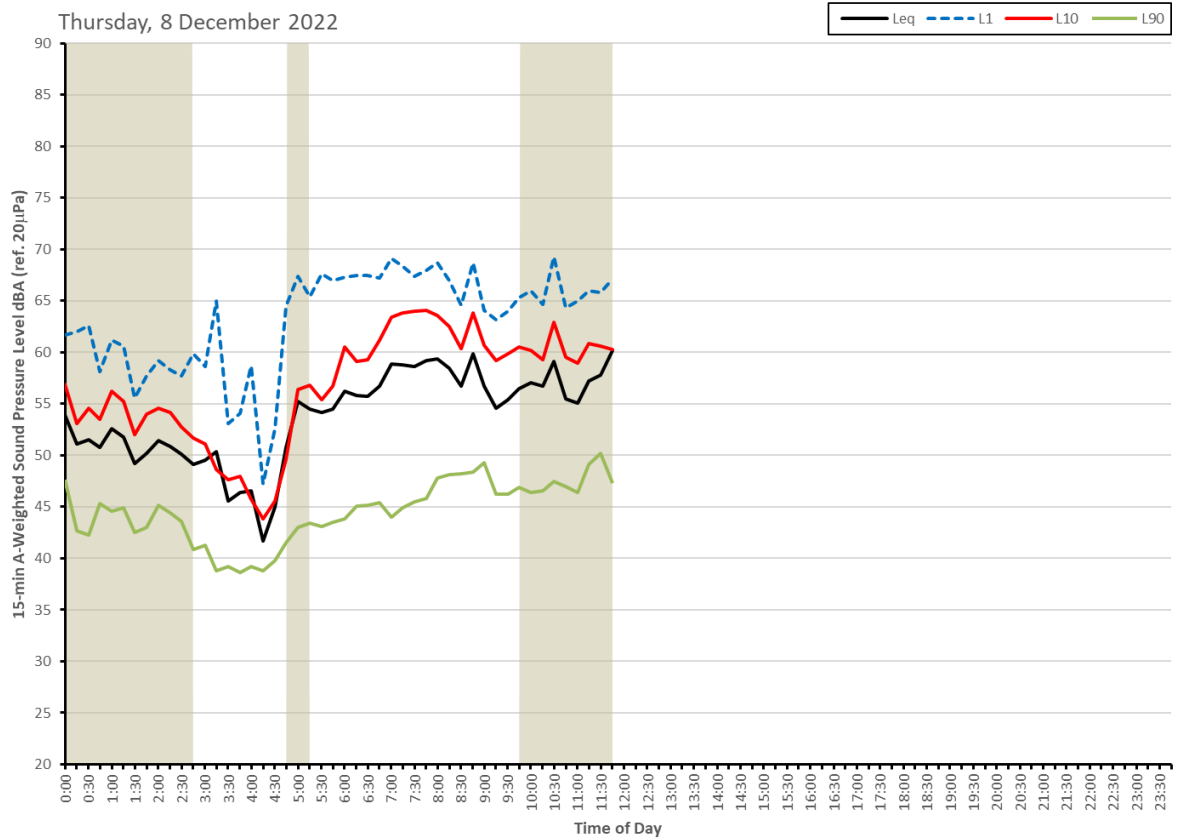
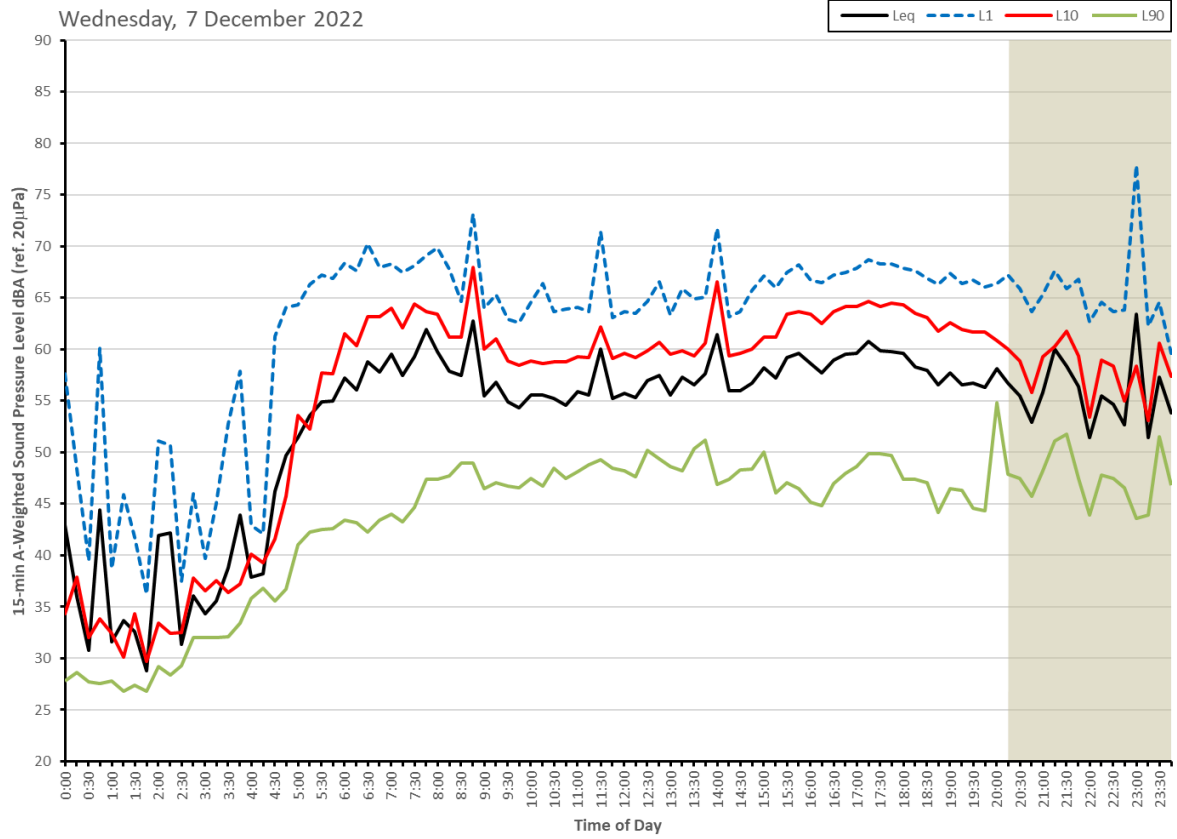
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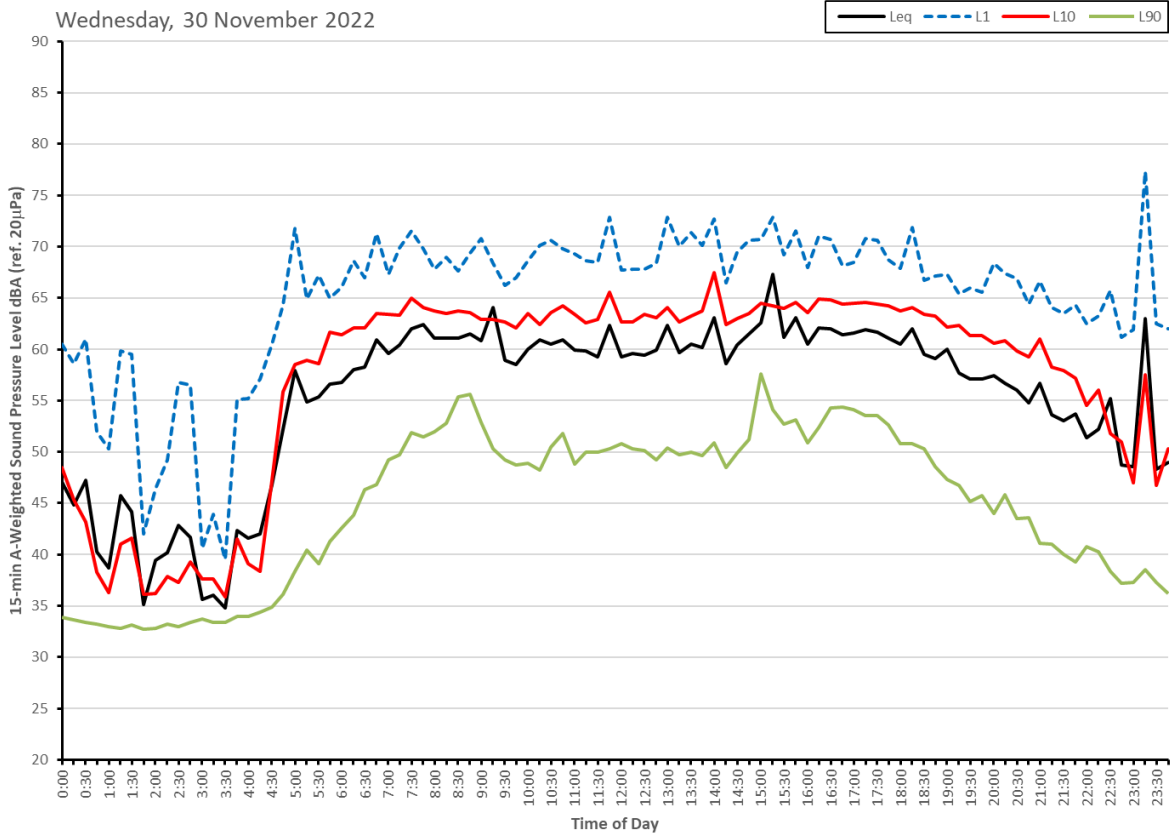
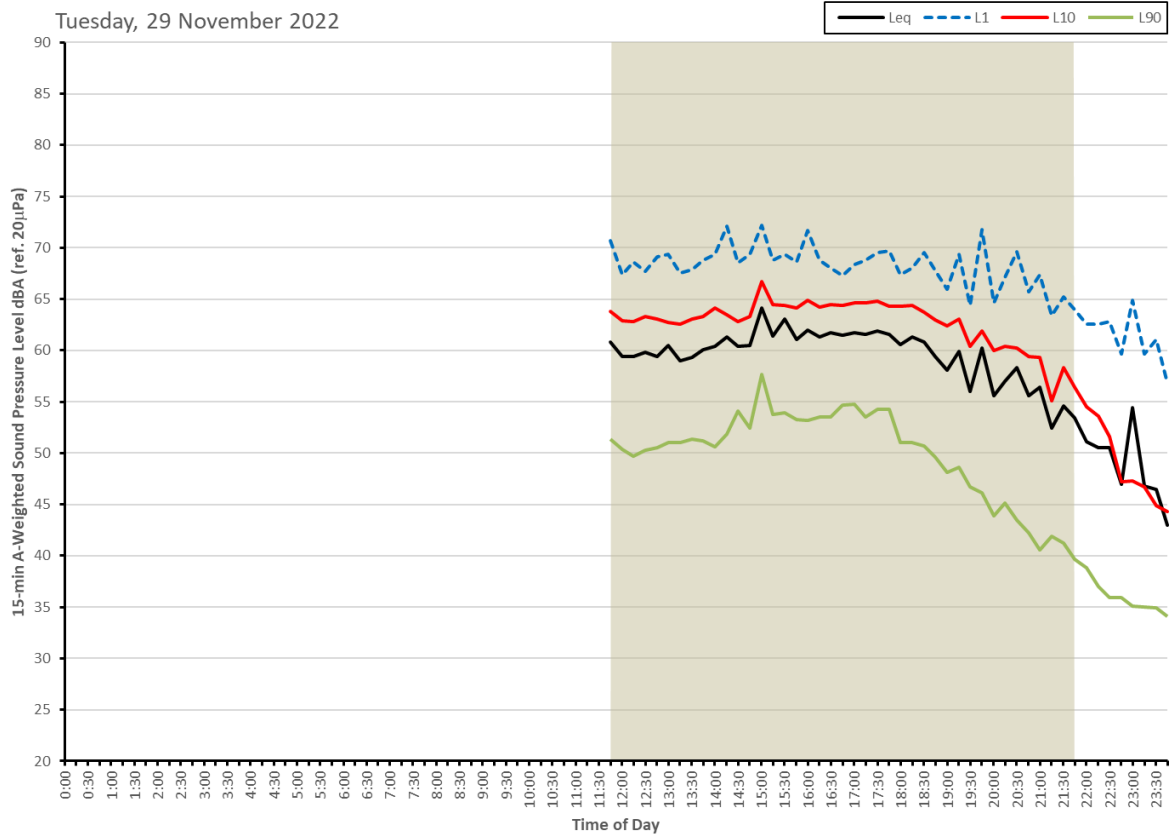


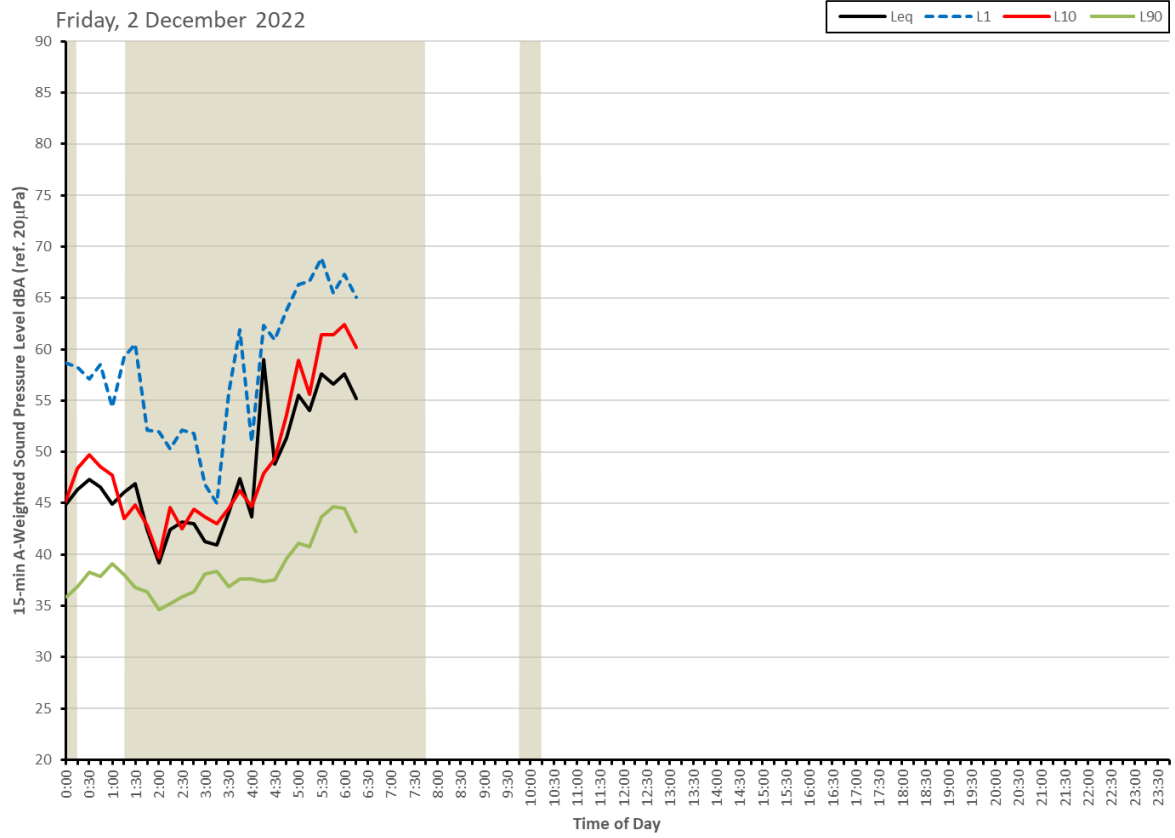
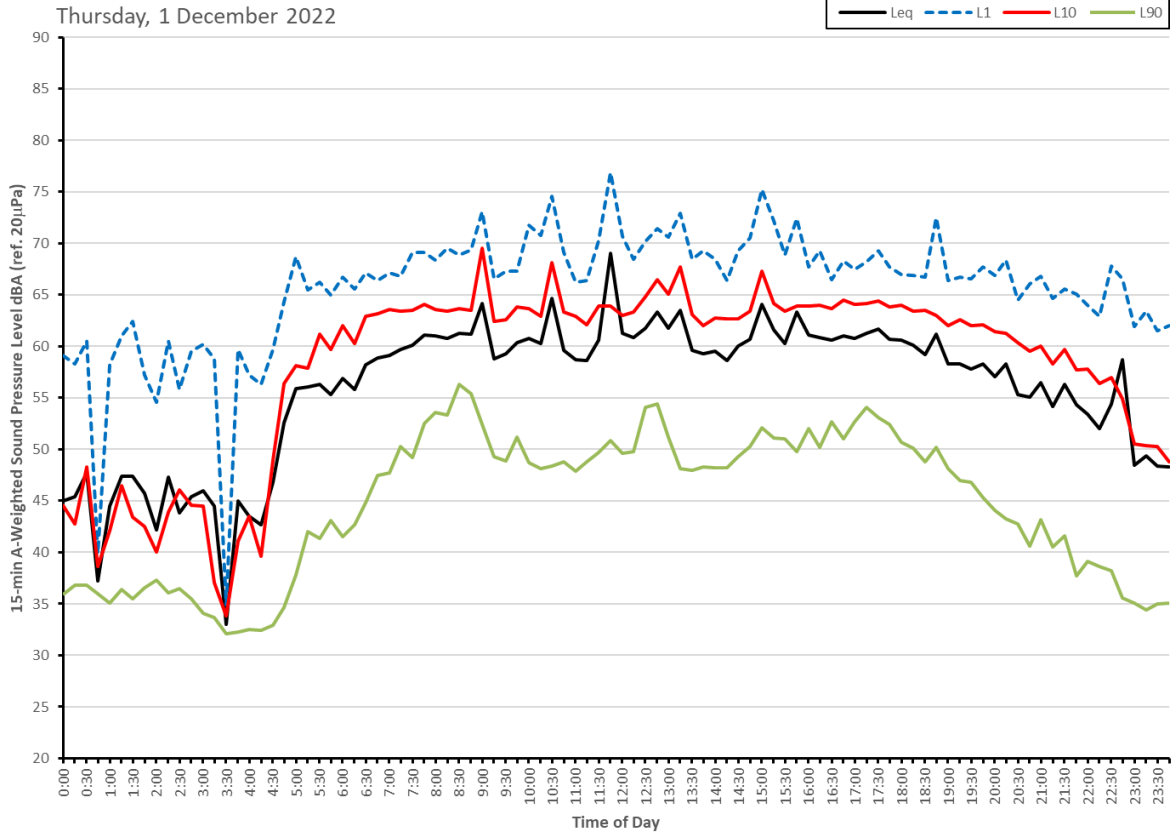




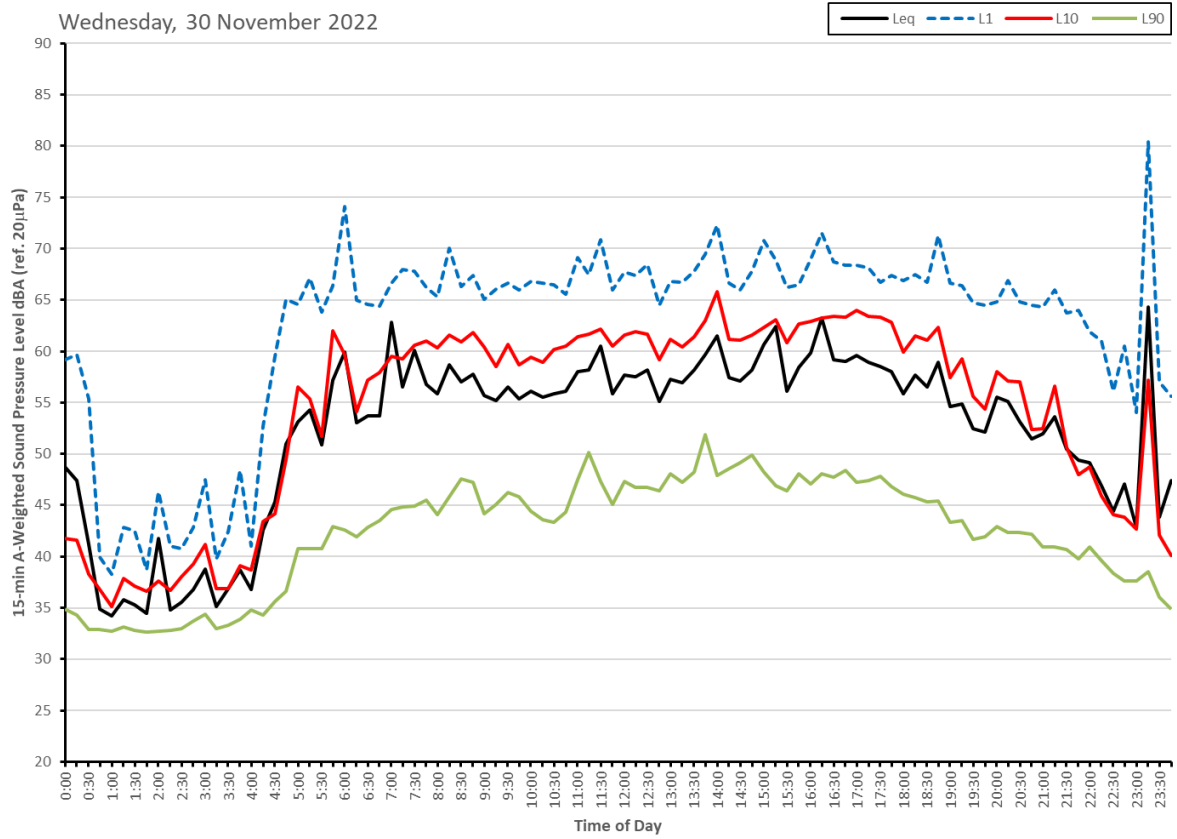
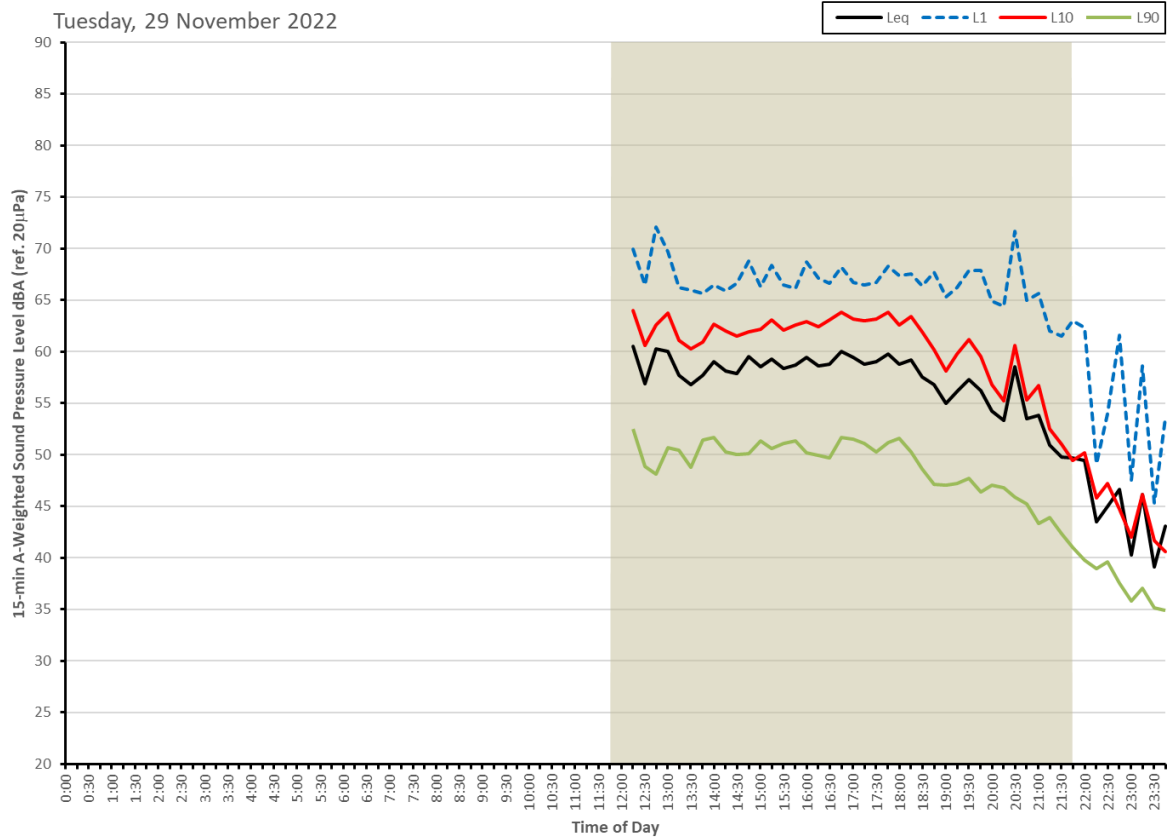


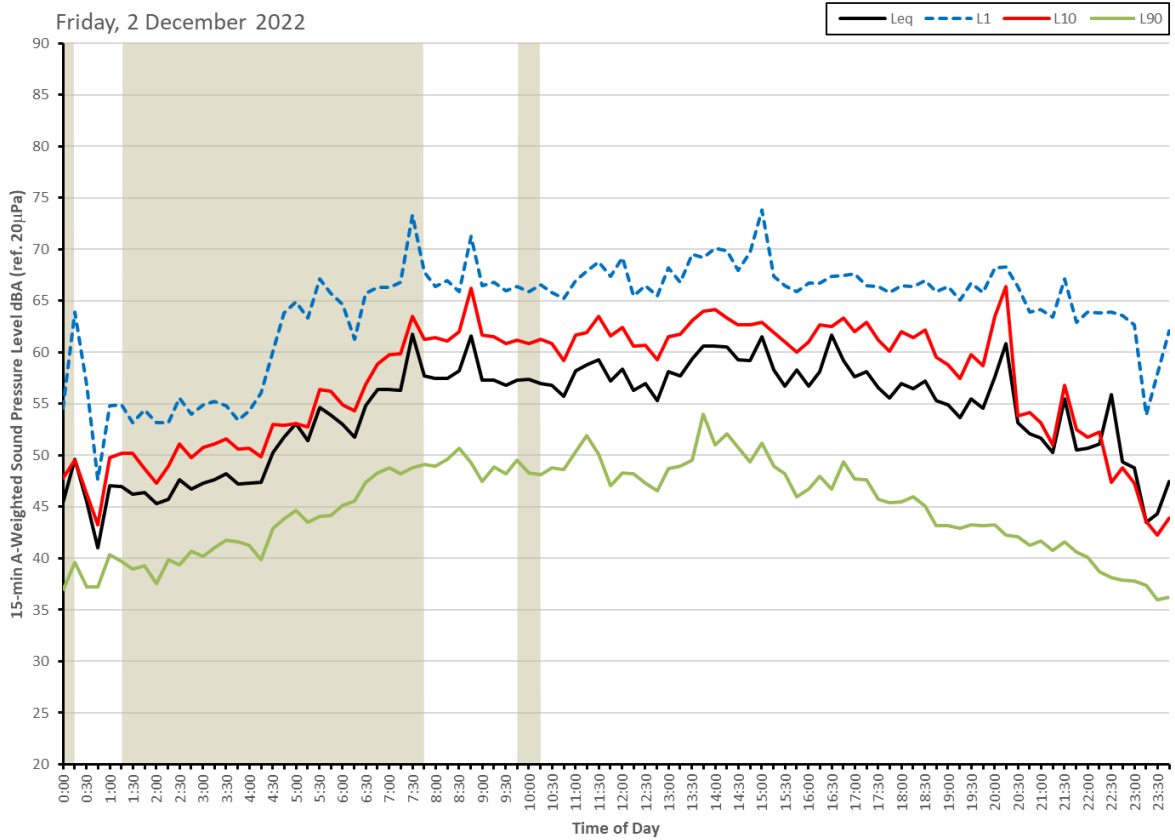
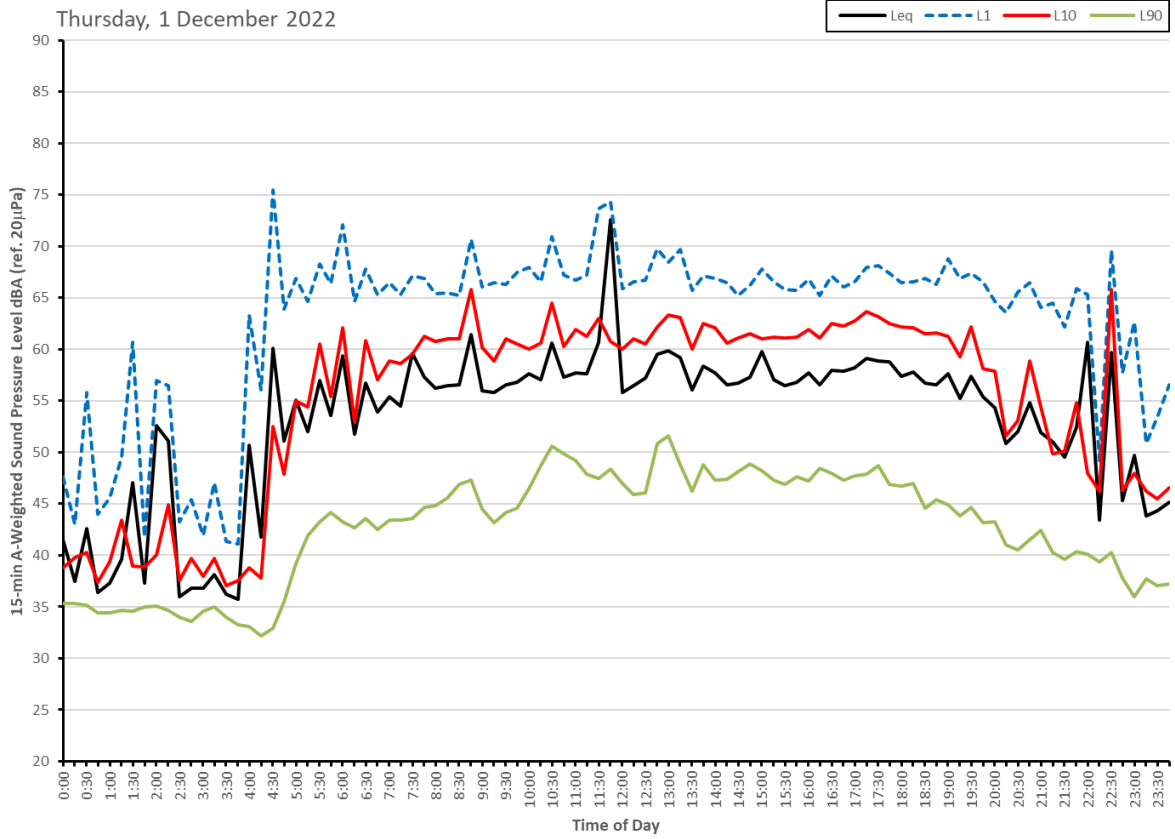
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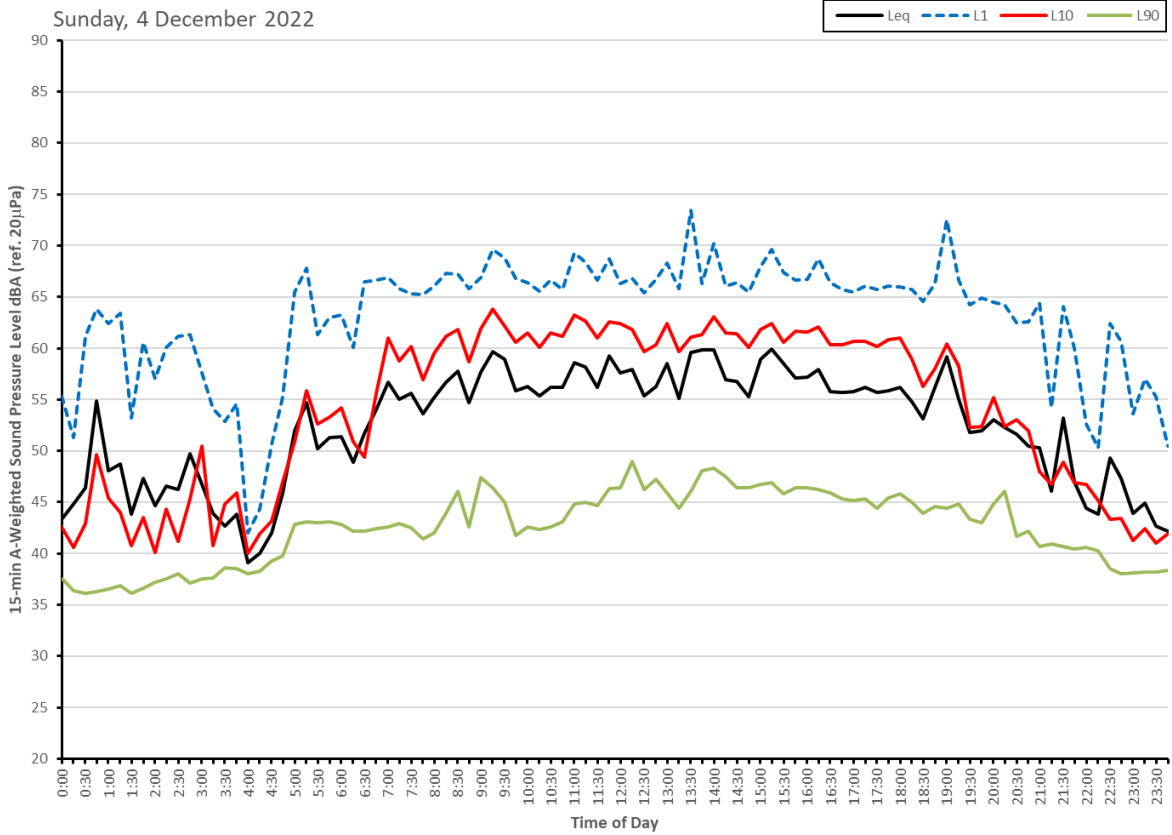
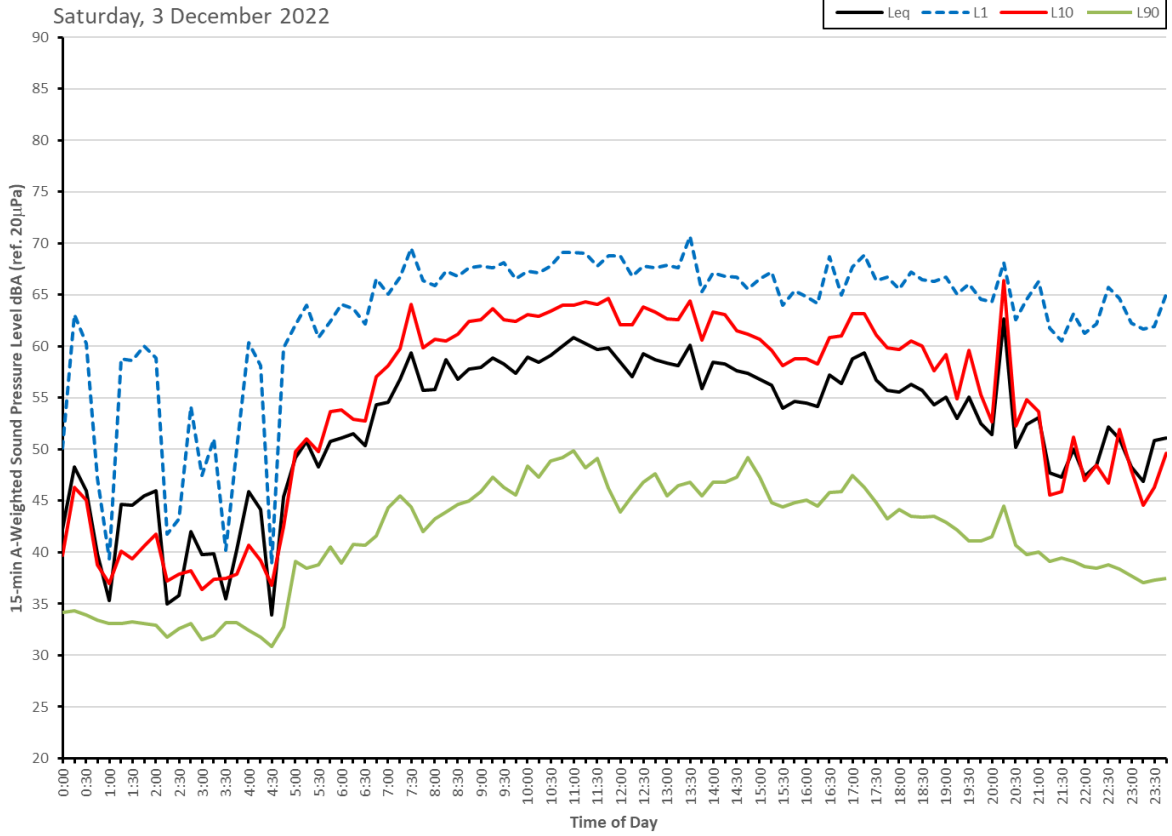


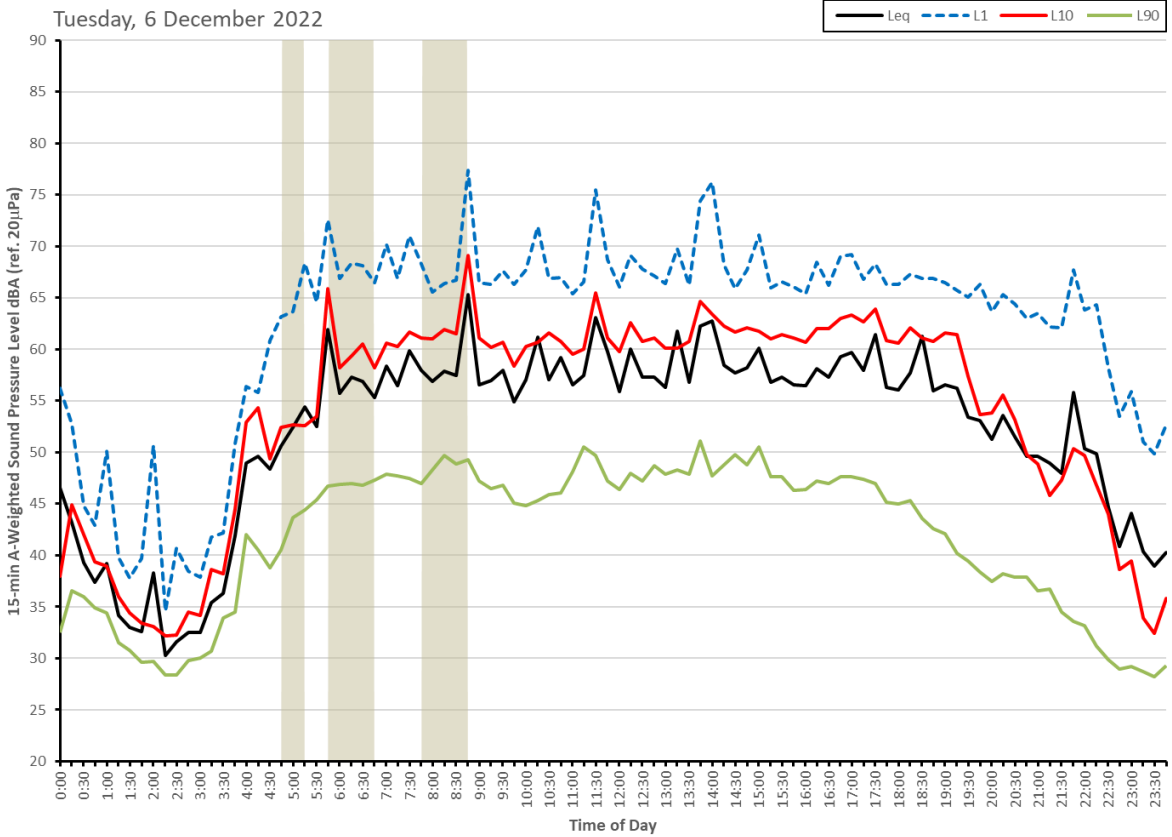
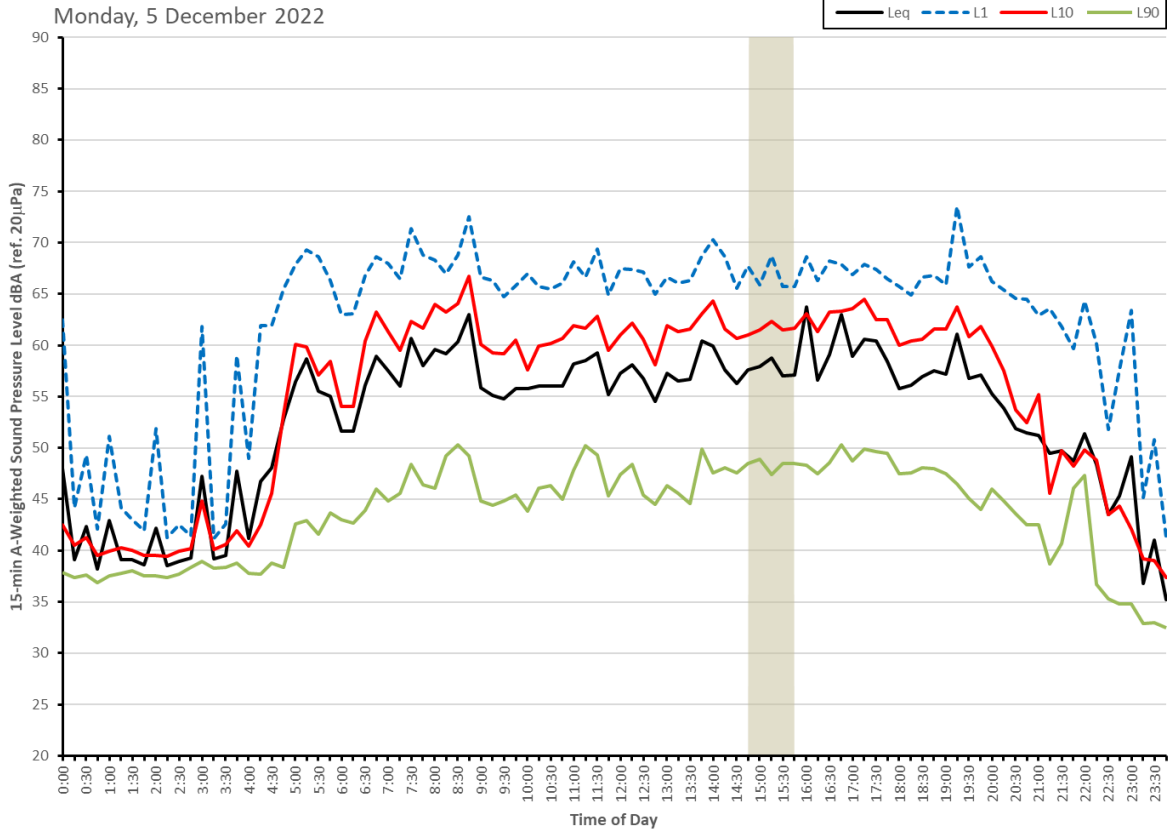


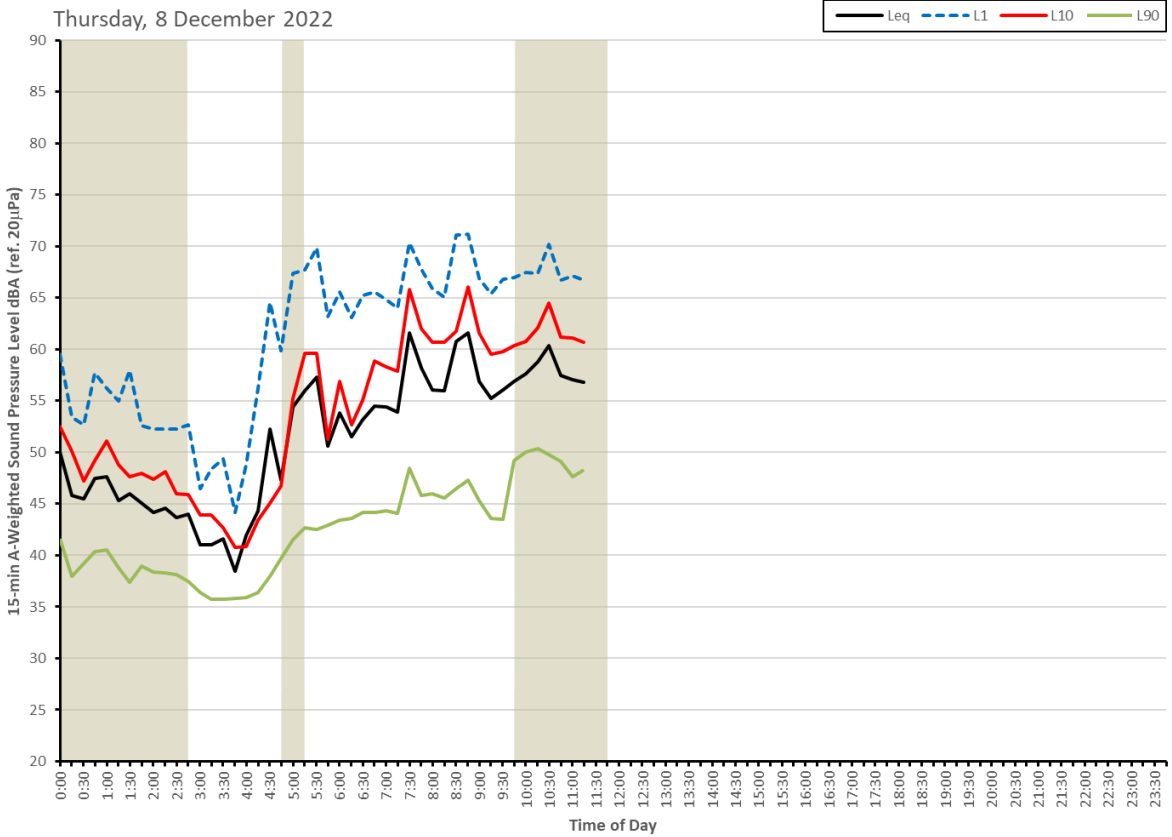
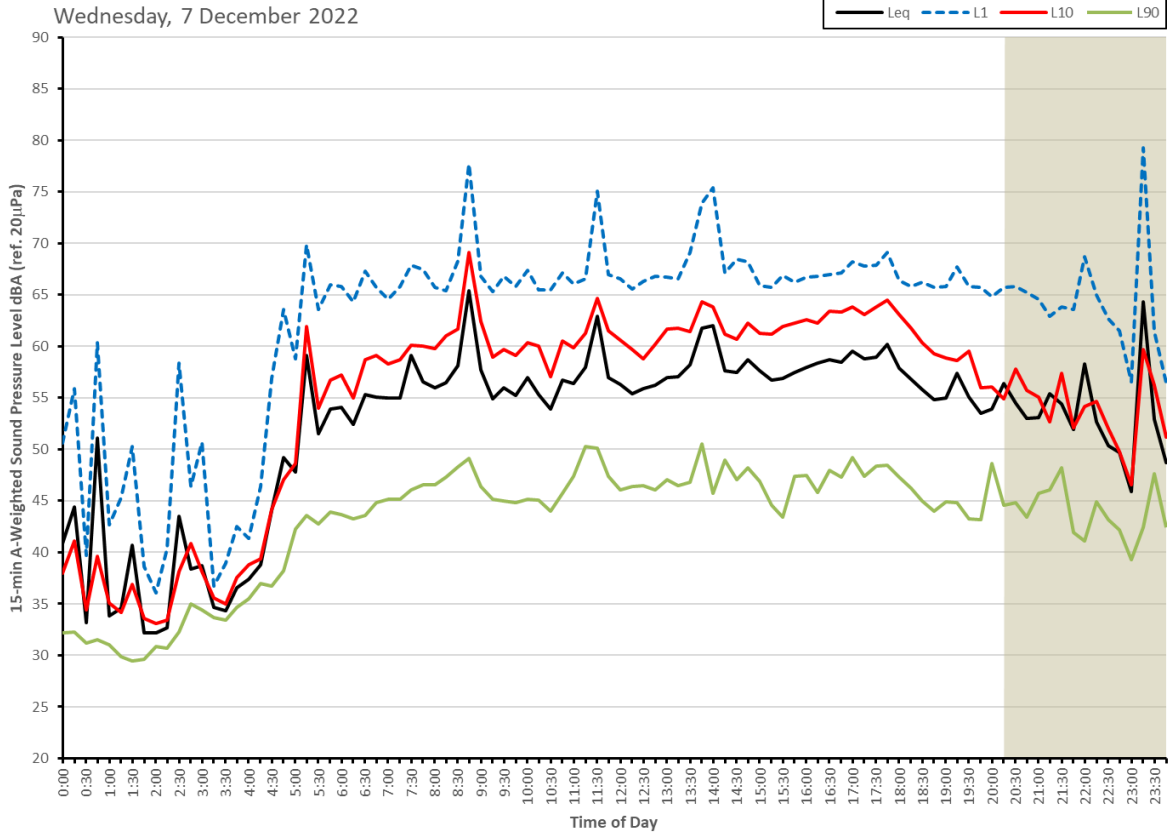
Noise Logger 3:











APPENDIX B – CURRICULUM VITAE

SEAN MATTHEWS | SENIOR ACOUSTICS ENGINEER

Sean is an experienced Senior Acoustics Engineer with diverse and extensive experience in the field of acoustic consulting.

With a strong understanding of other disciplines and an intimate focus on coordination, he is able to provide effective design solutions. The diversity of projects from large residential to commercial and infrastructure has also resulted in a strong technical understanding across the board in regards to acoustics and vibration.



QUALIFICATIONS

BEHons (Mechanical), 2010, University of Sydney

AFFILIATIONS

Member of Australian Acoustical Society (MAAS)

KEY PROJECT EXPERIENCE

- Tweed Valley Hospital
- HammondCare Scone Stage 2
- Bowral Residential Aged Care
- Kincumber Residential Aged Care
- Mt Martha Residential Aged Care
- Caroline Springs Residential Aged Care
- Tuggeranong Office Park
- Darling Square Precinct
- Leichhardt Green, Leichhardt
- Park Sydney, Ashmore
- RAAF Williamstown Stage 2
- Liverpool Hospital & Academic Precinct
- HammondCare SA Repat Specialist Dementia Care Unit, Daw Park
- Defence Logistics Transformation Project
- Sydney Light Rail Extension
- Wynyard Walk
- T2 Tower Barangaroo
- West Village, Parramatta
- Rhodes Community Centre
- Mezzo, 87 Bay Street, Glebe
- 444 Gardeners Road, Alexandria
- Lot 104 Lachlan's Line

APPENDIX C – COMMUNITY COMMUNICATION STRATEGY



School Infrastructure NSW

Community Communication Strategy

Newcastle High School redevelopment

(Formerly Newcastle Education Campus)

SSD-41814831

March 2024

Version	Date of Review
1.0	4/04/2024

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Document purpose

School Infrastructure NSW (SINSW) consults and engages with communities and stakeholders throughout the development of a school project. This engagement helps to inform the design of the school project and provides an opportunity to share and address potential constraints and impacts during construction.

A Consultation Report outlining the consultation and engagement during this planning phase of the project is submitted as part of the State Significant Development (SSD) application. This Community Communications Strategy (CCS) provides an overview of how SINSW will continue to communicate and consult with the community during construction of the project.

The Newcastle High School redevelopment (formerly referred to as Newcastle Education Campus) is classified as a State Significant Development, and has been assessed by the Department of Planning, Housing and Infrastructure (DPHI). Consent was provided on Friday 12 January 2024.

To view the SSD, including the Consultation Report, visit the DPHI planning portal at www.planningportal.nsw.gov.au/major-projects/projects/newcastle-education-campus.

This CCS has been developed to Comply with condition B9 of the SSD consent:

Community Communication Strategy

B9. No later than 48 hours prior to the commencement of construction, a Community Communication Strategy must be submitted to the Planning Secretary for information. The Community Communication Strategy must provide mechanisms to facilitate communication between the Applicant, Council and the community (including adjoining affected landowners and businesses, and others directly impacted by the development), during the design and construction of the development, and for a minimum of 12 months following the completion of construction.

The Community Communication Strategy must:

- (a) identify people to be consulted during the design and construction phases;
- (b) set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the development;
- (c) provide for the formation of community-based forums, if required, that focus on key environmental management issues for the development;
- (d) set out procedures and mechanisms:
 - (i) through which the community can discuss or provide feedback to the Applicant;
 - (ii) through which the Applicant will respond to enquiries or feedback from the community; and
 - (iii) to resolve any issues and mediate any disputes that may arise in relation to construction and operation of the development, including disputes regarding rectification or compensation.
- (e) include any specific requirements around traffic, noise and vibration, amenity, tree retention, heritage.

This CCS outlines SINSW's commitment to:

- Consider and manage stakeholder and community expectations as integral to the successful delivery of the project.
- Inform affected stakeholders, such as the local community or road users about construction activities.
- Enable the open and proactive management of issues and communications.

This CCS will be implemented through the construction phase of the project, and for 12 months following construction completion.

Plan review

The CCS will be revised as required to address any changes in stakeholders or the project management or complaints handling process. This will be done in close consultation with the SINSW Senior Project Director, appointed Project Management company and/or Contractor and SINSW Community Engagement Manager.

Approval

The CCS is reviewed and approved by the SINSW Senior Project Director, in close consultation with relevant members of the Department of Education's School Performance team that may include a Director Educational Leadership or school Principal. Final endorsement is provided by the SINSW Senior Manager, Community Engagement.

Table 1: List of SSD requirements and where they are addressed in this CCS

State Significant Developments SSD-41814831 B9	The Community Communications Strategy addresses this in section
a) <i>identify people to be consulted during the design and construction phases;</i>	▪ Section 3
b) <i>set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the development;</i>	▪ Section 4
c) <i>provide for the formation of community-based forums, if required, that focus on key environmental management issues for the development;</i>	▪ Section 4
d) <i>set out procedures and mechanisms:</i> <ul style="list-style-type: none"> <li data-bbox="296 680 922 741">i. <i>through which the community can discuss or provide feedback to the Applicant;</i> <li data-bbox="296 763 954 824">ii. <i>through which the Applicant will respond to enquiries or feedback from the community;</i> <li data-bbox="296 846 970 969">iii. <i>to resolve any issues and mediate any disputes that may arise in relation to construction and operation of the development, including disputes regarding rectification or compensation.</i> 	▪ Section 6
e) <i>include any specific requirements around traffic, noise and vibration, tree retention, heritage.</i>	▪ Section 7

1. Context

The Newcastle High School redevelopment includes staged upgrades comprising of:

- demolition (Buildings B, D, E, I, J and P), relocation (Building H) and refurbishment of existing buildings A and K.
- construction of new buildings (new learning hub and multipurpose facility), covered walkways, campus green, drop-off/pick-up, waste and sporting facilities
- tree removal and landscaping
- ancillary works including public domain infrastructure.

For more information on the project, visit the [project webpage](#) on the School Infrastructure NSW website.

2. Community engagement objectives

SINSW's goal is that our school infrastructure meets the needs of a growing population and enables flexible learning and teaching. This CCS has been developed to achieve the following community engagement objectives:

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

3. Stakeholders

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

Table 2: Stakeholders

Stakeholders	Interest and involvement
Newcastle High School community <ul style="list-style-type: none">▪ Principal▪ Teachers▪ Staff▪ Parents and carers▪ Students▪ Newcastle High School P&C	<ul style="list-style-type: none">▪ Construction impacts and how these will be minimised▪ Safe pedestrian and traffic access to the school▪ Parking, drop-off and pick-up considerations▪ Quality of infrastructure and resources upon project completion▪ How to access the new school once completed▪ Understanding of the timing for construction, use of the temporary school, and how students will transition from the temporary to the permanent school.▪ Available play space for students▪ Awareness of intake area for the new school

Stakeholders	Interest and involvement
<p>Local community</p> <p>Residents and property owners of:</p> <ul style="list-style-type: none"> ▪ National Park Street ▪ Parkway Avenue ▪ Smith Street ▪ Dumaresq Street 	<ul style="list-style-type: none"> ▪ Noise and truck movements during construction ▪ Increased traffic and congestion on nearby streets ▪ Local traffic and pedestrian safety ▪ Traffic conditions during pick-up and drop-off ▪ Shared use of school facilities and amenities
<p>Adjoining affected landowners and businesses</p> <ul style="list-style-type: none"> ▪ Newcastle No. 2 Sportsground, Smith Street ▪ Newcastle and Hunter Rugby Union, Cnr Parry and Smith Streets ▪ Newcastle Netball Association, Union Street ▪ 1st Merewether Scout Hall, Smith Street ▪ Fearnley Dawes Athletic Centre, 120 Smith Street 	<ul style="list-style-type: none"> ▪ Noise and truck movements during construction ▪ Increased traffic and congestion on nearby streets ▪ Local traffic and pedestrian safety ▪ Traffic conditions during pick-up and drop-off ▪ Shared use of school facilities and amenities ▪ Environmental impacts during construction ▪ Public domain upgrades e.g. footpaths
<p>Local Members of Parliament:</p> <ul style="list-style-type: none"> ▪ Mr (Tim) Timothy Crakanthorp MP, State Member for Newcastle ▪ Ms Sharon Claydon MP, Federal Member for Newcastle 	<ul style="list-style-type: none"> ▪ Meeting the economic, social and environmental objectives of state and federal governments ▪ Delivering increased public education capacity on time ▪ Delivering infrastructure which meets expectations ▪ Addressing local issues such as traffic, congestion and public transport solutions
<p>Government agencies and peak bodies:</p> <ul style="list-style-type: none"> ▪ Transport for NSW ▪ Fire and Rescue NSW ▪ NSW Department of Planning, Housing and Infrastructure ▪ NSW Environmental Protection Authority ▪ NSW Rural Fire Service ▪ Hunter Water ▪ NSW Heritage Council ▪ NSW Department of Premier and Cabinet 	<ul style="list-style-type: none"> ▪ Traffic and congestion on the local road system ▪ Adequate public transport options and access ▪ Ensuring new infrastructure meets standard requirements for safety and fire evacuation ▪ Ensuring the development is compliant ▪ Ensuring the development does not impact heritage items ▪ Management of any contamination
<p>Local Council – City of Newcastle</p> <ul style="list-style-type: none"> ▪ Lord Mayor, Nuatali Nelmes ▪ Councillors ▪ Chief Executive Officer, Jeremy Bath 	<ul style="list-style-type: none"> ▪ Schedule for construction and opening of school ▪ Impacts to the local community including noise, congestion and traffic ▪ Shared use of community spaces ▪ Providing amenities to meet increase population density ▪ Copies of information distributed to local residents ▪ Processes and protocols in place to manage

Stakeholders	Interest and involvement
	interactions with local residents
<p>Nearby public schools</p> <ul style="list-style-type: none"> ▪ Newcastle High School (Cooks Hill campus) ▪ Newcastle East Public School ▪ The Junction Public School ▪ Hamilton South Public School ▪ Merewether Public School ▪ Hamilton Public School 	<ul style="list-style-type: none"> ▪ Impact on school resources ▪ Impact on current students ▪ Implications for teaching staff ▪ Possible impacts on enrolments ▪ Opportunities to view the new facilities
<p>Community groups</p> <ul style="list-style-type: none"> ▪ Newcastle Boys High School Old Boys Association ▪ From Central to Hunter Ex-Students' Association ▪ Newcastle Girls High School Ex-Students Union 	<ul style="list-style-type: none"> ▪ Construction impacts and how these will be minimised ▪ Impacts of project on existing infrastructure and public transport capacity ▪ Impacts of project on school heritage and history ▪ Quality of infrastructure and resources upon project completion ▪ How to access the new school once completed ▪ Understanding of the timing for construction ▪ Available play space for students ▪ Awareness of intake area for the new school/changes to intake area for upgrades
<p>Project Status Update Group (names not disclosed)</p> <ul style="list-style-type: none"> • Project members • School Principal • Director Educational Leadership 	<ul style="list-style-type: none"> • Construction progress • Operational impacts from construction schedule
<p>Registered/Interested Aboriginal Parties</p> <ul style="list-style-type: none"> • Awabakal Local Aboriginal Land Council • Aboriginal Education Consultative Group • Muloombinah Local Aboriginal Education Consultative Group • Registered Aboriginal Parties • Members of the local Aboriginal community including Mrs Barbara Greentree, Luke Russell, Cherie Johnson, Dominic Dates, Callan Nickerson, Aunty Belinda Wright, Amy Lalic, Nathan Towney and Madison Piercy. 	<ul style="list-style-type: none"> • Walk on Country, design discussion and Smoking Ceremony prior to the sod turn • Recognition and respect for Aboriginal heritage and culture

4. Engagement approach

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

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

In addition to engagement with government departments, agencies and Council, community engagement will continue for the project during construction in two streams:

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

4.1. General community input

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

- a) School Infrastructure NSW 1300 community information line (1300 482 651) that is published on all communications material, including project site signage
- b) School Infrastructure NSW email address (schoolinfrastructure@det.nsw.edu.au) that is published on all communications material, including project site signage
- c) Project webpage '[contact us](#)' form
- d) During information booths and information sessions held at the school or local community meeting place, and advertised on our website and via letterbox drops.

Refer to Section 6.5 of this document for detail on our enquiries and complaints process. The contractor contact details for after hours complaints and enquiries are available in the Construction Environment Management Plan which can be found in the Reports section in the [project webpage library](#).

A number of tools and techniques will be used to keep stakeholders and the local community involved as summarised in Table 3 below.

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

- a) Site establishment
- b) Commencement of main works construction
- c) School Term prior to project completion
- d) Project completion
- e) First day of school following project completion / official opening

Table 3: School Infrastructure NSW Communications Tools

Communications Tool	Description of Activity	Frequency
1300 community information line	<p>The free call 1300 482 651 number is published on all communication materials and is manned by SINSW.</p> <p>All enquiries that are received are referred to the appointed Community Engagement Manager and/or Senior Project Director as required and logged in our CRM.</p> <p>Once resolved, a summary of the conversation is updated in the CRM.</p>	Throughout the life of the project and accessible for 12 months post completion
Advertising (print)	Advertising in local newspapers may be undertaken prior to significant construction activities, major disruptions and opportunities to meet the project team or find out more at a face to face event.	At project milestones
Call centre scripts	High level, project overview information may be provided to external organisations who may receive telephone calls enquiring about the project, most notably stakeholder councils.	Throughout the project when specific events occur or issues are raised by stakeholders
Community contact cards	<p>These are business card size with all the SINSW contact information.</p> <p>The project team / contractors are instructed to hand out contact cards to stakeholders and community members enquiring about the project. Cards are offered to school administration offices as appropriate.</p> <p>Directs all enquiries, comments and complaints through to our 1300 number and School Infrastructure NSW email address.</p>	Throughout the life of the project and available 12 months post completion
CRM database	<p>All projects are created in SINSW's Customer Relationship Management system at project inception.</p> <p>Interactions, decisions and feedback from stakeholders are captured, and monthly reports generated.</p> <p>Any enquiries and complaints are to be raised in the CRM and immediately notified to the Senior Project Director, Project Director and Community Engagement Manager.</p>	Throughout the life of the project and updated for 12 months post completion
Display boards	A0/A1 size full colour information boards to use at info sessions or to be permanently displayed in appropriate places (school admin office for example).	As required
Door knocks	<p>Provide timely notification to nearby residents of upcoming construction works, major impacts such as changes to pedestrian movements, temporary bus stops, expected impacts and proposed mitigation.</p> <p>Provide written information of construction activity and contact details.</p>	As required prior to periods of significant construction impacts
FAQs	Set of internally approved answers provided in response to frequently asked questions. Used as part of relevant stakeholder	Throughout the life of the project

Communications Tool	Description of Activity	Frequency
	and community communication tools. These are updated as required, and included on the website if appropriate.	
Information booths	<p>Information booths are held locally and staffed by a project team member to answer any questions, concerns or complaints on the project.</p> <p>Information booths may be held both at the school/ neighbouring school, as well as for the broader community:</p> <ul style="list-style-type: none"> a) School information booths are held at school locations at times that suit parents and caregivers, with frequency to be aligned with project milestones and as required. b) Community information booths are usually held at local shopping centres, community centres and places that are easily accessed by the community. They are held at convenient times, such as out of work hours on weekdays and Saturdays. <p>Collateral to be provided include community contact cards, latest project notification or update, with internal FAQs prepared.</p> <p>All liaison to be summarised and loaded in the CRM.</p>	At project milestones and as required
Community information sessions	<p>Information sessions are a bigger event than an info booth, held at a key milestone or contentious period. We have more information on the project available on display boards / screens and an information pack handout – including project scope, planning approvals, any impacts on the school community or residents, project timeline, FAQs.</p> <p>Members from the project and communications team will be available to answer questions about the project.</p> <p>These events occur after school hours on a week day.</p> <p>All liaison summarised and loaded on the CRM.</p>	As required
Information pack	<p>A 4 page A4 colour, fold out flyer that can include information about the project scope, progress, FAQs, timeline and next steps.</p> <p>To be distributed at info sessions or at other bigger events / milestones in hard copy and also made available electronically.</p>	As required
Media releases/events	<p>Media releases are distributed upon media milestones. They promote major project milestones and activities and generate broader community awareness.</p>	<p>Media milestones during construction period may include:</p> <ul style="list-style-type: none"> a) Planning approval granted b) Construction contract tendered c) Construction contract awarded d) Sod turning opportunity e) Handover / Official

Communications Tool	Description of Activity	Frequency
		opening
Notifications and updates	<p>A4 printed in colour that can include FAQs if required.</p> <p>Notifications are distributed under varying templates with different headings to suit different purposes:</p> <p>a) Works notification are used to communicate specific information/ impacts about works, impacts and mitigations.</p> <p>b) 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. Includes the project summary, information booths / sessions if scheduled, progress summary and contact information.</p>	<p>As required according to the construction program.</p> <p>Distributed (refer construction works notification distribution methodology in Section 4.2) via letterbox drop to local residents and via the school community prior to construction activities or other milestones throughout the life of the project. Specific timings indicated in table 5.</p>
Photography and videography	<p>Images may be used in notifications, on the website, at information sessions and in presentations.</p> <p>Once the project is complete, SINSW will organise photography of external and internal spaces to be used for a range of communications purposes.</p>	<p>Project completion (actual photography and video of completed project).</p> <p>Prior to project completion - artist impressions, flythrough, site plans and construction progress images may be used.</p>
Presentations	Details project information for presentations to stakeholder and community groups.	As required
Priority correspondence	Ministerial (and other) correspondence that is subject to strict response timeframes. Includes correspondence to the Premier, Minister, SINSW and other key stakeholders. SINSW is responsible for drafting responses as requested within the required timeframes.	As required
Project Reference Group	SINSW facilitated Project Reference Group sessions providing information on the design, construction activities, project timeframes, key issues and communication and engagement strategies.	Meets every school term or as required.
Project Status Update Group	The Project Status Update Group (PSUG) commences once construction begins and during Schematic Design. It is a forum for project teams to communicate changes from previous design phases. Its primary purpose is the sharing of information between the project team and school regarding operational impacts from the construction schedule.	Meets in week 6 of every school term once construction has commenced to allow for planning of the following school term

Communications Tool	Description of Activity	Frequency
Project signage	A0/A1 sized, durable aluminium signage will be installed at a suitable location on the construction site fencing. Provides high level information including project scope, project image and SINSW contact information.	Throughout the life of the project and installed for 12 months post completion
Site visits	Demonstrate project works and progress and facilitate a maintained level of interest in the project. Includes media visits to promote the reporting of construction progress.	As required
School Infrastructure NSW email address	Provide stakeholders and the community an email address linking direct to the Community Engagement team. Email address (schoolinfrastructure@det.nsw.edu.au) is published on all communications materials.	Throughout the life of the project
School Infrastructure NSW website	A dedicated project page for Newcastle High School redevelopment is located on the SINSW website – https://www.schoolinfrastructure.nsw.gov.au/projects/n/newcastle-high-school-revdevelopment.html	Updated at least monthly and is live for at least 12 months post completion of the project
Welcome pack/ thank you pack	At project completion the following flyers are utilised: <ul style="list-style-type: none"> ▪ Welcome pack – project completion for school community provided on the first day/week they are returning to school when new facilities are opening, or attending a new school. Includes project overview, map outlining access to the school and key locations, FAQs, contact information. ▪ Thank you pack – tailored to the local residents to thank them for their patience and support of the project. 	Project completion only

4.2. Construction works notification distribution methodology

Construction works notifications will be distributed to targeted properties in the vicinity of the project. These properties have been identified as part of the technical studies and plans submitted as part of the planning and assessment approval pathway and post approval requirements. Specifically, the notification distribution map at **Figure 1** below has been prepared through an analysis of the potential project impacts and requirements identified in:

- the Noise and Vibration Impact Assessment submitted with the SSD application
- the Traffic Impact Assessment submitted with the SSD application
- the Construction Worker Transportation Strategy
- the Construction Environmental Management Plan, including the:
 - Construction Noise and Vibration Management Sub Plan
 - Construction Traffic and Pedestrian Management Sub Plan.

This methodology has been used to identify the anticipated construction impacts identified for this project. It does not include an arbitrary distribution area due to the robust impact analysis that has been carried out during planning and assessment phase of the project.

The distribution area may be altered:

- to address specific construction activities where the impact/s affect fewer or greater properties, depending on the nature of the work
- where ongoing monitoring shows more widespread impacts to that predicted in the environmental impact assessment
- if complaints are received outside of the distribution area
- if there is an approved project modification in the future that results in more widespread impacts

- at the discretion of School Infrastructure NSW.

Additional project updates and notifications will also be distributed when communicating milestones and higher-level information to the wider community such as construction contract award and project completion. Such updates and notifications may not detail construction impacts and may be distributed to a greater number of addresses to widely publicise the project's achievements.

The below details the nearest sensitive receivers that may be impacted by construction including noise. The properties within all shaded areas including the school will receive notifications for unplanned out of hours works before undertaking the activities or as soon as is practical afterwards. This will also consider residents that may be impacted by heavy vehicle movements and other non site specific impacts (e.g. truck movements).

Figure 1: Map of construction works with notification distribution areas enclosed



Figure 2: Map of vehicle movements

Vehicle routes including National Park Street and Smith Street.



5. Engagement Delivery Timeline

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

Table 4: Engagement timeline

Project Phase / milestone	Target Audiences	Proposed communication tools / activities / purpose as per Table 3	Timing / implementation
Prior to SSD approval – consultation during planning and design development	All local stakeholders and residents	Consultation Report submitted as part of SSD	<u>Completed</u>
SSD approval – consult community on construction mitigation measures	Local residents	Works notification Distributed through letter box drop	<u>Completed</u>
Site Establishment	Local community, including across the new high school intake area High school community, including principal, teachers, staff, and P&C Adjoining property owners Local Council Member for Newcastle Aboriginal Elders	Project Update, Works Notifications, and Project signage. Distributed through letter box drop, school newsletter and social media. Onsite sod turn event, smoking ceremony	<u>Completed</u>
Main Construction works including but not limited to: a) Remediation (if occurs) b) Works commenced c) Key impact periods – noise, dust, traffic, vibration	Local community, including across the new high school intake area Newcastle High School community, including principal, teachers, staff, P&C and parents/carers Adjoining property owners	Works Notifications, and Project signage. Distributed through letter box drop, school newsletter and social media. Information booth if deemed required.	Throughout construction
Term prior to project completion	Local community, including across the new high school intake area Newcastle High School community, including principal, teachers, staff, and P&C Adjoining property owners Local Council	Project Update, Media Release Distributed through letter box drop, school newsletter and social media Information session, site tours if required by school leadership.	TBC

Project Phase / milestone	Target Audiences	Proposed communication tools / activities / purpose as per Table 3	Timing / implementation
	PSA and NSW Teachers' Federation		
Handover [and welcome to new school facilities]	Local community, including across the new high school intake area Adjoining property owners Local Council	Project Update, media release Distributed through letter box drop, school newsletter and social media	TBC
Opening of new high school facilities /Completion of project	Local community, including across the new high school intake area New high school community, including principal, teachers, staff, and P&C Newcastle High School community including students, teachers, staff, and parents/carers Adjoining property owners Poplars management QPRC (Customer & Communication Service Manager)	Official opening ceremony, Welcome Pack, Welcome Team, media release Distributed through letter box drop, school newsletter and social media.	TBC
Post-opening, for 12 months following operation	All	Website remains live Project signage remains installed 1300 phone and email still active, and CRM still maintained for complaints and enquiries.	TBC (at least 12 months post construction completion)

6. Protocols

6.1. Media engagement

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

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

6.2. Site visits

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

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

6.3. Social, online and digital media

SINSW initiates and maintains all social and online media channels. These channels may include the Department's Facebook and Twitter, and SINSW's LinkedIn and website. SINSW will also work to coordinate social media posts with the schools' social media accounts.

6.4. Stakeholder and community notification process

Notification letters or project updates will be distributed to the community and stakeholders in advance of any activity with the potential to cause impacts.

Depending on the work activity and stakeholder, notifications are primarily distributed via letterbox drop, via the school, electronically via email, as well as uploaded to the SINSW project webpage. If appropriate, notification may also be delivered in person via door knocks, or via phone call or text message, or one-on-one briefings.

Notifications will be written in plain English and will:

- outline the reason that the work is required
- outline the location, nature, and duration of the proposed works
- outline date/s of work, where practicable
- outline work hours
- include a diagram that clearly indicates the location of the works, where required
- include a 1300 community contact number, project email address and website details
- Provide details for a translation service, where required.

Table 5 below outlines minimum notification periods that will be targeted for work activities with the potential to impact sensitive receivers. All notification periods prescribed within development approvals or by approving bodies will be adhered to.

Regular construction updates regarding the general work program and significant milestones will also be provided to the school community and neighbouring properties throughout construction.

The contractor will provide SINSW with the information necessary to meet the notification requirements and target timeframes contained, where practicable.

Table 5: Target community notification periods

Notification period	Work activity
Same day (or as soon as practical)	Major incident, emergency works
	Unplanned out of hours work (notification provided to affected residents by the contractor before undertaking the works or as soon as practical)
	Unexpected hazardous material find or incident (e.g. asbestos, lead, chemical spill or other harmful material)
7 days	Start of works or site establishment
	Works outside of the site boundary
	Planned out of hours work or change to approved work hours
	Planned investigation and remediation of hazardous materials including asbestos
	Phase of high noise generating works including demolition, tree removal, rock breaking, rock hammering, piling or similar
	Major traffic or pedestrian access changes including parking impacts, detours, and road diversions/closures
	Operational changes for the school community including to school drop-off points, entry and exit points, bus stops, and play space
3 months	Major impacts to school community, including relocation to temporary school, changes to student intake area or similar

6.5. Enquiries and complaints management

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

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

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

If a phone call, email or face-to-face complaint is received during construction, it will be acknowledged within 2 working days and logged in our CRM, actively managed, closed out and resolved by SINSW within 10 days, where practicable. Where complaints are unable to be resolved within this timeframe the complainant will be provided with regular updates regarding the complaint resolution process.

A 24-hour contact number for the project site manager will be displayed at the site and can be shared with the community as necessary for any urgent issues that need to be addressed on site, outside of business hours.

The contractor site manager contact details are available on the [project webpage](#) at page 16 of the Construction Environment Management Plan.

As per the project’s planning approval conditions, a complaints register is updated monthly, or as required by the planning authority, and is publicly available on the project’s webpage on the SINSW website.

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

Complaints will be escalated when:

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

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

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

Table 6 below outlines target timeframes for responding to enquiries and complaints, through each correspondence method:

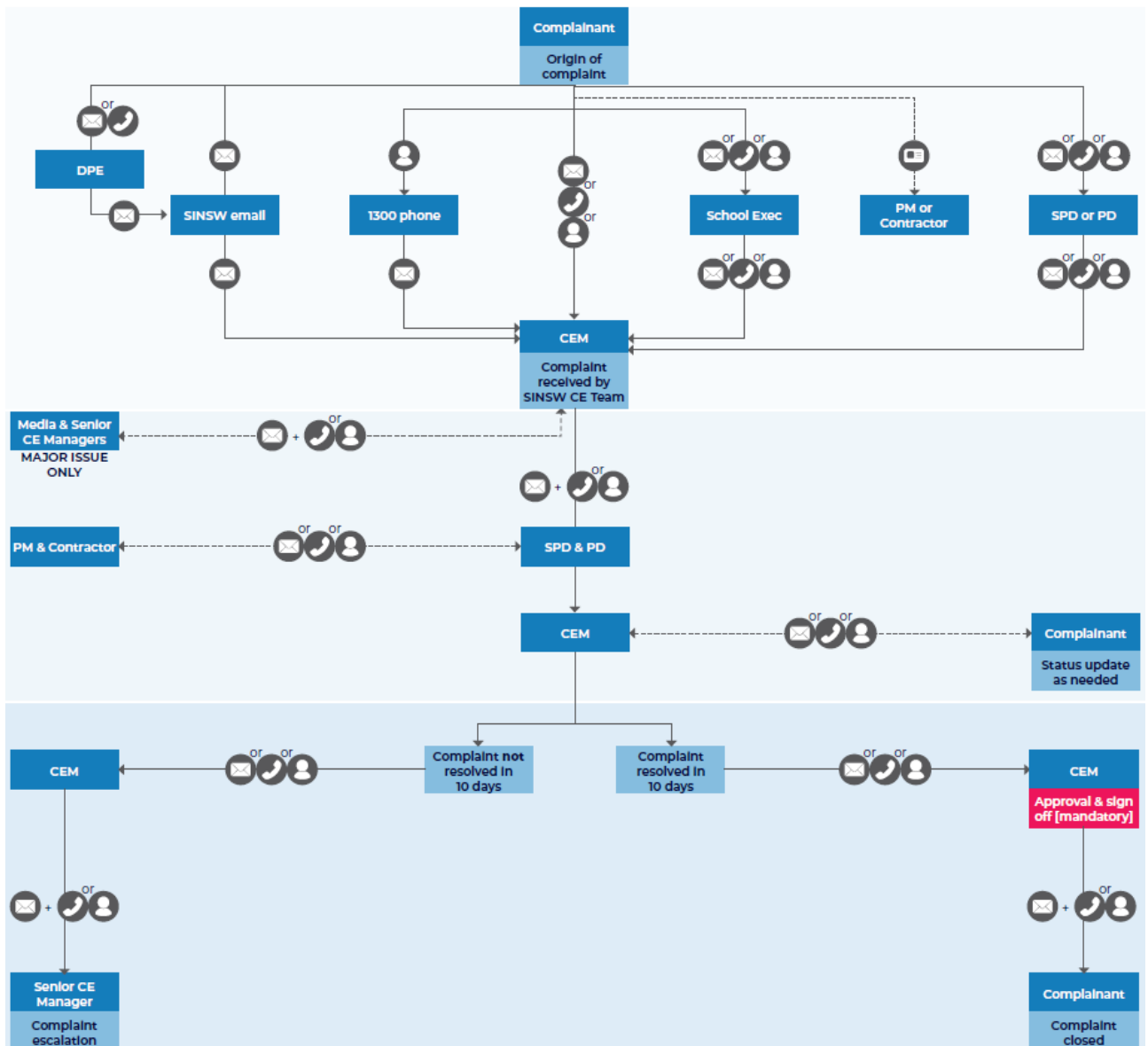
Table 6: Complaint and enquiry response time

Complaint	Acknowledgement times	Response times
Phone call during business hours	At time of call.	Complaint to be closed out within 10 days, where practicable. If not possible, continue contact, escalate internally as required, and provide the complainant with regular updates until resolved.
Phone call after hours*	Within two (2) hours of receiving message upon returning to office.	Complaint to be closed out within 10 days, where practicable. If not possible, continue contact, escalate internally as required, and provide the complainant with regular updates until resolved.
Email during business hours	At time of email (automatic response)	Complaint to be closed out within 10 days, where practicable. If not possible, continue contact, escalate internally as required, and provide the complainant with regular updates until resolved.
Email outside of business hours	At time of email (automatic response)	Complaint to be closed out within 10 days, where practicable. If not possible, continue contact, escalate internally as required, and provide the complainant with regular updates until resolved.
Interaction/ Enquiry		
Phone call during business hours	At time of call.	Interaction to be logged and closed out within 10 days, where practicable.

Complaint	Acknowledgement times	Response times
Phone call after hours	Within two (2) hours of receiving message upon returning to office.	Interaction to be logged and closed out within 10 days, where practicable.
Email during business hours	At time of email (automatic response)	Interaction to be logged and closed out within 10 days, where practicable.
Email outside of business hours	At time of email (automatic response)	Interaction to be logged and closed out within 10 days, where practicable.
Letter	N/A	Interaction to be logged and closed out within 10 days following receipt, where practicable.

The below diagram outlines our internal process for managing complaints.

Figure 3 - Internal Complaints Process



6.5.1. Disputes involving compensation and rectification

School Infrastructure NSW is committed to working with the school and broader community to address concerns as they arise. Where disputes arise that involve compensation or rectification, the process for resolving community enquiries and

complaints will be followed to investigate the dispute. Depending upon the results of the investigation, School Infrastructure NSW may seek legal advice before proceeding.

6.6. Incident management

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

- (a) involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial; *or*
- (b) results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).

6.6.1. Roles and responsibilities following an incident

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

- a) SINSW Director
- b) SINSW Community Engagement Manager

SINSW Community Engagement Manager will inform:

- a) SINSW Senior Manager, Community Engagement
- b) SINSW Communications Director

SINSW Communications Director will:

- a) Advise the SINSW Communications Director who will lead and manage all communications with the Minister's office in the event of an incident, with assistance as required
- b) Direct all communications with media to the SINSW Media Manager in the first instance for management
- c) Notify all other key project stakeholders of an incident.

The SINSW Senior Project Director will issue a written incident notification to Department of Planning, Housing and Infrastructure (DPHI) Planning Secretary immediately following the incident to set out the location and nature of the incident.

This must be followed within seven days following the incident of a written notification to the Department of Planning, Housing and Infrastructure that:

- (a) identifies the development and application number;
- (b) provides details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
- (c) identifies how the incident was detected;
- (d) identifies when SINSW became aware of the incident;
- (e) identify any actual or potential non-compliance with conditions of consent;
- (f) describes what immediate steps were taken in relation to the incident;
- (g) identifies further action(s) that will be taken in relation to the incident; and
- (h) provides the contact information for further communication regarding the incident.

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

The Incident Report must include:

- (a) a summary of the incident;
- (b) outcomes of an incident investigation, including identification of the cause of the incident;
- (c) details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and

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

6.7. Reporting process

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

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

Reporting will include but not be limited to:

- a) Stakeholder engagement reporting – numbers of forums, participation levels and a summary of the outcomes
Community sentiment reporting – outputs of all community engagement activities, including numbers in attendance at events, participation levels and feedback received against broad themes
- b) Online activity – through the project website.

7. Specific requirements

7.1. Traffic

The construction contractor has developed a Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) that details the measures that will be implemented to ensure road safety and network efficiency during construction. The CTPMSP includes the following measures:

- Site personnel will be stationed at the site entry and exit gates to ensure pedestrian safety and manage and assist construction vehicles entering to and exiting from the site.
- Road signage will be installed along surrounding streets to warn drivers approaching the site location of construction vehicles entering and exiting the site.
- Construction vehicles will radio/call the site office on approach to ensure a loading area is available within the site.
- All loading and unloading activities will be undertaken within the work site.
- Major deliveries will be scheduled to avoid the school peak drop-off and pick-up times.
- Heavy vehicle drivers will be required to adhere to the nominated transport routes.
- Drivers will be asked to leave the site in a suitable traffic gap (vehicles already on the public road have the right-of-way and must not be stopped).
- Construction workers will be encouraged and expected to use public transport to travel to/from the site. This will be incorporated in the workers induction program at the beginning of the construction period.

7.2. Noise and vibration

All works will be conducted in accordance with the project's Construction Noise and Vibration Management Sub-Plan (CNVMSP). Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:

- a) between 7am and 6pm, Mondays to Fridays inclusive; and
- b) between 8am and 1pm, Saturdays.

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

Provided noise levels do not exceed the existing background noise level plus 5 decibels, works may also be undertaken during the following hours:

- c) between 6pm and 7pm, Mondays to Fridays
- d) between 1pm and 4pm, Saturdays

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

- (e) by the Police or a public authority for the delivery of vehicles, plant or materials; or
- (f) in an emergency to avoid the loss of life, damage to property or to prevent
- (g) environmental harm; or
- (h) where the works are inaudible at the nearest sensitive receivers; or

- (i) for the delivery, set-up and removal of construction cranes, where notice of the
- (j) crane-related works is provided to the Planning Secretary and affected residents at
- (k) least seven days prior to the works; or
- (l) by the relevant roads authority or utilities service provider in order to minimise
- (m) disruption to the roadway or essential services, where the related works have been
- (n) provided to the Planning Secretary and affected residents at least seven days prior
- (o) to the works; or
- (p) where a variation is approved in advance in writing by the Planning Secretary if appropriate justification is provided for the works.

Notification of such construction activities will be given to affected residents before undertaking the activities or as soon as is practical afterwards.

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

- 9am to 12pm, Monday to Friday;
- 2pm to 5pm Monday to Friday; and
- 9am to 12pm, Saturday.

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

7.3. Amenity

All works will be undertaken in accordance with the project's Construction Environmental Management Plan (CEMP) that details measures to manage dust and odour to protect the amenity of the neighbourhood.

All construction facilities at the site will be designed and operated to minimise the emission of smoke, dust, cement dust, plant and vehicle exhausts, and other substances into the atmosphere. Construction methods will be used that minimise air pollution.

Dust from construction works will be hosed down with water as required. Construction vehicles leaving the site will cover their loads and will be washed down to prevent tracking dust and mud from the site. Power tools will be fitted with dust collection devices where practical.

In compliance with Development condition E13, should outdoor lighting result in any residual impacts on the amenity of surrounding sensitive receivers, SINSW will provide mitigation measures in consultation with affected landowners to reduce the impacts to an acceptable level. Visual amenity impacts will be limited during construction via the installation of appropriate site fencing and adherence to site housekeeping procedures.

7.4. Flora and fauna

SINSW is committed to ensuring construction work has a minimal impact upon fauna and vegetation on site. SINSW will comply with all Development Consent Conditions relating to the protection of fauna and vegetation and all relevant mitigation measures listed in the project's Environmental Impact Statement (EIS).

The project's CEMP details the measures to be taken for the protection and management of fauna and vegetation, and has been prepared in accordance with relevant guidelines and performance indicators.

Trees will not be trimmed or removed without appropriate statutory approval. A qualified and experienced arborist will complete all vegetation removal and trimming.

Trees and vegetation that must be preserved will be fenced-off, marked or otherwise isolated to ensure they are not inadvertently damaged as per the recommendations of the Arborist Report Rev A, dated 27 September 2023 and Addendum to Arborist Report dated 30 November 2023 and prepared by Joseph Pidutti Consulting Arborist.

Any trenching or construction works unavoidably undertaken within Tree Protection Zones will be witnessed, supervised and recorded by an AQ5 qualified arborist who will specify any works to be undertaken to avoid or remediate damage to trees.

On completion of the works, all areas disturbed by construction activities shall be restored to the contract specifications. Where required and practical, efforts will be made to mulch and re-use vegetation on site or send it to a green waste recycling facility.

7.5. Soil and water

SINSW is committed to the appropriate management of soil and water on the construction site. SINSW will comply with all Development Consent Conditions relating to soil and water management and will comply with all relevant mitigation measures listed in the Environmental Impact Statement (EIS).

The CEMP for the project includes a Construction Soil and Water Management Sub-Plan (CSWMSP) which details measures for the management of soil and water. It has been prepared in accordance with relevant guidelines and performance indicators. The CSWMSP:

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

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

Care will be taken to prevent sediment run-off into neighbouring lots and stormwater systems. This includes installing silt fences to site boundaries, as required, and fixing geotextile fabric to the temporary construction fencing for any downhill boundaries. Stormwater inlets will be covered with geotextile fabric to ensure no sediment enters the system. Vehicle access will be controlled to prevent sediment being tracked. An all-weather driveway to access the site will be maintained.

Only approved soil and imported fill types will be used onsite in accordance with the consent conditions. Accurate records will be kept on the volume and type of fill used onsite. Any collected silt will be disposed of in accordance with the relevant codes and standards.

Regular inspections, repairs and cleaning will be carried out of the silt fences to the boundaries, stockpiles, wastes enclosers and of the stockpile covers.