

Darlington Public School

Construction Noise and Vibration Management Sub Plan
(CNVMSP)

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Attention To	A.W. Edwards Pty Ltd

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B14 Consent Satisfaction Table

Condition	Condition requirements	Document reference
B14	The Construction Noise and Vibration Management Sub-Plan must address, but not be limited to, the following:	
	(a) be prepared by a suitably qualified and experienced noise expert;	Appendix A
	(b) describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009);	Section 9
	(c) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;	Section 9.3
	(d) include strategies that have been developed with the community for managing high noise generating works;	Section 10
	(e) describe the community consultation undertaken to develop the strategies in condition B14;	Section 10, Appendix B
	(f) include a complaints management system that would be implemented for the duration of the construction; and	Section 10
	(g) include a program to monitor and report on the impacts and environmental performance of the development and the effectiveness of the implemented management measures in accordance with the requirements of condition B11.	Section 9.7.7 & Section 9.7.8.

1 INTRODUCTION

This report presents our assessment of the processes which will be followed in order to manage noise and vibration from construction activities associated with the development of Darlington Public School, 417 Abercrombie Street, Darlington. This report is pursuant to development consent SSD 9914 conditions B12a & B14 for the provision of a Construction Noise and Vibration Management Sub-Plan.

The principal objective of this study is to undertake an evaluation of work to be performed during construction phases for Stage 1 & 2 of the project and forecast potential impacts of noise and vibration. The evaluation will be used to formulate and streamline effective regulation and mitigation measures.

The principal issues which will be addressed in this report are:

- Specific activities that will be conducted and the associated noise/vibration sources.
- Identification of potentially affected noise/ vibration sensitive receivers.
- The development, hours of work and excavation period.
- The construction noise requirements specified in consent condition B14 (ref: SSD 9914),
- Noise/ vibration response procedures,
- Assessment of potential noise/ vibration from the proposed demolition, excavation, and construction activities; and

Contingency plans to be implemented in the event of non-compliances and/or noise complaints.

2 SITE DESCRIPTION & PROPOSED DEVELOPMENT

The proposed works includes staged demolition, excavation and ground works, construction of structure and internal fit-out of a multi-storey educational facility.

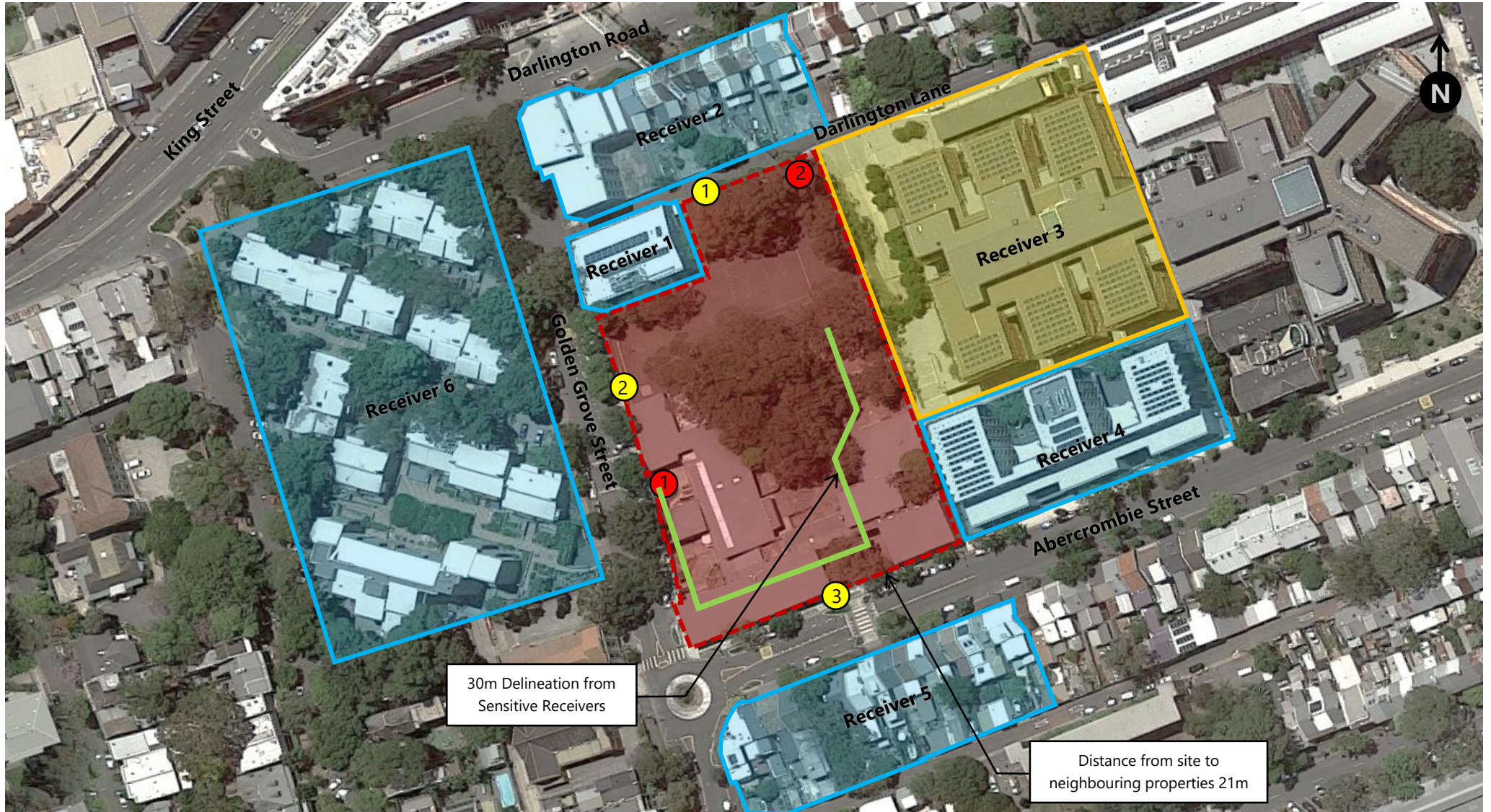
Stage 1 relates to the north-western most quarter of the school site. The duration of construction is proposed to be 12 months beginning in March 2021. Stage 2 is located at the southern half of site with works proposed to last for approximately 12 months following the completion of Stage 1. Each stage site is to be enclosed by A class hoarding for the full perimeter where not otherwise enclosed by surrounding buildings.

Excavation and construction works will provide for three levels of predominantly adaptable learning, administrative, staff and library areas with predominantly stores located on lower ground. Other areas include outdoor games court and multi-purpose hall.

The previously conducted *SSDA Acoustic Assessment* prepared by this office dated 4 June 2020 (ref: 20200343.1/0406A/R2/JM) indicates that the nearest affected receivers are as follows:

- **Receiver 1:** Regiment Building within the collection of University of Sydney owned buildings. This development is used as student accommodation and is located on the north-west corner of the site at 2-10 Golden Grove Street.
- **Receiver 2:** Residential townhouses located north of the school over Darlington Lane, at 118 – 132 Darlington Road.
- **Receiver 3:** The Abercrombie Building (H70) within the collection of University of Sydney owned buildings. This development contains teaching spaces and offices and is located east of the school, at 297-303 Rose Street.
- **Receiver 4:** Abercrombie Student Accommodation within the collection of University of Sydney owned buildings. This development is located east of the school, at 403-415 Abercrombie Street.
- **Receiver 5:** Residential townhouses located south of the school over Abercrombie Street, at 420-454 Abercrombie Street.
- **Receiver 6:** Residential development located west of the school over Golden Grove Street, at 11 Golden Grove Street.

An aerial photo of the site, monitoring locations and surrounding receivers is shown below in Figure 1



- Attended Noise Measurement
- Unattended Noise Measurement

Figure 1 – Aerial View of Site & Receivers
(Sourced from Six Maps 2019)

- Project Site
- Residential Receiver
- Non-Residential Receiver

3 ACTIVITIES TO BE CONDUCTED AND ASSOCIATED NOISE SOURCES

The construction period has been divided into the main work phases along with the primary noise producing equipment and activities likely to occur in each phase.

3.1 EXCAVATION AND GROUNDWORKS

This stage will include the following noise intensive works:

- Excavator (up to 20 tonnes) to carry waste material from site.
- Excavator with hydraulic hammer.
- Hand tools – Saw cutters, Impact drills, electric drills, hammering (jack hammers) and angle grinders.
- The operation of tower crane with diesel generator on crane arm (stage 1 only),
- Hand tools – Saw cutters, Impact drills, electric drills, hammering (jack hammers) and angle grinders; and
- Materials handling and removal.

3.2 STRUCTURE AND FIT-OUT

Construction stage will include erection of the building structure, followed by internal fit out works and general landscaping. Typical activities during this stage include:

- Screw Piling
- Hand tools – impact drills, electric drills, hammering (jack hammers) and angle grinders.
- Concrete pump, concrete truck and associated concrete vibrators.
- Trucks, trailers and forklifts delivering materials and removing spoil from site.
- Tower crane with diesel generator on crane arm (stage 1 only)

4 HOURS OF WORK AND DURATION

4.1 HOURS OF WORK

Consent conditions C4-C8 (ref: SSD 9914) stipulate that construction hours are limited as follows:

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

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

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

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

- (a) between 6pm and 7pm, Mondays to Fridays inclusive; and
- (b) between 1pm and 4pm, Saturdays.

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

- (a) by the Police or a public authority for the delivery of vehicles, plant or materials; or
- (b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or
- (c) where the works are inaudible at the nearest sensitive receivers; or
- (d) where a variation is approved in advance in writing by the Planning Secretary or his nominee if appropriate justification is provided for the works.

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

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

- (a) 9am to 12pm, Monday to Friday;
- (b) 2pm to 5pm Monday to Friday; and
- (c) 9am to 12pm, Saturday.

A summary of approved construction hours is provided in Table 1 below:

Table 1 – Summary of Approved Construction Hours

Construction Activity	Development Consent Condition	Day of the Week – Permitted Times		
		Monday - Friday	Saturday	Sunday & Public Holidays
Construction and delivery of materials to and from site	C4	7:00am – 6:00pm	8:00am – 1:00pm	None permitted.
Construction and delivery of materials to and from site	C5 (BG+5 noise limit)	6:00pm – 7:00pm	1:00pm – 4:00pm	None permitted
Rock breaking, rock hammering, sheet piling, pile driving	C8	9:00am – 12:00pm, and 2:00pm – 5:00pm	9:00am – 12:00pm	None permitted

5 EXISTING BACKGROUND NOISE LEVELS

Both long term unattended noise logging and attended noise measurements were previously conducted at SSDA stage in order to quantify the existing local acoustic environment. These measurements are detailed in the *SSDA Acoustic Assessment* prepared by this office dated 4 June 2020 (ref: 20200343.1/0406A/R2/JM) and are summarised below:

Table 2 – Unattended Long-Term Noise Monitoring

Monitor Location	Measured Noise Level – Time of Day		
	Daytime (7am – 6pm)	Evening (6pm -10pm)	Night (10pm – 7am)
Western Location Darlington Preschool (Monitor 1)	55 dB(A) _{L_{eq}(Period)} 45 dB(A) _{L₉₀(Period)}	53 dB(A) _{L_{eq}(Period)} 43 dB(A) _{L₉₀(Period)}	48 dB(A) _{L_{eq}(Period)} 35 dB(A) _{L₉₀(Period)}
Northern Location Darlington Lane (Monitor 2)	60 dB(A) _{L_{eq}(Period)} 45 dB(A) _{L₉₀(Period)}	54 dB(A) _{L_{eq}(Period)} 44 dB(A) _{L₉₀(Period)}	49 dB(A) _{L_{eq}(Period)} 41 dB(A) _{L₉₀(Period)}

Table 3 - Attended Short-Term Noise Monitoring

Measurement Location	Time of Day	Measured Noise Level	Comments
Darlington Lane	Wednesday 3 rd April 2019 1:30pm – 2:00pm	53 dB(A) _{L_{eq}(Period)} 47 dB(A) _{L₉₀(Period)}	Distant Mechanical Noise from University of Sydney Building
Golden Grove Street	Wednesday 3 rd April 2019 2:00pm - 2:30pm	54 dB(A) _{L_{eq}(Period)} 47dB(A) _{L₉₀(Period)}	Typical Local road with minimal traffic
Abercrombie Street	Wednesday 3 rd April 2019 2:30pm – 3:00pm	54 dB(A) _{L_{eq}(Period)} 46 dB(A) _{L₉₀(Period)}	Distant Mechanical Noise from University of Sydney Building

6 CONSTRUCTION NOISE AND VIBRATION EMISSION MANAGEMENT LEVELS

6.1 NOISE MANAGEMENT LEVELS

Noise emissions associated with construction activities on the project site to external areas of receivers will be assessed in with reference to the following:

- Development Consent SSD 9914
- NSW EPA's *Interim Construction Noise Guideline (DECC, 2009)*,
- Protection of the Environment Operations Act 1997,
- Australian Standard AS2436:2010 "Guide to Noise Control on Construction, Maintenance and Demolition Sites.

6.1.1 Development Consent SSD9914

Consent conditions state the following with respect to construction noise limits:

- C13 *The development must be constructed to achieve the construction noise management levels detailed in the Interim Construction Noise Guideline (DECC, 2009). All feasible and reasonable noise mitigation measures must be implemented and any activities that could exceed the construction noise management levels must be identified and managed in accordance with the management and mitigation measures identified in the approved Construction Noise and Vibration Management Plan.*
- C14 *The Applicant must ensure construction vehicles (including concrete agitator trucks) do not arrive at the site or surrounding residential precincts outside of the construction hours of work outlined under condition C4.*
- C15 *The Applicant must implement, where practicable and without compromising the safety of construction staff or members of the public, the use of 'quackers' to ensure noise impacts on surrounding noise sensitive receivers are minimised.*

6.1.1.1 NSW Environmental Protection Authority (EPA) document – “Interim Construction Noise Guideline (ICNG) 2009”

The EPA’s ICNG assessment requires:

- Review of noise levels at nearby development
- If necessary, recommendation of noise control strategies in the event that compliance with noise emission goals is not possible.

EPA guidelines adopt differing strategies for noise control depending on the predicted noise level at the nearest residences for construction during the recommended standard hours:

- “*Noise Affected*” level – Where construction noise is predicted to exceed the “noise affected” level at a nearby residence, the proponent should take reasonable/feasible work practices to ensure compliance with the noise affected level. For residential properties, the noise affected level occurs when construction noise exceeds the rating background noise level by more than 10dB.
- “*Highly Noise Affected*” level – Where noise emissions are such that nearby properties are “highly noise affected”, noise controls such as respite periods should be considered. For residential properties, the highly noise affected level occurs when construction noise exceeds 75dB(A)_{L_{eq}(15min)} at nearby residences.

The guideline also provides external management levels for land used for commercial or industrial purposes to be assessed at the most affect occupied point of the premises. EPA guidelines recommend a construction noise management level for industrial receivers of 75dB(A)_{L_{eq}(15-minute)}.

Section 4.1.2 of the guideline provides that, for other sensitive land uses such as classrooms at educational institutions, the noise management level should not exceed 45 dB(A) internally.

6.1.2 Protection of the Environment Operations Act 1997,

We note that, in the absence of specific noise limits provided in the Protection of the Environment Operations Act 1997 with respect to construction noise, it is considered that adherence to the requirements of the NSW EPA’s ICNG is sufficient in the assessment of ‘offensive noise’.

6.1.3 Construction Noise Management Levels Summary

Noisie management levels applicable to the development site and surrounding receivers are summarised in the following tables.

Table 4 – Construction Noise Emission Management Level (Residents)

Receiver Type	“Noise Affected” Level - $\text{dB(A)}L_{\text{eq}(15\text{min})}$	“Highly Noise Affected” Level - $\text{dB(A)}L_{\text{eq}(15\text{min})}$
All Residential Receivers	Background + 10dB(A) (construction hours as per consent condition C4)	75
	Background + 5dB(A) (construction hours as per consent condition C5)	N/A

Noise management levels to other receiver types surrounding the development are summarised below:

Table 5 – Construction Noise Emission Management Level (Other)

Receiver Type	Noise Management Level - $\text{dB(A)}L_{\text{eq}(15\text{min})}$
University of Sydney Building (R3)	45 (internal)

6.1.4 Australian Standard AS2436:2010 “Guide to Noise Control on Construction, Maintenance and Demolition Sites

Australian Standard AS2436 does not provide specific noise management targets. The guideline focuses on strategies for developing feasible and reasonable mitigation methodologies, management controls and community liaison to reach realistic compromises between the needs of construction activities and potentially affected receivers.

For the control and regulation of noise from construction sites AS2436:2010 *Guide to noise control on construction, maintenance and demolition sites* nominates the following:

- That reasonable suitable noise management objectives are established.
- That all practicable measures be taken on the building site to regulate noise emissions, including the siting of noisy static processes to locations of the site where they can be shielded, selecting less noisy processes, and if required regulating demolition hours, and

6.2 VIBRATION OBJECTIVES

Development consent conditions state the following with respect to vibration:

- C16 *Vibration caused by construction at any residence or structure outside the site must be limited to:*
- (a) *for structural damage, the latest version of DIN 4150-3 (1992-02) Structural vibration - Effects of vibration on structures (German Institute for Standardisation, 1999); and*
 - (b) *for human exposure, the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration: a technical guideline (DEC, 2006) (as may be updated or replaced from time to time).*
- C17 *Vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in condition C16.*
- C18 *The limits in conditions C16 and C17 apply unless otherwise outlined in a Construction Noise and Vibration Management Plan, approved as part of the CEMP required by condition B14 of this consent.*

Figure 1 indicates the extent of the 30m boundary where vibratory rollers are not to be used (referenced in C17), unless monitoring confirms compliance with vibration requirements. The criteria and the application of the guidelines mentioned in condition C16-18 are discussed in separate sections below.

6.2.1 German Standard DIN 4150-3 (1999-02) - Ground Borne Vibrations and Damage Limits

German Standard DIN 4150-3 (1999-02) provides vibration velocity guideline levels for use in evaluating the effects of vibration on structures. The criteria presented in DIN 4150-3 (1999-02) are presented in Table 6.

It is noted that the peak velocity is the absolute value of the maximum of any of the three orthogonal component particle velocities as measured at the foundation, and the maximum levels measured in the x- and y-horizontal directions in the plane of the floor of the uppermost storey.

Table 6 – DIN 4150-3 (1999-02) Safe Limits for Building Vibration

TYPE OF STRUCTURE		PEAK PARTICLE VELOCITY (mms ⁻¹)			
		At Foundation at a Frequency of			Plane of Floor of Uppermost Storey
		< 10Hz	10Hz to 50Hz	50Hz to 100Hz	All Frequencies
1	Buildings used in commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

6.2.2 Environmental Noise Management Assessing Vibration: a technical guideline (DEC, 2006) - Managing Assessing Impacts

Department of Environment and Conservation NSW "Assessing Vibration: A Technical Guideline" (Feb 2006) is based on the guidelines contained in BS 6472:1992. This guideline provides procedures for assessing tactile vibration and regenerated noise within potentially affected buildings.

The recommendations of this guideline should be adopted to assess and manage vibration within the excavation/construction site.

Table 7 – EPA Recommended Vibration Criteria

Place	Time	RMS acceleration (m/s ²)		RMS velocity (mm/s)		Peak velocity (mm/s)	
		<u>Preferred</u>	<u>Maximum</u>	<u>Preferred</u>	<u>Maximum</u>	<u>Preferred</u>	<u>Maximum</u>
Continuous Vibration							
Critical Working Areas	Daytime	0.005	0.01	0.1	0.2	0.14	0.28
Residences		0.01	0.02	0.2	0.4	0.28	0.56
Offices		0.02	0.04	0.4	0.8	0.56	1.1
Workshops		0.04	0.08	0.8	1.6	1.1	2.2
Impulsive Vibration							
Critical Working Areas	Daytime	0.005	0.01	0.1	0.2	0.14	0.28
Residences		0.3	0.6	6.0	12.0	8.6	17.0
Offices		0.64	1.28	13.0	26.0	18.0	36.0
Workshops		0.64	1.28	13.0	26.0	18.0	36.0

7 ASSESSMENT OF NOISE EMISSIONS

7.1 ACTIVITIES TO BE CONDUCTED AND THE ASSOCIATED NOISE SOURCES

We have been advised of the typical equipment/processes anticipated to be used on the project site. Noise impacts from these activities on the amenity of the surrounding identified sensitive receivers will be predicted based on the A-weighted sound power levels outlined in the table below.

Table 8 – Equipment Sound Power Levels

EQUIPMENT /PROCESS	SOUND POWER LEVEL dB(A)
Excavator with Bucket (up to 20 tonnes)	100
Excavator with Hydraulic Hammer	120
Concrete Saw	105
Bobcat	100
Heavy Trailers (idling)	95
Screw Piling	103
Concrete Pump	105
Concrete Vibrators	100
Heavy Trailers (idling)	95
Hand Tools (Used Externally)	100
Work Zone (Forklifts, Trucks, etc.)	95
Tower Crane – Diesel Generator on Crane Arm	105

***Noise levels take into account correction factors (for tonality, intermittency where necessary).**

The noise levels presented in the above table are derived from the following sources:

1. On-site measurements;
2. Table D2 of Australian Standard 2436-1981 & Table A1 of Australian Standard 2436-2010; and
3. Data held by this office from other similar studies.

7.2 NOISE EMISSION PREDICTIONS AND ASSESSMENT

7.2.1 Methodology

Noise generated by plant and equipment will be managed to generally comply with the nominated acoustic criteria, and where this noise goal may be exceeded, noise will be managed based on principles consistent with Australian Standard 2436.

Predictions of noise levels at the sensitive receivers identified have been made of the construction processes with the potential to produce significant noise.

It is noted that many of the noise sources are present over a small period of the day or may be present for a few days with a significant intervening period before the activity occurs again.

7.2.2 Predicted Noise Levels

An assessment of the principal sources of noise emission has been undertaken to identify the activities that may produce noise and/or vibration impacts so that appropriate ameliorative measures can be formulated.

Noise levels from construction works have been predicted at the surrounding receivers and assessed against the construction noise management levels set out in Section 6. Refer to tables below for predicted noise levels for each receiver.

It is noted that:

- Many of the noise sources are present over a small period of the day or may be present for a few days with a significant intervening period before the activity occurs again. This assessment assumes all items of plant operate continuously over a 15minute period. As such, this is a decidedly conservative assessment.
- The distance between the noise source and the receiver.
- The screening effected provided by any remaining building structure or building shell, other existing school buildings and topography. In particular, noise from works done at higher levels will be substantially screened by the remaining building structure to receivers located on lower levels.
- Proposed A classs hoarding will provide additional screening benefit.

Table 9 – Predicted Noise Emissions to Receivers North of Site

Activity	Predicted Level dB(A) $L_{10(15\text{-minute})}$	Noise Management Level	Comment
Excavator with Bucket (20 tonnes)	47 to 67	<p data-bbox="1211 472 1805 499">NSW EPA <i>Interim Construction Noise Guideline</i></p> <p data-bbox="1402 560 1615 587">Residential Areas</p> <p data-bbox="1386 647 1637 675">Noise Affected Level:</p> <p data-bbox="1211 691 1805 718">55 dB(A)$L_{eq(15\text{min})}$ (for condition C4 approved hours)</p> <p data-bbox="1151 734 1865 761">49 dB(A)$L_{eq(15\text{min})}$ (for condition C5 approved hours – Mon-Fri)</p> <p data-bbox="1180 777 1836 804">50 dB(A)$L_{eq(15\text{min})}$ (for condition C5 approved hours - Sat)</p> <p data-bbox="1249 865 1771 892">Highly Noise Affected Level: 75dB(A)$L_{eq(15\text{min})}$</p> <p data-bbox="1319 952 1702 979">(Assessed at property boundary)</p>	<p data-bbox="1912 695 2116 754">See discussion in Section 7.3.</p>
Excavator with Hydraulic Hammer	62 to 82		
Concrete Saw	47 to 67		
Bobcat	42 to 62		
Heavy Trailers (idling)	37 to 57		
Screw Piling	45 to 65		
Concrete Pump	47 to 67		
Concrete Vibrator	42 to 62		
Heavy Trailers (idling)	37 to 57		
Hand Tools (used externally)	42 to 62		
Work Zone (forklifts, trucks, etc)	37 to 57		
Tower Crane – Diesel Generator on Crane Arm (Stage 1 only)	65 to 71		

Table 10 – Predicted Noise Emissions to Receivers West of Site

Activity	Predicted Level dB(A) $L_{10(15\text{-minute})}$	Noise Management Level	Comment
Excavator with Bucket (20 tonnes)	48 to 59	<p data-bbox="1205 400 1794 427">NSW EPA Interim Construction Noise Guideline</p> <p data-bbox="1391 488 1608 515">Residential Areas</p> <p data-bbox="1375 576 1624 603">Noise Affected Level:</p> <p data-bbox="1205 619 1794 646">55 dB(A)$L_{eq(15\text{min})}$ (for condition C4 approved hours)</p> <p data-bbox="1140 662 1859 689">48 dB(A)$L_{eq(15\text{min})}$ (for condition C5 approved hours – Mon-Fri)</p> <p data-bbox="1169 705 1830 732">50 dB(A)$L_{eq(15\text{min})}$ (for condition C5 approved hours - Sat)</p> <p data-bbox="1240 793 1760 820">Highly Noise Affected Level: 75dB(A)$L_{eq(15\text{min})}$</p> <p data-bbox="1308 880 1691 908">(Assessed at property boundary)</p>	<p data-bbox="1906 624 2101 683">See discussion in Section 7.3.</p>
Excavator with Hydraulic Hammer	63 to 74		
Concrete Saw	48 to 59		
Bobcat	43 to 54		
Heavy Trailers (idling)	38 to 49		
Screw Piling	46 to 57		
Concrete Pump	48 to 59		
Concrete Vibrator	43 to 54		
Heavy Trailers (idling)	38 to 49		
Hand Tools (used externally)	43 to 54		
Work Zone (forklifts, trucks, etc)	38 to 49		
Tower Crane – Diesel Generator on Crane Arm (Stage 1 only)	60 to 67		

Table 11 – Predicted Noise Emissions to Residential Receivers East of Site

Activity	Predicted Level dB(A) _{L₁₀(15-minute)}	Noise Management Level	Comment
Excavator with Bucket (20 tonnes)	57 to 77	<p data-bbox="1263 347 1854 373">NSW EPA Interim Construction Noise Guideline</p> <p data-bbox="1451 435 1666 461">Residential Areas</p> <p data-bbox="1435 523 1682 549">Noise Affected Level:</p> <p data-bbox="1263 568 1854 593">55 dB(A)_{L_{eq}(15min)} (for condition C4 approved hours)</p> <p data-bbox="1218 612 1899 670">49 dB(A)_{L_{eq}(15min)} (for condition C5 approved hours – Mon-Fri)</p> <p data-bbox="1229 689 1888 715">50 dB(A)_{L_{eq}(15min)} (for condition C5 approved hours - Sat)</p> <p data-bbox="1301 777 1816 802">Highly Noise Affected Level: 75dB(A)_{L_{eq}(15min)}</p> <p data-bbox="1368 865 1749 890">(Assessed at property boundary)</p>	<p data-bbox="1921 612 2123 670">See discussion in Section 7.3.</p>
Excavator with Hydraulic Hammer	72 to 92		
Concrete Saw	57 to 77		
Bobcat	52 to 72		
Heavy Trailers (idling)	47 to 67		
Screw Piling	55 to 75		
Concrete Pump	57 to 77		
Concrete Vibrator	52 to 72		
Heavy Trailers (idling)	47 to 67		
Hand Tools (used externally)	52 to 72		
Work Zone (forklifts, trucks, etc)	47 to 67		
Tower Crane – Diesel Generator on Crane Arm (Stage 1 only)	54 to 57		

Table 12 – Predicted Noise Emissions to University Receivers East of Site

Activity	Predicted Level dB(A) $L_{10(15\text{-minute})}$ (Internal)	Noise Management Level	Comment
Excavator with Bucket (20 tonnes)	36 to 49	<p data-bbox="1267 560 1854 587">NSW EPA Interim Construction Noise Guideline</p> <p data-bbox="1406 647 1715 675">Internal Classroom Areas</p> <p data-bbox="1464 692 1657 719">45 dB(A)$L_{eq(15\text{min})}$</p> <p data-bbox="1352 780 1769 807">(Assessed within nearest classroom)</p>	<p data-bbox="1924 652 2123 715">See discussion in Section 7.3.</p>
Excavator with Hydraulic Hammer	51 to 64		
Concrete Saw	36 to 49		
Bobcat	31 to 44		
Heavy Trailers (idling)	26 to 39		
Screw Piling	34 to 47		
Concrete Pump	36 to 49		
Concrete Vibrator	31 to 44		
Heavy Trailers (idling)	26 to 39		
Hand Tools (used externally)	31 to 44		
Work Zone (forklifts, trucks, etc)	26 to 39		
Tower Crane – Diesel Generator on Crane Arm (Stage 1 only)	34 to 39		

Table 13 – Predicted Noise Emissions to Receivers South of Site

Activity	Predicted Level dB(A)$L_{10(15\text{-minute})}$ (internal)	Noise Management Level	Comment
Excavator with Bucket (20 tonnes)	46 to 61	<p>NSW EPA Interim Construction Noise Guideline</p> <p>Residential Areas</p> <p>Noise Affected Level: 56 dB(A)$L_{eq(15\text{min})}$ (for condition C4 approved hours) 48 dB(A)$L_{eq(15\text{min})}$ (for condition C5 approved hours – Mon-Fri) 51 dB(A)$L_{eq(15\text{min})}$ (for condition C5 approved hours - Sat)</p> <p>Highly Noise Affected Level: 75dB(A)$L_{eq(15\text{min})}$</p> <p>(Assessed at property boundary)</p>	<p>See discussion in Section 7.3.</p>
Excavator with Hydraulic Hammer	61 to 76		
Concrete Saw	46 to 61		
Bobcat	41 to 56		
Heavy Trailers (idling)	36 to 51		
Screw Piling	44 to 59		
Concrete Pump	46 to 61		
Concrete Vibrator	41 to 56		
Heavy Trailers (idling)	36 to 51		
Hand Tools (used externally)	41 to 56		
Work Zone (forklifts, trucks, etc)	36 to 51		
Tower Crane – Diesel Generator on Crane Arm (Stage 1 only)	56 to 58		

7.3 DISCUSSION – NOISE

Predicted construction noise levels to surrounding receivers, as presented in tables above, are summarised and discussed below:

7.3.1 Residential Receivers to the North and West

Construction noise impacts to residential receivers to the north of site are expected to intermittently exceed the noise management level (NAL) during Stage 1 demolition and construction, and typically be below NAL during Stage 2. This is true for both C4 and C5 approved hours.

Regular exceedances of NAL are expected from the operation of the diesel powered tower crane during stage 1 without additional treatment.

The 'Highly Noise Affected Level' (HNAL) is expected to regularly be exceeded when operating excavators with hydraulic hammer attachments during Stage 1.

Residents to the west will benefit from screening the A class perimeter hoarding, whilst R1 to the north over looks site. There will, however, be a degree of screening incurred by the offset orientation of the building to the site noting that facades directly facing are of solid masonry construction.

7.3.2 Residential Receivers to the East

Construction noise impacts to residential receivers to the east of site are expected to intermittently exceed NAL during stage 1.

Regular exceedances of NAL are expected during stage 2 where works are conducted externally and unscreened by existing structures for continuously operating plant such as pumps and some mobile plant.

Regular exceedances of HNAL are expected when operating excavators with hydraulic hammer attachments during both stages.

7.3.3 University Receivers to the East

Noise levels within classroom areas of Receiver 3 are expected to be generally compliant with the noise management levels when construction activities occur 40m or further from the nearest building façade.

Intermittent exceedances of the noise management level are expected when conducting construction activities within this 40m zone and unscreened (stage 2).

Regular exceedances are expected when operating excavators with hydraulic hammer attachments during both stages.

7.3.4 Residential Receivers to the South

Construction noise impacts to residential receivers to the south of site are expected to intermittently exceed the noise management level (NAL) during Stage 2 demolition and construction, and typically be below NAL during Stage 1. This is true for both C4 and C5 approved hours.

Marginal exceedances of NAL are expected from the operation of the diesel powered tower crane during stage 1 without additional treatment.

The 'Highly Noise Affected Level' (HNAL) is expected to regularly be exceeded when operating excavators with hydraulic hammer attachments during Stage 1.

7.3.5 Generally

Noise levels predicted to residences occasionally exceed EPA recommended noise management levels however, proposed activities are intermittent and will generally occur over a limited time period.

8 GROUND VIBRATION IMPACTS

Primary vibration generating activities are bulk excavation (if in rock) and demolition. If excavation is in soil, it is not typically expected to create vibration levels exceeding EPA guidelines.

Given the distance of the development site from residential receivers to the west and south, vibration levels are unlikely to exceed the structural damage or amenity vibration criteria.

For adjacent buildings within the Darlington Public School site, given the low sensitivity to vibration the building and use, building damage limits and amenity management levels are unlikely to be exceeded provided recommendations provided in Section 9 are adopted.

Where complaints are received as a result of vibration impacts, the complaints procedure listed in Section 10 should be followed and, where required, vibration monitoring should be implemented.

8.1 SAFEGUARDS TO PROTECT SENSITIVE STRUCTURES

It is impossible to predict the vibrations induced by the excavation/construction operations on site at potentially affected receivers. This is because vibration level is principally proportional to the energy impact which is unknown nature of terrain in the area (type of soil), drop weight, height etc.

A suitably qualified acoustic consultant should undertake monitoring of initial excavation process when conducted near potentially affected receivers to ensure that vibration criteria set out in section 5 are not exceeded. We note this has been completed for Stage 1 works and is to be undertaken prior to Stage 2 works (refer to section 9.7.8).

8.2 VIBRATION MONITORING

In the event of complaints or concern for structural damage to nearby buildings, vibration monitors can be installed during the key stages of demolition and excavation.

The monitors are proposed to be fitted with GSM modem and remotely signal up to five mobile phones indicating any exceedance of the prescribed vibration criteria to enable immediate notification to be sent to the contractor when vibration thresholds are approached. Indicatively, an alarm level of 5mm/s PPV can be used.

Additionally, it is impossible to predict the vibrations induced by the excavation/construction operations on site at potentially affected receivers. However, the total vibration emissions are to be limited with real-time alarm notification given to the plant operators to ensure that the vibration limits are not exceeded. Based on feedback from the real-time monitoring system, the plant operators will be able to modify their operations to ensure the vibrations are kept within acceptable limits.

8.2.1 Vibration Monitoring Download

Downloading of the vibration logger will be conducted on a regular basis. In the event exceedance of vibration criteria or alarms occur, downloading of the logger will be conducted more frequently. Results obtained from the vibration monitor will be presented in a graph format and will be forwarded to the client for review. It is proposed that reports are provided fortnightly with any exceedance in the vibration criteria reported as detailed in this report.

8.2.2 Vibration Monitoring Reports

A fortnightly report will be submitted to the client via email summarising the vibration events. The vibration exceedance of limit is recorded the report shall be submitted within 24 hours. Complete results of the continuous vibration logging will be presented in fortnightly reports including graphs of collected data.

9 SPECIFIC NOISE CONTROLS

9.1 STATIC PLANT

If required, additional noise reduction can be achieved by erecting solid barriers around static plant such as tower crane motors, diesel generators and any stationary concrete pumps. Noting that noise from the operation of this plant is predicted to be generally below noise management levels, such treatment would be considered precautionary.

Tower cranes to have solid barriers installed around the perimeter of crane engines and residential grade exhaust mufflers fitted.

9.2 EXCAVATOR NOISE & HYDRAULIC HAMMERING

Where feasible, the use of a concrete crusher attachment for excavators should be considered as an alternative to hydraulic/pneumatic hammers during demolition and rock sawing. The use of a ripper attachment on bulldozers in preference to hammering closer to boundaries, where feasible.

9.3 CONCRETE PUMPS, PILING PLANT

Noise from concrete pumps and piling rigs have the potential to result in intermittent exceedances of allowable noise levels. It is noted that screw piling is proposed and is recommended above hammer or vibro-piling.

Concrete pumps should not be operated prior to 7:30 am and be placed as close as possible to the middle of the site (where feasible) to reduce proximity to the nearby receivers or otherwise near to site boundary hoardings which will also maximise noise reduction from screening. We note that operational limits for piling are inherently addressed in consent condition C8.

9.4 VIBRATORY COMPACTORS

Consent condition 17 stipulates that vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in condition C16.

Hand-held compactor plant are proposed as part of Stage 2 works and are proposed in locations within 30m of neighbouring residential properties. Vibration sample testing is to be undertaken prior to the use of any compactor plant to confirm that vibration criteria are not exceeded at the nearest residential property and vibration levels do not cause adverse impact to surrounding residents. Refer to section 9.7.8.

9.5 ACOUSTIC BARRIERS

The placement of barriers at the source is generally only effective for static plant (tower cranes, diesel generators). Equipment which is on the move or working in rough or undulating terrain cannot be effectively attenuated by placing barriers at the source. Barriers can also be placed between the source and the receiver.

The degree of noise reduction provided by barriers is dependent on the amount by which line of sight can be blocked by the barrier. If the receiver is totally shielded from the noise source reductions of up to 15 dB(A) can be affected. Where only partial obstruction of line of sight occurs, noise reductions of 5 to 8 dB(A) may be achieved. Where no line of sight is obstructed by the barrier, generally no noise reduction will occur.

Screens around work areas will provide no material benefit for multi storey receivers as these will overlook screening.

9.6 OTHER ACTIVITIES

In the event of complaint, noise management techniques identified in this report should be employed to minimise the level of noise impact if management levels are found to be exceeded. This may include additional community consultation and re-scheduling of loud construction processes.

Notwithstanding above, general management techniques and acoustic treatments are included in Section 9.6 which may be implemented on a case-by-case basis to reduce noise emissions to surrounding receivers.

9.7 GENERAL RECOMMENDATIONS

Other noise management practices which may be adopted are discussed below. In addition, notification, reporting and complaints handling procedures should be adopted as recommended in this report.

9.7.1 Treatment of Specific Equipment

Where construction process or appliances are noisy, the use of silencing devices may be possible. These may take the form of engine shrouding, or special industrial silencers fitted to exhausts.

9.7.2 Material Handling

The installation of rubber matting over material handling areas can reduce the sound of impacts due to material being dropped by up to 20dB(A).

9.7.3 Selection of Alternate Appliance or Process

Where a particular activity or construction appliance is found to generate excessive noise levels, it may be possible to select an alternative approach or appliance. For example; the use of a hydraulic hammer on certain areas of the site may potentially generate high levels of noise. By carrying out this activity by use of bulldozers ripping and/or milling machines lower levels of noise will result.

9.7.4 Establishment of Site Practices

This involves the formulation of work practices to reduce noise generation. This includes locating fixed plant items as far as possible from residents as well as rotating plant and equipment to provide respite to receivers. Construction vehicles accessing the site should not queue in residential streets and should only use the designated construction vehicle routes. Loading of these vehicles should occur as far as possible from any sensitive receiver.

9.7.5 Management Training

All site managers should be aware of noise and vibration limits, applicable control measures and methods. They should ensure that all agreed noise and vibration measures are carried out by employees and sub-contractors.

A copy of the Noise Management Plan is to be available to contractors, and site inductions should detail the site contact in the event of noise complaints.

9.7.6 Respite Periods

We note that development consent condition C8 provides specific time periods in which plant or activities with the potential to exceed noise management levels are permitted to operate. This inherently provides periods, subsequently reducing the occurrence and severity of noise impacts to surrounding receivers.

The respite periods would apply to very noisy works exceeding the highly noise affected management levels or as stipulated for the activities included in Condition C8. It is noted that the only activities predicted to exceed the HNML's are those described in C8.

9.7.7 Noise Monitoring

Noise monitoring can be undertaken to determine the effectiveness of measures which have been implemented, whilst the results of monitoring can be used to devise further control measures.

Attended noise measurements should be undertaken at key stages (i.e; demolition, bulk excavation, first major concrete pour) when particularly noise generating activities are undertaken or specific items of plant (ie. Excavator with hammer attachments) are in operation.

Attended noise measurements are to be conducted in accordance with Australian Standard AS1055: 2018 'Acoustics- Description and measurement of environmental noise', and should include the following:

- Type 1 or 2 sound meter (calibrated)
- Use of appropriate noise descriptor (in this case, $L_{eq(15min)}$).
- Detail of measurement position and proximity to reflecting surface if any (building or similar). Measurement positions will typically be a residential property boundary.

Monitoring should not be conducted under adverse weather conditions. The conditions applying at the time of the measurements should be indicated in the reporting.

9.7.8 Vibration Monitoring

Stage 1 Works

Vibration levels during the demolition and excavation phases have been undertaken during stage 1 works as detailed in the 'Vibration Monitoring Report' prepared by this office (ref: 20210058.4/1405A/R0/TH). The investigation concludes that vibration levels emitted from piling plant did not exceed the relevant criteria at the most impacted external receiver.

Stage 2 Works

A.W.Edwards personnel have advised that earth compacting is required as part of the stage 2 works. Consent condition 17 precludes this activity within 30m of a residential receiver unless it can be determined that vibration criteria outlined in condition 16 are not exceeded. We propose that vibration sample testing be undertaken to determine the impact of these activities and assess satisfaction of the consent.

Sample measurements will be conducted at locations as determined by this office or by another suitably qualified acoustic/vibration specialist. Plate and/or tamper compactors will be operated nearest to site boundaries, with vibration levels measured using a triaxial geophone monitor at the nearest residential location. Sample testing is to be conducted to determine vibration levels in a worst-case scenario.

If it can be determined that vibration levels comply with criteria stipulated by the consent, the use of compactors would be deemed acceptable (in accordance with condition 17).

In the case that vibration criteria cannot be met at all locations, safe working distances will be determined from the on-site measurements for compactors. Where earth compacting is required in areas where vibration levels exceed criteria, alternate processes will be implemented to complete the works. Non vibratory rollers will be used in place of compactor plant. We confirm that vibration levels emitted from this process will be acceptable without the need for additional sample testing.

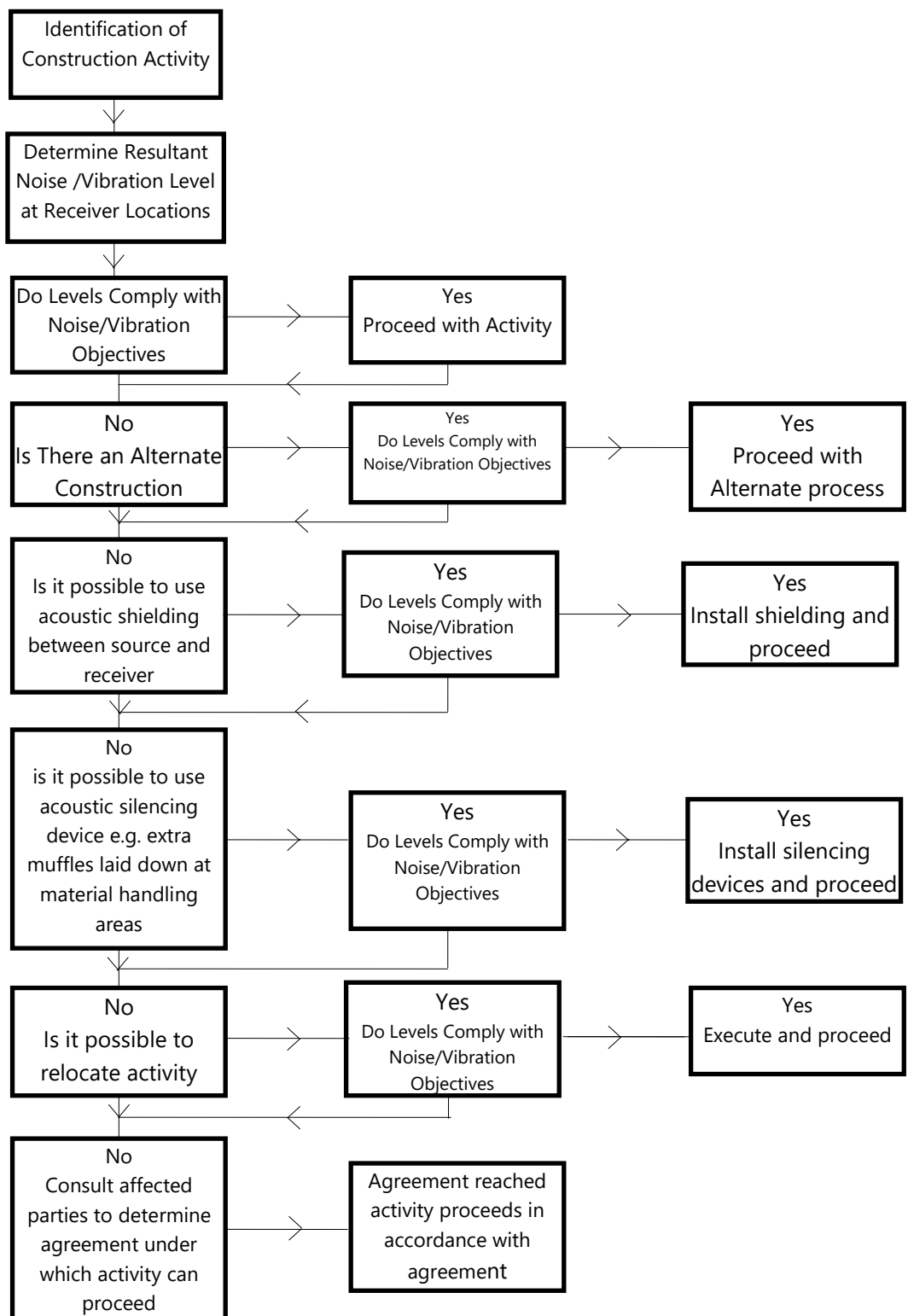
Elsewhere, vibration monitoring can be undertaken at key stages, or where other high vibration producing activities are proposed.

The measurement location should be near the middle of the common boundary between the two properties, or as otherwise determined from time to time to best measure representative vibration levels. The monitor used should log the peak particle velocities and also transmit SMS warnings to the contractor and acoustic expert if a pre-determined threshold is exceeded. Regular reports should be provided (twice monthly) showing the vibration levels recorded and comparing these to the criteria.

Attended or unattended monitoring should also be undertaken at other locations in response to complaints, as appropriate.

9.8 CONTROL OF CONSTRUCTION NOISE AND VIBRATION – PROCEDURAL STEPS

The flow chart presented below illustrates the process that should be followed in assessing construction activities.



9.9 DEALING WITH OFFENSIVE NOISE LEVELS

Should ongoing complaints of excessive noise occur, immediate measures shall be undertaken to investigate the complaint, the cause of noise exceedances and identify the required changes to work practices.

The effectiveness of any changes shall be verified before continuing. Documentation and training of site staff shall occur to ensure the practices that produced the exceedances are not repeated.

All complaints or offensive noise received should be fully investigated and reported to management. The complainant should also be notified of the results and actions arising from the investigation.

The investigation of offensive noise shall involve where applicable:

- noise measurements at the affected receiver.
- an investigation of the activities occurring at the time of the incident.
- inspection of the activity to determine whether any undue noise is being emitted by equipment.
- Whether work practices were being carried out either within established guidelines or outside these guidelines.

Where an item of plant is found to be emitting excessive noise, the cause is to be rectified as soon as possible. Where work practices within established guidelines are found to result in excessive noise being generated then the guidelines should be modified to reduce noise emissions to acceptable levels. Where guidelines are not being followed, the additional training and counselling of employees should be carried out.

Measurement or other methods shall validate the results of any corrective actions arising from a complaint where applicable.

10 COMMUNITY INTERACTION AND COMPLAINTS HANDLING

10.1 ESTABLISHMENT OF DIRECT COMMUNICATION WITH AFFECTED PARTIES

Consent Condition B7 states the following with respect to community interaction:

No later than 48 hours before 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, the relevant 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.*

Complaints handling procedures and protocols should be conducted in accordance with the project Community Communication Strategy (CCS) and the complaints management system detailed in Section 8.5. Direct communication will be via SINSW as per the CCS.

NSW Department of Education provides regular project updates as well as works notifications issued online and available to nearby businesses and residents. The most recent of which (at the time of this report) issued 1st March 2021 (refer to Appendix B).

11 CONCLUSION

This document presents a noise and vibration management plan for construction activities proposed at Darlington Public School, 417 Abercrombie Street, Darlington.

The principal issues which addressed in this report are:

- Specific activities that will be conducted and the associated noise/vibration sources;
- Identification of potentially affected noise/ vibration sensitive receivers;
- The development, hours of work and excavation period;
- The construction noise and vibration requirements specified in development conditions of consent (ref: SSDA 9914).
- Noise/ vibration response procedures;
- Assessment of potential noise/ vibration from the proposed demolition, excavation and construction activities; and
- Contingency plans to be implemented in the event of non-compliances and/or noise complaints.

The assessment of noise and vibration indicates that construction activities associated with the project development may generate noise levels that will require some additional management. Adoption of the controls detailed in Section 9 of this report and adherence to the requirements of development consent will ensure that noise impacts will be minimised.

Vibration goals have also been set in this report to minimise structural damage risk for existing structures close to the project site and to protect human comfort.

Noting the above, we find the construction noise and vibration management requirements of development consent SSDA 9914 to be satisfied.

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

Yours faithfully,



Acoustic Logic Pty Ltd
Thomas Hutchens

APPENDIX A – CURRICULUM VITAE

Qualifications & Experience

2010-2012 Advanced Diploma of Sound Production, NMIT

2017-2019 Master of Architectural Science (Audio and Acoustics), University of Sydney

2019-Current Project Engineer, Acoustic Logic Consultancy

Outline of Experience

Beginning at ALC in 2019, Tom has worked in detailed assessment of acoustic impacts and been involved in the design of noise/vibration attenuation systems to meet relevant statutory codes (BCA, EPA guidelines and Australian Standards).

His work involves the investigation, design and construction supervision of noise and vibration control measures associated with mechanical services and building works.

Whilst being employed with Acoustic Logic, Tom has been responsible for noise and vibration engineering for residential, hospital, commercial and special projects including;

- Building acoustics and building services noise control.
- Environmental noise modelling and assessment.
- Traffic, train and aircraft noise prediction.
- Industrial Noise Control.
- Construction Noise and Vibration.
- NSW Office of Liquor and Gaming acoustic assessment.
- Testing and assessment of walls/floors/glazing/building services.
- Room acoustics modelling and design for critical listening and performance spaces.

Project Experience

A sample of projects Tom has been or is currently involved with as a Project Engineer include the following:

Bangarra Recording Studio (Walsh Bay Arts Precinct) – Commercial recording studio

Crown Resorts Sydney – Hotel, gaming, entertainment and residential development

School at the Meadowbank and Employment Precinct – State significant education development

Upgrades to Chatswood Public and High Schools – Educational development

Darlington Public School – Educational development

Hornsby Ku-ring Gai Hospital – Public hospital expansion

Campbell's Stores, Circular Quay – Entertainment precinct

1 Castlereagh Street, Sydney – Commercial development

Marriot, Auburn – Hotel development

APPENDIX B – NOTIFICATION LETTER

Darlington Public School

Project update

1 March 2021

Investing in our schools

The NSW Government is investing \$7 billion over the next four years, continuing its program to deliver more than 200 new and upgraded schools to support communities across NSW. This is the largest investment in public education infrastructure in the history of NSW.

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

Project overview

Darlington Public School is being upgraded to deliver new facilities and provide for growing student enrolments in the area. These new facilities will include:

- New learning and teaching spaces
- A new hall
- A new library
- New administration and staff facilities
- A new canteen
- Covered outdoor learning areas (COLAs)

Managing Construction impacts

As part of the formal planning and approval process for Darlington Public School, plans have been developed that detail how construction impacts on nearby residents will be minimised. These impacts include noise, vibration and vehicle movements.

You can contribute to the development of these plans to effectively manage construction impacts. Your feedback is sought on how we propose to manage construction activities listed in the table below. Please provide your feedback by Monday 8 March 2021 via email at schoolinfrastructure@det.nsw.edu.au or phone 1300 482 651.

Activity	How we propose to minimise or manage the impact on nearby residents
General	<ul style="list-style-type: none">• We will provide advance notice of work to the local community, particularly when we anticipate high noise generating works.• Noise levels on site will be managed in accordance with the noise control guidelines outlined in the EPA Environmental Noise Control Manual for construction and demolition works.• Construction works, including the delivery of materials to and from the site, are proposed to take place between 7:00am and 6:00pm Mondays to Fridays and between 8:00am and 1:00pm on Saturdays. No work is currently proposed for

	<p>Sundays or public holidays. We may also carry out work where noise levels that do not exceed the existing background noise level plus 5dB between 6:00am and 7:00pm Monday to Friday and between 9:00am and 12:00pm Saturdays.</p> <ul style="list-style-type: none"> • We will provide advance notice if any work is approved to take place outside of the above hours. • In line with the NSW Environmental Planning and Assessment (COVID-19 Development – Construction Work Days) Order 2020, during the COVID-19 pandemic, School Infrastructure NSW construction sites can operate on weekends and public holidays. This is to allow workers to abide by social distancing rules while on construction sites by distributing building work across the week. Under this Order, work on weekends is limited to the approved weekday construction hours for this project.
Construction	<ul style="list-style-type: none"> • Procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009). • Measures to manage high noise generating works such as piling and similar activities. • Noise reducing work practices. <p>Proposed actions:</p> <ul style="list-style-type: none"> • Work will occur within approved standard work hours. • If high noise generating works are planned, neighbours will be notified of this before work starts. These high noise generating activities may include rock breaking, rock hammering, sheet piling, pile driving and similar activities. • If vibration piling and similar activities are required, effective equipment should be chosen, and respite periods for local residents may be put in place. These activities will be subject of the respite period between the hours of: <p>9:00am to 12:00pm, Monday to Friday 2:00pm to 5:00pm, Monday to Friday 9:00am to 12:00pm, Saturday.</p> <ul style="list-style-type: none"> • High noise generating works will be managed to reduce the impact to local residents by implementing shorter time periods or alternating with quieter work methods where practical. • No work will be carried out on Sundays or public holidays unless necessary to maintain social distancing guidelines or approved by the Department of Planning, Industry and Environment. • Where necessary, site hoarding will be installed to mitigate noise impacts. • Workers and contractors are regularly trained to use equipment in ways to minimise noise. • Avoid the use of radios or stereos outdoors where neighbours can be affected. • Avoid the overuse of public address systems. • Avoid shouting and minimise talking loudly or slamming vehicle doors. • Develop a one-page summary of the consent conditions for the site noticeboard for workers to quickly reference this information. <p>Measures to ensure road safety and network efficiency during construction.</p>

	<p>Proposed actions:</p> <ul style="list-style-type: none">• Trucks will be well maintained and will be required to observe speed limits.• Trucks will only use approved truck routes to and from the site.
Construction	<p>Mechanism for the community to discuss or provide feedback regarding construction impacts.</p> <p>Proposed actions:</p> <p>The community information phone line and email address will be available throughout the project and for a minimum of 12 months following completion of the project:</p> <p>Phone: 1300 482 651</p> <p>Email: schoolinfrastructure@det.nsw.edu.au</p>

For more information contact:

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