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Green Square Public School and Community Spaces

Construction Noise & Vibration Management Plan

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1 INTRODUCTION

Acoustic Logic has been engaged to prepare a Noise and Vibration Management Plan for the demolition, excavation and construction works associated with the proposed Green Square Public School and Community Spaces project. This plan has been formulated to satisfy Condition B3 of the Department of Planning and Environment Development Consent (*Ref: SSD 10381).*

The issues which will be addressed in this report are:

- Identification of the noise and vibration standards which will be applicable to this project.
- Identification of potentially impacted nearby development.
- Identify likely sources of noise and vibration generation and predicted noise levels at nearby development.
- Formulation of a strategy to comply with the standards identified and mitigation treatments in the event that compliance is not achievable.

2 SITE DESCRIPTION

The proposed construction works include the demolition of existing structures on the property, retention of heritage building, excavation on site and construction of a new school development. Typical works anticipated are as follows:

- Demolition of existing structures on site & detailed excavation.
- Use of a mobile crane.
- Erection of building structure (powered hand tools for formwork, concrete pump, vibrators).
- Façade Installation (powered hand tools)
- Landscaping (front end loaders etc).

In accordance with Condition C2 of Department of Planning and Environment Development Consent (*Ref: SSD 10381),* hours work are as follows:

Day	Construction Hours
Monday – Friday	7.00am – 6.00pm
Saturday	8.00am – 3.30pm
Sunday & Public Holidays	No Work

2.1 RECEIVER LOCATIONS

The subject site is bounded as follows:

- To the east by Joynton Avenue which carries medium to high volumes of traffic flow. Further to the east is the Gunyama Park Aquatic and Recreation Centre;
- To the south by existing multi-level residential unit development, Matron Ruby Grant Park and Joynton Avenue Creative Centre. Further to the south is Hansard Street which carries medium to low volumes of traffic flow;
- To the north by a new multi-level residential unit development; and
- To the west by Portman Street, which carries medium to low volumes of traffic flow. Further to the west are existing multi-level residential unit developments.

The surrounding noise receivers are as follows:

- Receiver 1 – Commercial receiver currently under construction to the east of the site, opposite Joyton Avenue;
- Receiver 2 – Five-storey residential dwelling receiver to the north-east of the site;
- Receiver 3 – Mutli-storey residential receiver to the immediate north of the site;
- Receiver 4 – Two-storey residential receivers at approximately to the north of the site;
- Receiver 5 – Single-storey residential dwelling to the north-west of the site;
- Receiver 6 – Multi-storey residential dwelling to the north-west of the site, opposite Portman Street.
- Receiver 7 – Multi-storey residential building to the west of the site, opposite Portman Street;
- Receiver 8 – Two multi-storey residential buildings to the south of the site;
- Receiver 9 – Three-storey educational building to the south of the site (Joyton Avenue Creative Centre).
- Receiver 10 – The single-level Waranara Early Education Centre attached to the south of the site. It is noted that the heritage building to be retained at the subject site, forms part of the childcare centre.

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The three heritage buildings proposed to be retained at the subject site are:

- H1: A single-storey heritage building on the eastern boundary of the site which is part of Waranara Early Education Centre (R10);
- H2: A three-storey heritage building on the southern side of the site, which contains machinery associated with stormwater systems; and
- H3: As single-storey heritage building to the south-eastern corner of the site which is currently a community hub, the Banga Community Shed.

An aerial photo of the site with a detailed site analysis is presented below.

Figure 1 – Site Aerial Photo and Closest Noise Sensitive Receivers (Resource: SIX Maps)

Subject site
Nearest commercial noise sensitive receivers
Nearest residential noise sensitive receivers
Buildings to be retained
Long term noise monitoring locations
H1-H3 Heritage Buildings to be retained at the proximity of the works

3 EXISTING AMBIENT NOISE LEVELS

3.1 UNATTENDED NOISE MEASUREMENTS

Long term unattended noise measurements were undertaken around the site by installing three noise loggers (refer to Figure 1 for locations). All three monitors were placed at 1.5m above ground level.

The unattended monitoring was conducted using Acoustic Research Laboratory noise loggers. The loggers were programmed to store 15-minute statistical noise levels throughout the monitoring period. The equipment was calibrated at the beginning and the end of the measurement using a Rion NC-73 calibrator; no significant drift was detected. All measurements were taken on A-weighted fast response mode. There were no significant periods of adverse weather conditions during the measurement period.

The measured background noise levels have been processed based on requirements of NSW EPA NPfI and results are summarised below.

Table 1 – Measured Unattended Background Noise Levels

Location	Period/Time	Background Noise Level dB(A) L_{90}
Location No 1 (refer to Figure 1) at the western boundary of the subject site	Monday – Friday 7.00am – 7.00pm	48
	Saturday 8.00am – 4.00pm	47
Location No 2 (refer to Figure 1) at the closest boundary of Residential Receiver to the north (R2)	Monday – Friday 7.00am – 7.00pm	50
	Saturday 8.00am – 4.00pm	45
Location No 3 (refer to Figure 1) at the closest boundary of Commercial Receiver to the east (R1)	Monday – Friday 7.00am – 7.00pm	50
	Saturday 8.00am – 4.00pm	46

4 CONSTRUCTION NOISE AND VIBRATION CONTROLS

4.1 DEVELOPMENT CONSENT

The following conditions has been referenced from both the Department of Planning and Environment Development Consent in regard to construction noise and vibration from the project site. Refer to Appendix A for an extended discussion on each Condition item.

Demolition, Excavation and Construction Noise and Vibration Management Plan

B3. A site-specific noise management plan must be submitted to the Crown Certifier for comment and approval prior to certification being issued (pursuant to Section 6.28 of the Environmental Planning and Assessment Act 1979).

The Plan must be prepared by a suitably qualified person who possesses the qualifications to render them eligible for membership of the Australian Acoustic Society, Institution of Engineers Australia or the Australian Association of Acoustic Consultants.

The plan must include but not be limited to the following:

(a) Identification of noise sensitive receivers near to the site.

(b) A prediction as to the level of noise impact likely to affect the nearest noise sensitive receivers from the use and proposed number of high noise intrusive appliances intended to be operated onsite. A statement should also be submitted outlining whether or not predicted noise levels will comply with the noise criteria stated within the EPA's Interim Construction Noise Guidelines (DECC, 2009) for the typical construction hours of 07:00am to 7:00pm. Where resultant site noise levels are likely to be in exceedance of this noise criteria then a suitable proposal must be given as to the duration and frequency of respite periods that will be afforded to the occupiers of neighbouring property.

(c) A representative background noise measurement (LA90, 15 minute) should be submitted, assessed in the vicinity of any potentially affected receiver locations and measured in accordance with AS 1055:1.2.1997.

(d) Confirmation of the level of community consultation that has/is and will be undertaken with Building Managers/ occupiers of the main adjoining noise sensitive properties likely to be most affected by site works and the operation of plant/machinery particularly during the demolition and excavation phases

(e) Confirmation of noise monitoring methodology that is to be undertaken during the main stages of work at neighbouring noise sensitive properties in order to keep complaints to a minimum and to ensure that noise from site works complies with the noise criteria contained within City's Construction Noise Code.

(f) What course of action will be undertaken following receipt of a complaint concerning offensive noise.

(g) Details of any noise mitigation measures that have been outlined by an acoustic consultant or otherwise that will be deployed on site to reduce noise impacts on the occupiers of neighbouring noise sensitive property to a minimum.

(h) *What plant and equipment is to be used on site, the level of sound mitigation measures to be undertaken in each case and the criteria adopted in their selection taking into account the likely noise impacts on the occupiers of neighbouring property and other less intrusive technologies available.*

Hours of Work and Noise – Outside CBD

C2. The hours of construction and work on the development must be as follows:

(a) *All work, including building/demolition and excavation work, and activities in the vicinity of the site generating noise associated with preparation for the commencement of work (e.g. loading and unloading of goods, transferring of tools etc) in connection with the proposed development must only be carried out between the hours of 7.00am and 6.00pm on Mondays to Fridays inclusive, and 8.00am and 3.30pm on Saturdays, with safety inspections being permitted at 7.00am on work days, and no work must be carried out on Sundays or public holidays.*

(b) *All work, including demolition, excavation and building work must comply with the Interim Construction Noise Guideline (DECC, 2009) and Australian Standard 2436 - 2010 Guide to Noise Control on Construction, Maintenance and Demolition Sites. 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.*

(c) *Notwithstanding the above, the use of a crane for special operations, including the delivery of materials, hoisting of plant and equipment and erection and dismantling of on site tower cranes which warrant the on-street use of mobile cranes outside of above hours can occur, subject to a permit being issued by Council under Section 68 of the Local Government Act 1993 and/or Section 138 of the Roads Act 1993.*

Note: Works may be undertaken outside of hours, where it is required to avoid the loss of life, damage to property, to prevent environmental harm and/or to avoid structural damage to the building. Written approval must be given by the Construction Regulation Team, prior to works proceeding

Note 1: Section 4.42(1)(f) of the EP&A Act 1979, a consent under Section 138 of the Roads Act 1993 cannot be refused if it is necessary for carrying out State significant development that is authorised by a development consent under Division 4.7 of the EP&A Act 1979 and is to be substantially consistent with the consent.

C3. Notwithstanding condition C2, provided noise levels do not exceed the existing background noise level plus 5dB, works may also be undertaken during the following hours:

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

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

4.2 EPA INTERIM CONSTRUCTION NOISE GUIDELINE

The EPA Interim Construction Noise Guideline (ICNG) assessment requires:

- Determination of noise management levels (based on ambient noise monitoring).
- Review of operational noise levels at nearby development.
- If necessary, recommendation of noise controls strategies in the event that compliance with noise emission management levels is not possible.

EPA guidelines adopt differing strategies for noise control depending on the predicted noise level at the nearest residences:

- *"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 effected level". For residential properties, the "noise effected" level occurs when construction noise exceeds ambient levels by more than 10dB(A)$L_{eq(15min)}$.
- "*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 effected" level occurs when construction noise exceeds 75dB(A)$L_{eq(15min)}$ at nearby residences.

If noise levels exceed the management levels identified in the tables above, reasonable and feasible noise management techniques will be reviewed.

Section 4.1.2 and 4.1.3 of this guideline also nominates management levels for other sensitive land uses (other than residences). Noise affected management levels relevant to this assessment is detailed below:

Table 2 – Noise Emission Goal – Non-Residential Properties

Land Use	**Management Level - dB(A)$L_{eq(15min)}$**
Commercial premises (offices, retail outlets)	70 (Externally)
Active recreation areas (characterised by sporting activities and activities generate their own noise or focus for participants)	65 (Externally)
Educational Institutions	55 (Externally)*

* As per the ICNG a conservative estimate of the difference between internal and external noise levels is 10 dB for buildings other than residences

4.3 SUMMARISED CONSTRUCTION NOISE LEVELS

A summary of all relevant construction noise emission levels is presented in the following table.

Table 3 – Summarised Construction Noise Requirements During Proposed Hours

Location	Period/Time	Background Noise Level dB(A) L_{90}	Construction Noise Management Levels dB(A)
Residential Receivers 4, 5, 6, 7 & 8	Monday – Friday 7.00am – 7.00pm	48	58
	Saturday 8.00am – 4.00pm	47	57
Residential Receiver 2	Monday – Friday 7.00am – 7.00pm	50	60
	Saturday 8.00am – 4.00pm	46	56
Residential Receiver 3	Monday – Friday 7.00am – 7.00pm	50	60
	Saturday 8.00am – 4.00pm	45	55
Commercial Receiver 1	Monday – Friday 7.00am – 7.00pm	50	70
	Saturday 8.00am – 4.00pm	46	
Educational Receiver R9	Monday – Friday 7.00am – 7.00pm	50	55
	Saturday 8.00am – 4.00pm	46	
Child Care Centre Receiver R10	Monday – Friday 7.00am – 7.00pm	50	65
	Saturday 8.00am – 4.00pm	46	

4.4 VIBRATION

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

- For structural damage vibration, German Standard DIN 4150-3 *Structural Vibration: Effects of Vibration on Structures; and*
- For human exposure to vibration, Department of Environment and Conservation NSW "Assessing Vibration: A Technical Guideline" (Feb 2006) is based on the guidelines contained in BS 6472:1992 *Guide to Evaluate Human Exposure to Vibration in Buildings (1Hz to 80Hz)* for low probability of adverse comment.

4.4.1 Structure Borne Vibrations (Building Damage Criteria)

German Standard DIN 4150-3 (2016-12) provides vibration velocity guideline levels for use in evaluating the effects of vibration on structures. The criteria presented in DIN 4150-3 (2016-12) is presented in the Table below.

It is noted that the peak velocity is the 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 4 – DIN 4150-3 (2016-12) 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

Nearby residences would be classified as either a type 1 or type 2 structure. Heritage receivers would be classified as type 3.

4.4.2 Assessing Amenity

Vibration goals for the amenity of nearby land users are those recommended by the EPA document *Assessing Vibration: A technical guideline*. These levels are presented below:

Table 5 – Vibration Goals

		RMS acceleration (m/s^2)		RMS velocity (mm/s)		Peak velocity (mm/s)	
Place	**Time**	**Preferred**	**Maximum**	**Preferred**	**Maximum**	**Preferred**	**Maximum**
Continuous Vibration							
Residences	Daytime	0.01	0.02	0.2	0.4	0.28	0.56
Offices	Day or night-time	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							
Residences	Daytime	0.3	0.6	6.0	12.0	8.6	17.0
Offices	Day or night-time	0.64	1.28	13	26	18	36
Workshops		0.64	1.23	13	26	18	36

Note 1: Continuous vibration relates to vibration that continues uninterrupted for a defined period (usually throughout the daytime or night-time), e.g. continuous construction or maintenance activity. (DECC, 2006).

Note 2: Impulsive vibration relate to vibration that builds up rapidly to a peak followed by a damped decay and that may or may not involve several cycles of vibration (depending on frequency and damping), with up to three occurrences in an assessment period, e.g. occasional loading and unloading, or dropping of heavy equipment. (DECC, 2006).

5 NOISE AND VIBRATION ASSESSMENT AND RECOMMENDATIONS

5.1 ACTIVITIES TO BE CONDUCTED AND THE ASSOCIATED NOISE LEVELS

Typically, the most significant sources of noise generated during a construction project will be demolition, excavation, civil works and piling. A summary of sound power levels of major construction processes/equipment is detailed in Table 6.

With respect to construction noise, the impact on nearby development will be dependent on the activity in question and where on the site the activity is undertaken. The primary construction equipment and sound power levels associated with the works are as follows:

Table 6 - Sound Power Levels of Typical Equipment

EQUIPMENT /PROCESS	SOUND POWER LEVEL dB(A)
Excavator with Rock Breaker Attachment	120
Hand Held Jackhammer	115*
Angle Grinder / Tile Cutter	114*
General Trucks	108
Piling Rig	108
Excavator with Bucket Attachment	105
Shotcrete	105
Bobcat	105
Concrete Pump	105
Cement Mixing Truck	105
Electric Tower Crane	95
Man & Material Hoist	96
Powered Hand Tools	95*

*** - includes 5 dB(A) addition for characteristics of noise source.**

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

- On site measurements;
- Table A1 of Australian Standard 2436-2010; and
- Data held by this office from other similar studies.

5.2 NOISE IMPACT ASSESMENT

5.2.1 Methodology

Noise from the loudest typical construction activities for all stages of works have been predicted to the nearest most affected sensitive receivers. Predictions take into account the distance between the noise source and the receiver. The screening effect provided by any building structure or building shell, if applicable. In particular, noise from works proposed during the fit-out stages when the building shell will screen these activities from the surrounding sensitive receivers.

5.2.2 Predicted Noise Levels

See tables below for predicted noise levels for each receiver. Given the size of the site predicted noise levels will change significantly depending on where the noise source is located. As such a noise level range has been presented, giving expected noise levels for activities 'farthest from' to 'nearest to' the receiver. Predictions have been given for worst-affected receivers closest to the project site.

Table 7 – Predicted Noise Generation to R1 (existing aquatic centre east of the site)

Activity	**Predicted Noise Level dB(A)$L_{eq(15min)}$** ***(External Areas)***	**Noise Management Level dB(A)$L_{eq(15min)}$** ***(External Areas)***	**Comment**
Excavator with Rock Breaker Attachment	68 – 84	≤ 70	A marginal exceedance of the Highly Affected Noise Management Level may be experienced when working towards the eastern boundary of the site
Hand Held Jackhammer	68 – 84		
Angle Grinder / Tile Cutter	62 – 78		
General Trucks	56 – 72		
Pilling Rig	56 – 72		
Excavator with Bucket Attachment	53 – 69		Below the Noise Management Level at all times
Shotcrete	53 – 69		
Bobcat	53 – 69		
Concrete Pump	53 – 69		
Cement Mixing Truck	53 – 69		
Tower Crane	43 – 59		
Man & Material Hoist	44 – 60		
Powered Hand Tools (Externally)	43 – 59		

Table 8 – Predicted Noise Generation to R2 (existing residents to the north-east of the site)

<table>
<tr><th>Activity</th><th>Predicted Noise Level
dB(A)$L_{eq(15min)}$
(External Areas)</th><th>Noise Management Levels
dB(A)$L_{eq(15min)}$
(External Areas)</th><th>Comment</th></tr>
<tr><td>Excavator with Rock Breaker Attachment</td><td>65 – 72</td><td rowspan="14">≤ 60
Monday – Friday
7.00am – 7.00pm

≤ 56
Saturday
8.00am – 4.00pm</td><td rowspan="4">Generally exceeds the Noise Management Levels, refer to Section 5.3 for discussion. However, below the highly noise affected noise level at all times.</td></tr>
<tr><td>Hand Held Jackhammer</td><td>65 – 72</td></tr>
<tr><td>Angle Grinder / Tile Cutter</td><td>59 – 66</td></tr>
<tr><td>General Trucks</td><td>53 – 60</td><td rowspan="9">A marginal exceedance of the Noise Management Level on Saturdays may be experienced when working towards the north-eastern boundary of the site</td></tr>
<tr><td>Pilling Rig</td><td>53 – 60</td></tr>
<tr><td>Excavator with Bucket Attachment</td><td>50 – 57</td></tr>
<tr><td>Shotcrete</td><td>50 – 57</td></tr>
<tr><td>Bobcat</td><td>50 – 57</td></tr>
<tr><td>Concrete Pump</td><td>50 – 57</td></tr>
<tr><td>Cement Mixing Truck</td><td>50 – 57</td></tr>
<tr><td>Tower Crane</td><td>40 – 47</td><td rowspan="3">Below the Noise Management Level at all times</td></tr>
<tr><td>Man & Material Hoist</td><td>41 – 48</td></tr>
<tr><td>Powered Hand Tools (Externally)</td><td>40 – 47</td></tr>
</table>

Table 9 – Predicted Noise Generation to R3 (new residents to the north of the site)

Activity	Predicted Noise Level dB(A)$L_{eq(15min)}$ *(External Areas)*	Noise Management Levels dB(A)$L_{eq(15min)}$ *(External Areas)*	Comment
Excavator with Rock Breaker Attachment	70 – 88	≤ 60 Monday – Friday 7.00am – 7.00pm ≤ 56 Saturday 8.00am – 4.00pm	Generally exceeds the Noise Management Levels, refer to Section 5.3 for discussion.
Hand Held Jackhammer	70 – 88		
Angle Grinder / Tile Cutter	64 – 82		
General Trucks	58 – 76		A marginal exceedance of the Noise Management Levels may be experienced when working towards the northern boundary of the site.
Pilling Rig	58 – 76		
Excavator with Bucket Attachment	55 – 73		
Shotcrete	55 – 73		
Bobcat	55 – 73		
Concrete Pump	55 – 73		
Cement Mixing Truck	55 – 73		
Tower Crane	45 – 63		
Man & Material Hoist	46 – 64		
Powered Hand Tools (Externally)	45 – 63		

Table 10 – Predicted Noise Generation to R6 (new residents to the west of the site)

Activity	**Predicted Noise Level dB(A)$L_{eq(15min)}$** ***(External Areas)***	**Noise Management Levels dB(A)$L_{eq(15min)}$** ***(External Areas)***	**Comment**
Excavator with Rock Breaker Attachment	69 – 82	≤ 58 Monday – Friday 7.00am – 7.00pm ≤ 57 Saturday 8.00am – 4.00pm	Generally exceeds the Noise Management Levels, refer to Section 5.3 for discussion
Hand Held Jackhammer	69 – 82		
Angle Grinder / Tile Cutter	63 – 76		
General Trucks	57 – 70		A marginal exceedance of the Noise Management Levels may be experienced when working towards the western boundary of the site
Pilling Rig	57 – 70		
Excavator with Bucket Attachment	54 – 67		
Shotcrete	54 – 67		
Bobcat	54 – 67		
Concrete Pump	54 – 67		
Cement Mixing Truck	54 – 67		
Tower Crane	44 – 57		Below the Noise Management Levels at all times
Man & Material Hoist	45 – 58		
Powered Hand Tools (Externally)	44 – 57		

Table 11 – Predicted Noise Generation to R7 (existing residents to the west of the site)

Activity	**Predicted Noise Level dB(A)$L_{eq(15min)}$** ***(External Areas)***	**Noise Management Levels dB(A)$L_{eq(15min)}$** ***(External Areas)***	**Comment**
Excavator with Rock Breaker Attachment	69 – 82	≤ 58 Monday – Friday 7.00am – 7.00pm ≤ 57 Saturday 8.00am – 4.00pm	Generally exceeds the Noise Management Levels, refer to Section 5.3 for discussion
Hand Held Jackhammer	69 – 82		
Angle Grinder / Tile Cutter	63 – 76		
General Trucks	57 – 70		A marginal exceedance of the Noise Management Levels may be experienced when working towards the western boundary of the site
Pilling Rig	57 – 70		
Excavator with Bucket Attachment	54 – 67		
Shotcrete	54 – 67		
Bobcat	54 – 67		
Concrete Pump	54 – 67		
Cement Mixing Truck	54 – 67		
Tower Crane	44 – 57		Below the Noise Management Levels at all times
Man & Material Hoist	45 – 58		
Powered Hand Tools (Externally)	44 – 57		

Table 12 – Predicted Noise Generation to R8 (existing residents to the south of the site)

Activity	Predicted Noise Level dB(A)$L_{eq(15min)}$ *(External Areas)*	Noise Management Levels dB(A)$L_{eq(15min)}$ *(External Areas)*	Comment
Excavator with Rock Breaker Attachment	70 – 86	≤ 58 Monday – Friday 7.00am – 7.00pm ≤ 57 Saturday 8.00am – 4.00pm	Generally exceeds the Noise Management Levels, refer to Section 5.3 for discussion
Hand Held Jackhammer	70 – 86		
Angle Grinder / Tile Cutter	64 – 80		
General Trucks	58 – 74		
Pilling Rig	58 – 74		
Excavator with Bucket Attachment	55 – 71		A marginal exceedance of the Noise Management Levels may be experienced when working towards the southern boundary of the site
Shotcrete	55 – 71		
Bobcat	55 – 71		
Concrete Pump	55 – 71		
Cement Mixing Truck	55 – 71		
Tower Crane	45 – 61		
Man & Material Hoist	46 – 62		
Powered Hand Tools (Externally)	45 – 61		

Table 13 – Predicted Noise Generation to R9 (existing educational building to the south of the site)

Activity	Predicted Noise Level dB(A)$L_{eq(15min)}$ *(External Areas)*	Noise Management Levels dB(A)$L_{eq(15min)}$ *(External Areas)*	Comment
Excavator with Rock Breaker Attachment	69 – 82	≤ 55	Generally exceeds the Noise Management Level, refer to Section 5.3 for discussion
Hand Held Jackhammer	69 – 82		
Angle Grinder / Tile Cutter	63 – 76		
General Trucks	57 – 70		
Pilling Rig	57 – 70		
Excavator with Bucket Attachment	54 – 67		A marginal exceedance of the Noise Management Level may be experienced when working towards the southern boundary of the site
Shotcrete	54 – 67		
Bobcat	54 – 67		
Concrete Pump	54 – 67		
Cement Mixing Truck	54 – 67		
Tower Crane	44 – 57		
Man & Material Hoist	45 – 58		
Powered Hand Tools (Externally)	44 – 57		

Table 14 – Predicted Noise Generation to R10 (existing childcare centre onsite)

Activity	Predicted Noise Level dB(A)$L_{eq(15min)}$ *(External Areas)*	Noise Management Levels dB(A)$L_{eq(15min)}$ *(External Areas)*	Comment
Excavator with Rock Breaker Attachment	78 – 92	≤ 65	Generally exceeds the Noise Management Level, refer to Section 5.3 for discussion
Hand Held Jackhammer	78 – 92		
Angle Grinder / Tile Cutter	72 – 86		
General Trucks	66 – 80		
Pilling Rig	66 – 80		
Excavator with Bucket Attachment	66 – 80		
Shotcrete	66 – 80		
Bobcat	66 – 80		
Concrete Pump	66 – 80		
Cement Mixing Truck	66 – 80		
Tower Crane	53 – 67		A marginal exceedance of the Noise Management Level may be experienced when working towards the southern boundary of the site
Man & Material Hoist	54 – 68		
Powered Hand Tools (Externally)	53 – 67		

5.3 DISCUSSION – NOISE

Exceedances to the highly noise affected management levels (for residents) and noise management levels (non-residents) are generally predicted for construction plant items associated with the excavation period. Due to this, feasible and reasonable work practices should be implemented to minimise noise impacts on surrounding receivers.

Once demolition/excavation works have been completed, general construction works are expected to generally be of a lower noise level with many activities below the ICNG noise management levels. A further noise reduction would be expected for any internal works once façade works have been completed.

Recommendations are detailed in Section 6.

5.3.1 Receiver 10 – childcare onsite

Many of the activities will exceed the external management level when operating close to the boundary, and when unscreened. A lower level of impact will be experienced within the childcare centre.

Noise exceedances at the receiver (childcare centre) should be managed as follows:

1. Based on information give to this office by the project management, the childcare centre will remain closed for a month around the time of the proposed demolition works. The GIC building, which is attached to the childcare centre, should be demolished during this one-month period.
2. All windows of the childcare centre facing to the north and west need to remain closed during the demolition works.
3. Temporary solid barriers can be built around the perimeter of the childcare centre to protect from noise emissions from construction. The barriers should be a high as practical, up to 3m in height. The barriers should be made of solid material with a minimum R_w of 24.
4. Provide a respite period during allocated child rest period (to be coordinated with the centre).

5.4 DISCUSSION – VIBRATION

The primary potential vibration sources will be from the use of hydraulic hammers and the dropping of heavy objects, especially when operating on the western and southern boundaries, which will mainly affect Receiver R10, and to a lesser extent R1, R6, R7, R8 and R9.

Vibration monitoring shall be considered during demolition and excavation stages to ensure that vibration levels to surrounding receivers are managed and recorded.

There is potential risk of vibration impacts at the heritage structures, particularly Building H1 due to the proximity and nature of the works. Additional measures (as recommended below) are required to minimise risk of damage to these buildings.

Vibration impacts on other surrounding receivers which do not immediately bound the site are expected to be compliant with the criteria in Section 4 and lower levels of management will be necessary for these sites.

5.4.1 Vibration at Heritage Buildings

Vibration impacts to the heritage buildings in the vicinity of the construction works will require management. Based on the Heritage Impact Statement for the proposed development, dated June 2020, the heritage buildings, as shown in figure below, have been built between 1909 – 1920. All heritage buildings are constructed from brick. Heritage buildings are the following:

1. Heritage Building 1 (H1) part of which forms part of Waranara Early Education Centre,
2. Heritage Building 2 (H2) is currently a stormwater systems storage facility; and
3. Heritage Building 3 (H3) is Banga Community Shed, which is a community hub.

The most affected receiver will be Building H1, which is directly next to both buildings to be demolished (as shown in below).

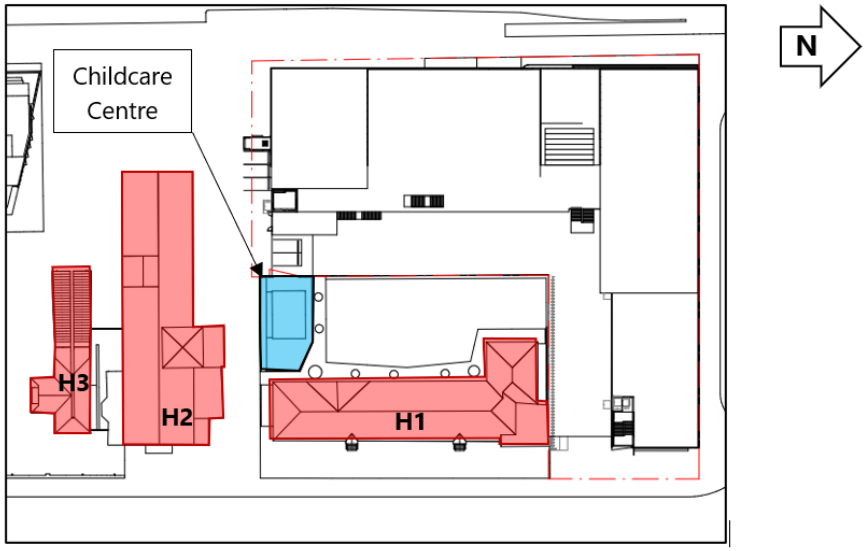


Figure 2 – Heritage Buildings on Site

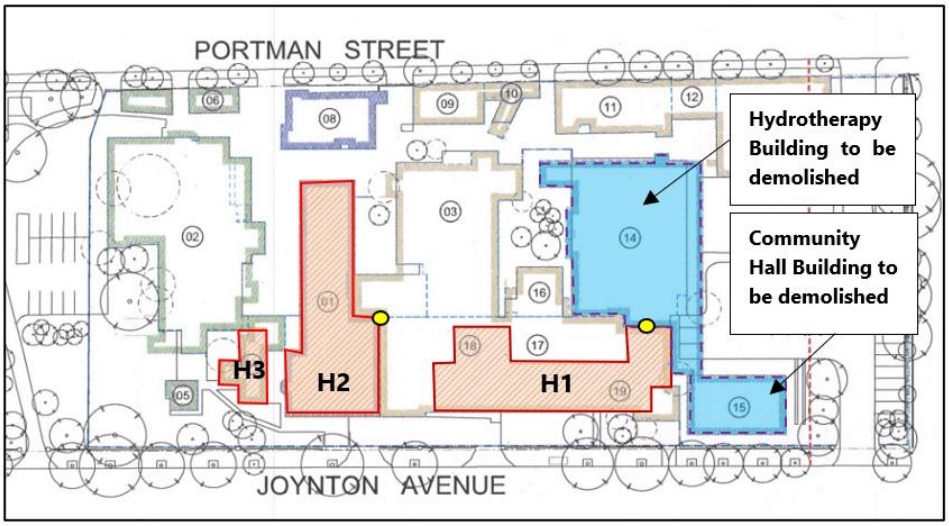


Figure 3 – Heritage Buildings and Buildings to be Demolished

Heritage Buildings
Buildings to be demolished
Recommended vibration monitoring locations

6 NOISE AND VIBRATION RECOMMENDATIONS

6.1 RECOMMENDATIONS

In light of the above assessment, and to mitigate the potential noise and vibration impacts from Green Square Public School and Community Spaces proposed works, we recommend the following management controls be implemented:

- The scheduling of construction activities should be undertaken to reasonably minimise noise impacts to all surrounding land uses.
    - In this regard, highly noise intrusive works should not take place prior to 8am where noise levels would significantly exceed the highly affected noise management level at residential receivers. This would typically apply to hammering operations and use of excavators within 50m of a residence.
    - Additionally, a respite period is to be implemented where pile-driver, rock breaker or hydraulic hammer works are required resulting in noise levels that exceed the highly noise affected levels. The recommended hours for use of this equipment is:
        - Monday – Friday: 9:30am – 1pm
        - Monday – Friday: 2pm – 4:30pm
        - Saturday: 9:30am – 1:30pm
    - The above hours may be modified in consultation with the surrounding receivers (in particular with the childcare centre) to minimise impact while not reducing the overall allowable hours per day. Particularly during the 1-month period the childcare centre is not operating, it would be advantageous to conduct as much of the works as possible and therefore minimise impact on the child care centre when it is in operation.
    - Notification to receivers immediately bounding the site should be undertaken (via flyer or similar), informing occupiers of the expected duration of the noisy activities should be undertaken.
- Where reasonable and feasible, pulverisers and other non-percussive methods should be used to demolish concrete structures.
- Prior to the commencement of any activity likely to generate significant ground vibration (typically hammering and dropping of objects) attended vibration monitoring is to be undertaken to establish "safe" working distances from the structures around the site (and the historical structures in particular).
- To comply the recommended structure vibration levels at the Heritage buildings it is likely that within approximately 20m of the buildings work methods will need to be modified to meet the nominated criteria, avoiding the use of percussive demolition or excavation activities (or using smaller equipment) and additional measures to prevent large objects impacting the ground.
- Vibration monitoring is to be undertaken during demolition and excavation phases of the development. Vibration monitoring is to be undertaken at locations representative of the following receivers:
    - R7 – 105-115 Portman Street, Zetland;
    - R8 – 132 Portman Street and 50 Hansard Street, Zetland; and
    - At heritage buildings (H1 and H2 as shown in Figures 1 and 3) located in the subject site and proposed to be retained. Continuous monitoring is recommended at these locations.
- Attended noise measurements at surrounding properties at the beginning of key construction phases to quantify the level of noise typically emitted from the site and confirm the predictions/respite periods applied.

- Materials handling/vehicles:
    - Trucks and forklifts in general use on site are to use a non-tonal reversing beacon where possible (subject to OH&S requirements) to minimise potential disturbance of surrounding receivers;
    - Trucks, trailers and delivery vehicles are to turn off engines when idling to reduce noise impacts (unless required for concrete pumping or similar).
- Complaints handling:
    - An afterhours contact number is displayed outside of the building site, so that in the event that surrounding development believes that a noise breach is occurring, they may contact the site.
    - In the event of complaint, the procedures outlined in Section 8 are adopted.
- The assessment and adoption of additional methods for noise and vibration management should be implemented as indicated in Sections 8, 9 and 10.
- The noise and vibration management plan should be reviewed and revised as appropriate by the contractor carrying out the work to ensure it is relevant to the work methods selected and the programme adopted.
- Highly intrusive appliances, including hydraulic hammers, to take place only
- It is recommended that the hours of operation for such equipment is amended within the plan to meet the requirements of condition 25 and are within a maximum of 6 hours per weekday and 4 hours on Saturdays.

7 GENERAL MITIGATION METHODS

7.1 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 this activity by use of pneumatic hammers, bulldozers ripping and/or milling machines lower levels of noise will result.

Pre-drilling, saw cutting and ripping may be incorporated in the excavation of the existing base slab. Whilst hammering may still be required, the substitution of drilling, sawing and ripping will reduce degree of hammering required.

7.2 ACOUSTIC BARRIER

Barriers or screens can be an effective means of reducing noise. Barriers can be located either at the source or receiver.

- The placement of barriers at the source is generally only effective for static plant (tower cranes). 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 however this will not beneficial in this instance due to receivers overlooking the site.

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 15dB(A) can be effected. Where only partial obstruction of line of sight occurs, noise reductions of 5 to 8dB(A) may be achieved. Where no line of sight is obstructed by the barrier, generally no noise reduction will occur.

As barriers are used to provide shielding and do not act as an enclosure, the material they are constructed from should have a noise reduction performance that is approximately 10dB(A) greater than the maximum reduction provided by the barrier. In this case the use of a material such as 10mm or 15mm thick plywood (radiata plywood) would be acceptable for the barriers.

7.3 SILENCING DEVICES

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.

7.4 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).

7.5 TREATMENT OF SPECIFIC EQUIPMENT

In certain cases, it may be possible to specially treat a piece of equipment to dramatically reduce the sound levels emitted.

7.6 ESTABLISHMENT OF SITE PRACTICES

This involves the formulation of work practices to reduce noise generation. It is recommended that all available and reasonable treatments and mitigation strategies presented in this report be adopted to minimise noise emissions from the excavation and construction activities on site.

7.7 NOISE MONITORING

Predicted noise levels indicate that noise emissions from a number of activities proposed on site will exceed the noise management at the surrounding sensitive receivers. On this basis, noise monitoring can be undertaken to determine the effectiveness of ameliorative measures which have been implemented.

Noise monitoring can be conducted during the excavation stages, to establish a benchmark of the potential highest levels of noise likely to be generated. We recommend monitoring for a weeklong period during each stage of works, to establish these benchmark levels.

Ongoing monitoring and reporting can be conducted if required, after this initial benchmark period. Continuous monitoring will typically include report generated fortnightly, with additional reports created if benchmark levels are exceeded. In events of exceedance in benchmark levels, site foreman will immediately stop work on site and contact acoustic consultant to determine if;

- Noisy plant/activity was recognised by site foreman – determine reason for exceedance and recommend ameliorative measures or alternate processes for the activity.
- Site attendance is required by acoustic consultant to determine noisy plant/activity and conduct attended measurements. Device further controls based on measured levels.

7.8 COMBINATION OF METHODS

It may be necessary that two or more control measures be implemented to minimise noise.

7.9 MAINTENANCE OF PLANT, EQUIPMENT AND MACHINERY

Construction Profile will ensure all plant, equipment and machinery are regularly serviced and maintained at optimum operating conditions, to ensure excessive noise emissions are not generated from faulty, overused or unmaintained machinery.

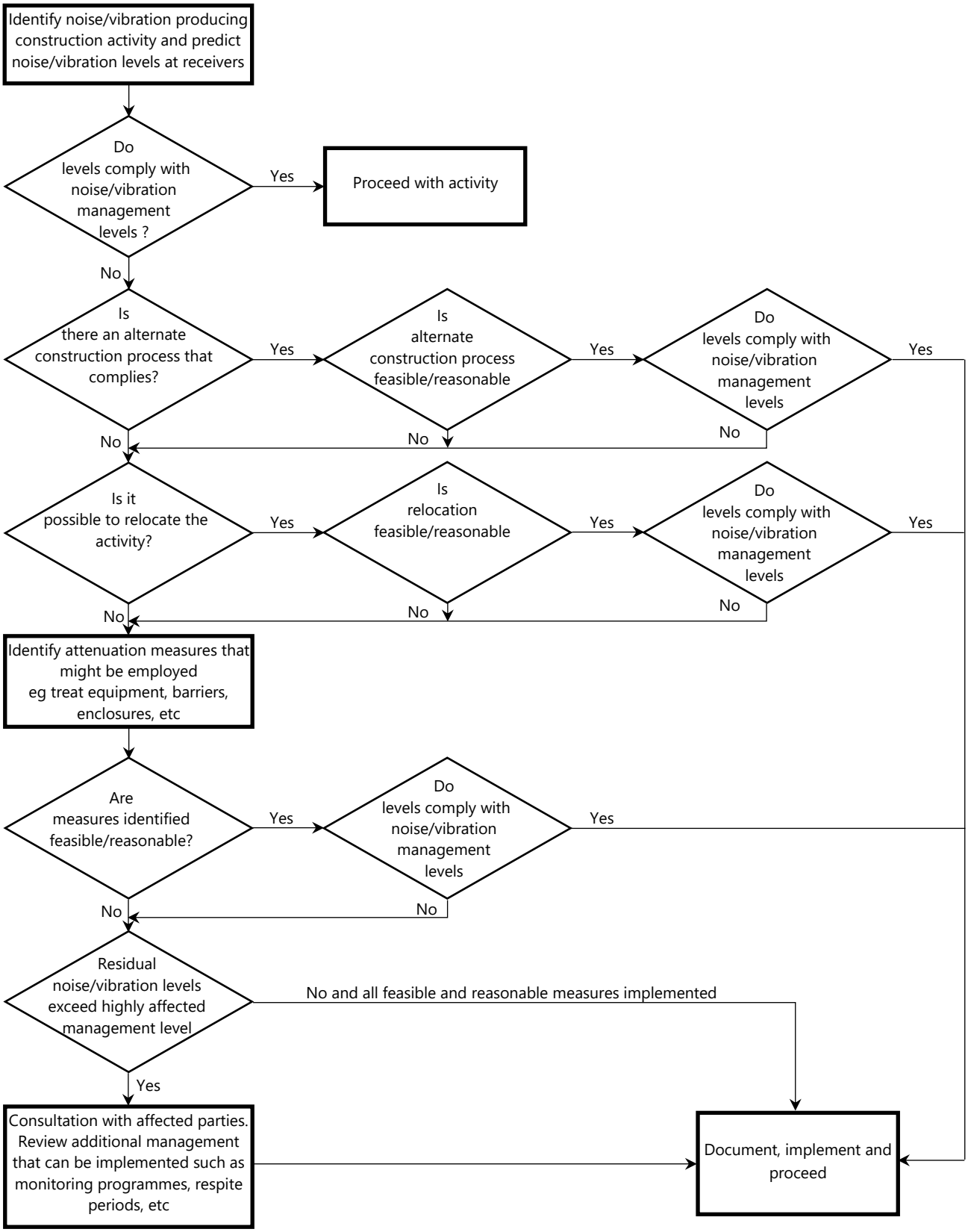
7.10 STAFF TRAINING AND REPORTING MECHANISM

All construction staff on site, as part of the site induction process, will be informed of the surrounding sensitive receivers on site and the site-specific recommendations to reduce noise impacts to these receivers (late starts, respite period, vehicle noise control etc.). Any complaints received by construction staff must be immediately reported to the site foreman, followed by completion of incident report form and steps detailed in the section below.

A copy of the recommendations detailed in this report and dealing with complaints procedure (section below) will be posted at key areas around the site for easy reference by all staff.

8 CONTROL OF CONSTRUCTION NOISE AND VIBRATION – PRECEDURAL STEPS

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



9 COMMUNITY INTERACTION AND COMPLAINTS HANDLING

9.1 ESTABLISHMENT OF DIRECT COMMUNICATION WITH AFFECTED PARTIES

In order for any construction noise management programme to work effectively, continuous communication is required between all parties, which may be potentially impacted upon, the builder and the regulatory authority. This establishes a dynamic response process which allows for the adjustment of control methods and criteria for the benefit of all parties.

The objective in undertaking a consultation processes is to:

- Inform and educate the groups about the project and the noise controls being implemented;
- Increase understanding of all acoustic issues related to the project and options available;
- Identify group concerns generated by the project, so that they can be addressed; and
- Ensure that concerned individuals or groups are aware of and have access to a Constructions Complaints Register which will be used to address any construction noise related problems should they arise.

Community consultation is recommended prior to any works commencing on site, with letterbox notifications to all identified surrounding sensitive receivers in this report. This will include a construction management plan detailing the proposed works on site and duration of each stage.

9.2 DEALING WITH COMPLAINTS

Should ongoing complaints of excessive noise or vibration criteria occur immediate measures shall be undertaken to investigate the complaint, the cause of the exceedances and identify the required changes to work practices. In the case of exceedances of the vibration limits all work potentially producing vibration shall cease until the exceedance is investigated.

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.

If a noise complaint is received the complaint should be recorded on a Noise Complaint Form. The complaint form should list:

- The name and address of the complainant (if provided);
- The time and date the complaint was received;
- The nature of the complaint and the time and date the noise was heard;
- The name of the employee who received the complaint;
- Actions taken to investigate the complaint, and a summary of the results of the investigation;
- Required remedial action, if required;
- Validation of the remedial action; and
- Summary of feedback to the complainant.

A permanent register of complaints should be held. All complaints 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 a complaint 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; and
- 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 so as 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.

9.3 CONSULTATION ALREADY CONDUCTED

Community Consultation has been undertaken with an online focus. An information package outlining the construction activities, and what mitigation measures have been implemented to reduce noise and vibration levels propagating beyond the site boundaries, has been provided to the community via the following mediums:

- Project Update distributed via letterbox drop – refer to Appendix B
- Information board via SI website

Consultation has been undertaken by providing the community the above-mentioned information and offering a FAQ facility online. SINSW has sought feedback from the community via email or phone on the mitigation strategies proposed by the contractor, in line with the consent requirements.

9.4 REPORTING REQUIREMENTS

The following shall be kept on site:

1. A register of complaints received/communication with the local community shall be maintained and kept on site with information as detailed in this report.
2. Where noise/vibration complaints require noise/vibration monitoring, results from monitoring shall be retained on site at all times.
3. Any noise exceedances occurring including, the actions taken and results of follow up monitoring.
4. A report detailing complaints received and actions taken shall be presented to the construction liaison committee.

9.5 CONTINGENCY PLANS

Where non-compliances or noise complaints are raised the following methodology will be implemented.

1. Determine the offending plant/equipment/process.
2. Locate the plant/equipment/process further away from the affected receiver(s) if possible.
3. Implement additional acoustic treatment in the form of localised barriers, silencers etc where practical.
4. Selecting alternative equipment/processes where practical.

10 CONCLUSION

An assessment of noise from demolition and construction works associated with the proposed Green Square Public School and Community Spaces development has been presented within this report.

The acoustic assessment of the proposed works has been made with reference to the existing consent conditions for the site and relevant policies & guidelines for construction noise – namely the *EPA Interim Construction Noise Guideline (DECC, 2009)*.

Based on the assessment, noise emission from construction activities can generally meet the relevant noise emission levels. Recommendations have been provided to minimise the noise impacts on surrounding receivers and for the ongoing management of noise and vibration emissions.

Provided that the mitigation techniques recommendations and procedures in this report are adopted, impacts associated with the development on surrounding land uses will be minimised.

Please contact us should you have any further queries.

Yours faithfully,

Acoustic Logic Pty Ltd
Lillian Lockett

APPENDIX A – CONDITION B3 EXTENDED DISCUSSION

MATTHEW PALAVIDIS
VICTOR FATTORETTO
MATTHEW SHIELDS

20220829.4/0710A/R1/LL

26/09/2022

J. Hutchinson Pty Ltd
584 Milton Road
TOOWONG QLD 4066

Attn: Amir Maglajlic

Green Square School - SSD Condition B3 Extended Discussion

This letter presents a review of Condition B3 of SSD-10381, which requires a Demolition, Excavation and Construction Noise and Vibration Plan to be prepared for the site. The specific requirements of the condition and how they have been addressed in the CNVMP prepared by Acoustic Logic (ref: 20220829.4/2609A/R2/LL) are detailed below.

> ***B3.*** **Demolition, Excavation and Construction Noise and Vibration Management Plan**
>
> ***A site-specific noise management plan must be submitted to the Crown Certifier for comment and approval prior to certification being issued (pursuant to Section 6.28 of the Environmental Planning and Assessment Act 1979).***
>
> ***The Plan must be prepared by a suitably qualified person who possesses the qualifications to render them eligible for membership of the Australian Acoustic Society, Institution of Engineers Australia or the Australian Association of Acoustic Consultants.***
>
> ***The plan must include but not be limited to the following:***
>
> ***(a) identification of noise sensitive receivers near to the site.***

Refer to Section 2.1 of the Acoustic Logic CNVMP.

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(b) A prediction as to the level of noise impact likely to affect the nearest noise sensitive receivers from the use and proposed number of high noise intrusive appliances intended to be operated onsite. A statement should also be submitted outlining whether or not predicted noise levels will comply with the noise criteria stated within the EPA's Interim Construction Noise Guidelines (DECC,2009) for the typical construction hours of 07:00am to 7:00pm. Where resultant site noise levels are likely to be in exceedance of this noise criteria then a suitable proposal must be given as to the duration and frequency of respite periods that will be afforded to the occupiers of neighbouring property.

The EPA Interim Construction Noise Guideline (ICNG) recommends management levels (rather than targets or criteria to be achieved), recommendations have been provided to minimise noise impacts to surrounding residents. Refer section 5.2 & 5.3 for predicted noise levels and recommendations.

(c) A representative background noise measurement (LA90, 15 minute) should be submitted, assessed in the vicinity of any potentially affected receiver locations and measured in accordance with AS 1055:1.2.1997.

Refer to Section 3.1 of the Acoustic Logic CNVMP.

(d) Confirmation of the level of community consultation that has/is and will be undertaken with Building Managers/ occupiers of the main adjoining noise sensitive properties likely to be most affected by site works and the operation of plant/machinery particularly during the demolition and excavation phases

Refer to Section 9 generally, and 9.3 specifically of the Acoustic Logic CNVMP.

(e) Confirmation of noise monitoring methodology that is to be undertaken during the main stages of work at neighbouring noise sensitive properties in order to keep complaints to a minimum and to ensure that noise from site works complies with the noise criteria contained within City's Construction Noise Code.

Refer recommendations in Section 6.1, where attended noise measurements are proposed at the beginning of key construction phases. Refer also to Section 7 of the Acoustic Logic CNVMP, however, noise impacts associated with the construction are expected to be mitigated through appropriate management and community consultation. As such, specific monitoring of noise is not considered to be required to determine effectiveness at this stage. If strong community reaction is experienced due to construction noise impacts, noise measurements may be taken at identified receivers to quantify the noise impact and develop appropriate management/mitigation strategies.

(f) ***What course of action will be undertaken following receipt of a complaint concerning offensive noise.***

Refer to Section 9.2 of the Acoustic Logic CNVMP.

(g) ***Details of any noise mitigation measures that have been outlined by an acoustic consultant or otherwise that will be deployed on site to reduce noise impacts on the occupiers of neighbouring noise sensitive property to a minimum.***

Refer to Section 5.3 and 6.1 of the Acoustic Logic CNVMP.

(h) ***What plant and equipment is to be used on site, the level of sound mitigation measures to be undertaken in each case and the criteria adopted in their selection taking into account the likely noise impacts on the occupiers of neighbouring property and other less intrusive technologies available.***

Refer to Section 5.1, 5.2 and 5.3 of the Acoustic Logic CNVMP.

Please contact us should you have any further queries.

Yours faithfully,

Acoustic Logic Pty Ltd
Lillian Lockett

APPENDIX B – COMMUNITY CONSULTATION

Artist impression of the new primary school and community spaces

Green Square Public School and community spaces

Project update | May 2022

NSW GOVERNMENT

Investing in our schools

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

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

Project overview

The Green Square Public School and Community Spaces will be delivered by the Department of Education in collaboration with the City of Sydney. It will provide fit-for-purpose learning spaces and core facilities to meet enrolment demand in the area.

The school will be located in Green Square on the former Royal South Sydney Hospital site on Joynton Avenue. This project is jointly funded by the NSW Government and City of Sydney and will include flexible teaching spaces, a library and canteen, staff rooms, administrative offices and amenities, a covered outdoor learning area (COLA), multipurpose spaces (community and shared spaces), out of school hours care (OSHC), a games court and adjacent courtyard (shared spaces).

Progress summary

The State Significant Development (SSD) application for the new Green Square Public School and Community Spaces has been approved.

The Minister for Planning and Public Spaces and the Secretary of the Department of Planning and Environment (DPE) delegated their respective consent authority and related assessment functions for the development to the Council of the City of Sydney. As the determining authority, the Central Sydney Planning Committee granted consent to the application at its meeting on May 12, 2022.

This means the project can start construction soon.

For more information contact:

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

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All documents relating to the planning consent will be published on the DPE website at www.planningportal.nsw.gov.au/major-projects/projects/green-square-integrated-community-facility-and-school and the City of Sydney website through the development application tracker online2.cityofsydney.nsw.gov.au/DA and School Infrastructure Project website at www.schoolinfrastructure.nsw.gov.au/projects/g/green-square-public-school.html.

Next steps

A contract for the main works construction will be awarded in the coming weeks. Following this, works will begin to establish the construction site on Joynton Avenue.

Managing construction impacts: feedback

Conditions of Approval have been issued for the project, which require School Infrastructure NSW (SINSW) and our contractor to prepare a Construction Noise and Vibration Management Sub-Plan (CNVMSP). The CNVMSP needs to include strategies that have been developed with the community for the delivery of the project.

There are strategies that are already planned as part of the construction works, such as;

- Noise monitoring, to ensure compliance with the noise and vibration management criteria outlined in the SSD application consent.
- Compliance with the 'Construction Hours' included in the SSD application consent conditions to minimise noise and vibration impacts of the development.
- Design considerations to minimise the extent of any rock breaking and excavation in rock.
- Acoustic shielding where practical, to minimise noise from the site.
- Deliveries scheduled outside of Waranara Early Education Centre pick up and drop off times where possible.

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 on Mondays to Fridays, and 8 am and 3:30 pm on Saturdays. Safety inspections are permitted from 7 am workdays. No work must be carried out on Sundays or public holidays, unless approved prior by the consent authority.

If you would like to provide any feedback that you feel would be beneficial and feasible for the project to implement, please contact us on the below contact information by **30 May 2022**.

For more information contact:

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

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