

6 Grand Avenue, Rosehill

Construction Noise and Vibration Management Plan

Project ID	20240813.2
Document Title	Construction Noise and Vibration Management
Attention To	Vaughan Constructions Pty Ltd

Revision	Date	Document Reference	Prepared By	Checked By	Approved By
0	25/10/2024	20240813.2/2510A/R0/SW	SW		RF

TABLE OF CONTENTS

1	INTRODUCTION.....	4
2	SITE DESCRIPTION AND PROPOSED DEVELOPMENT	5
2.1	SENSITIVE RECEIVERS SURROUNDING SITE	5
3	SSDA APPROVAL REQUIREMENTS	7
3.1	NOISE.....	7
3.2	HOURS OF WORK.....	8
4	EXISTING BACKGROUND NOISE LEVELS	9
5	NOISE AND VIBRATION MANAGEMENT LEVELS.....	10
5.1	NOISE OBJECTIVES - EPA INTERIM CONSTRUCTION NOISE GUIDELINE.....	10
5.1.1	RESIDENTIAL RECEIVERS.....	10
5.1.2	INDUSTRIAL AND COMMERCIAL RECEIVERS	10
5.1.3	Summarised Noise Management Levels.....	11
5.2	VIBRATION	12
5.2.1	Structure Borne Vibration (Building Damage Criteria)	12
5.2.2	Assessing Amenity	13
5.2.3	Discussion.....	13
6	NOISE AND VIBRATION ASSESSMENT AND RECOMMENDATIONS.....	14
6.1	ACTIVITIES TO BE CONDUCTED AND THE ASSOCIATED NOISE LEVELS	14
6.2	PREDICTED NOISE LEVELS.....	15
6.2.1	Noise Emission Predictions to IN1	15
6.2.2	Noise Emission Predictions to IN2	16
6.2.3	Noise Emission Predictions to IN3	17
6.2.4	Noise Emission Predictions to C1	18
6.3	DISCUSSION – NOISE	19
6.4	DISCUSSION - VIBRATION	19
6.5	GENERAL RECOMMENDATIONS.....	20
6.6	VIBRATION MONITORING.....	21
7	CONTROL OF CONSTRUCTION NOISE AND VIBRATION – PROCEDURAL STEPS	22
8	ADDITIONAL NOISE AND VIBRATION CONTROL METHODS.....	23
8.1	ACOUSTIC BARRIER.....	23
8.2	MATERIAL HANDLING	23
8.3	COMBINATION OF METHODS	23
8.4	NOISE MONITORING TECHNIQUES	23
9	DEALING WITH COMPLAINTS	24
10	CONCLUSION.....	25

1 INTRODUCTION

Acoustic Logic has been engaged to prepare a Construction Noise and Vibration Management Plan to be used to manage noise and vibration emissions associated with the demolition, excavation and construction of the approved industrial warehouse development located at 6 Grand Ave, Rosehill.

This management plan has been formulated to address the SSDA approval document (SID: 55522478 Assessment Report dated July 2024).

The assessment:

- Identifies sensitive receivers that are likely to be potentially impacted by the proposed works.
- Develops project specific noise and vibration management levels. These will be used to indicate whether additional impact mitigation, beyond normal “good practice”, is indicated.
- Identifies the major noise and vibration sources that will be present on the construction site, and additional construction-related traffic generated by the development.
- Predicts the likely noise and vibration levels during the phases of construction and assesses these against the established management levels. Where the predicted impacts exceed the management levels, the Plan identifies and assesses potential measures to minimise these impacts.
- Provides specific and general recommendations for the ongoing monitoring, assessment and management of noise and vibration emissions as the works progress in response to additional information and site conditions, and the updating of the Plan to reflect additional information obtained during the construction period.

Where the term “construction” is used in this assessment, it includes demolition, excavation and any other site activity related to the construction of the development being assessed.

This assessment has been prepared for the sole purpose as stated above and should not be used or relied on for any other purpose.

2 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The current site is situated at 6 Grand Ave, Rosehill and lies within an E5 – Heavy Industrial Zone according to NSW Planning (Refer Figure 1). The construction of the development will generally comprise the following:

- Demolition of existing structures on the site;
- Ground works such as excavation and piling;
- Construction of base build; and
- Construction of the proposed warehouses.

As advised by Vaughans Construction, the duration of each of the major stages of work are as follows:

- Demolition 1 month
- Excavation 5 months
- Piling 3 months
- Construction and fit out 19 months

2.1 SENSITIVE RECEIVERS SURROUNDING SITE

Based on a site survey conducted by this office, the following sensitive receivers have been identified as bounding the project site:

- **Receiver IN1:** Industrial receiver on the south at 10 Grand Avenue. It is noted that there is a data centre located within this receiver catchment.
- **Receiver IN2:** Industrial / commercial receiver on the east at 8A Grand Avenue.
- **Receiver IN3:** Light rail Depot on the west at 4 Grand Avenue.
- **Receiver C1:** Multiple dwelling commercial receivers including a petrol station on the north across Grand Avenue.

An aerial photo of the site, receiver locations and measurement locations are presented in Figure 2 overleaf.

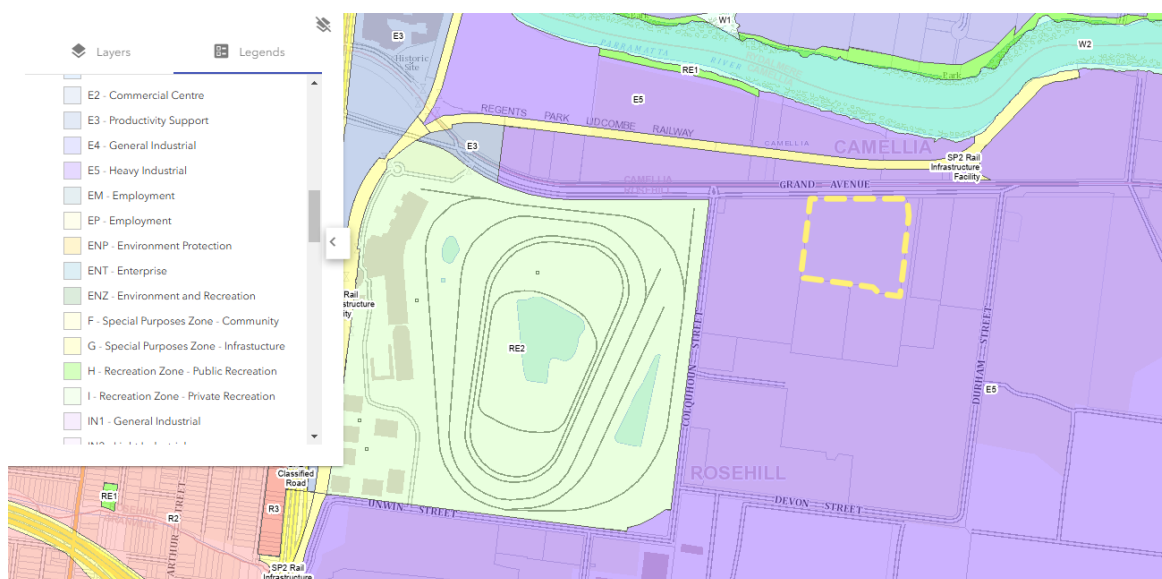


Figure 1: Project site within planning zone (ref: NSW Planning Portal)



- Project Site
- Industrial Receivers
- Commercial Receivers

Figure 2: Aerial view of the project site and sensitive receivers.

3 SSDA APPROVAL REQUIREMENTS

3.1 NOISE

Table 7 | Assessment of other issues

Findings and conclusions	Recommended conditions
Noise - The development has the potential to emit noise and vibration during both construction and operation, which could impact on the amenity of the locality. - The Applicant prepared a Noise Impact Assessment to assess the potential noise impacts. Construction - Construction is proposed to be carried out during standard daytime working hours of 7 AM to 6 PM Monday to Friday and 8 AM to 1 PM on Saturdays. - The noise assessment considered a worst-case scenario associated with the construction works and predicted the likely noise impact at each of the nearby residential receivers. - The noise assessment established the noise management levels outlined in the Interim Construction Noise Guideline (ICNG) could be met at all sensitive receivers during standard construction hours, however still recommended a Construction Noise and Vibration Management Plan be prepared to ensure noise continues to meet these requirements. - The assessment also found the construction area is setback far enough from buildings and structures on adjoining sites as to not cause cosmetic or human health construction vibration impacts. - The Applicant committed to preparing a noise and vibration management plan as part of its Construction Environmental Management Plan. - Council raised no issues in relation to construction noise. - The Department has reviewed the Applicant's construction noise assessment and considers it to provide a reasonable assessment of construction noise impacts. While there will be some construction noise, the Department is satisfied the noise management levels set out in the ICNG will be met, ensuring impact is minimal. - The Department has recommended conditions of consent to ensure construction noise remains consistent with these levels and occurs during the standard hours described above. - The Department's assessment concludes construction-related noise impacts will have minimal impact on surrounding receivers, subject to implementation of the recommended conditions. Operational - Key future noise sources associated with the occupation and use of the warehouse facility include mechanical plant, internal warehouse operations, operation of the loading docks and vehicle movements, across both storeys of the development.	Require the Applicant to adhere to: - standard construction hours - the requirements of the Interim Construction Noise Guideline - operational noise limits.

Findings and conclusions**Recommended conditions**

- Council noted noise has previously been an issue in the Camelia peninsula, with complaints from residents north of the Parramatta River.
- Upon request of the Department, the Applicant's assessment was updated to include consideration of noise impacts on nearby childcare centres.
- The updated noise assessment found noise from the development would primarily be caused by heavy vehicles moving through the site and the loading and unloading of trucks within the loading docks.
- The noise assessment found the predicted noise impact from the development at nearby residential properties would be no higher than 32 decibels (dBA), meeting the project specific noise level of 38 – 50 dBA, established by the EPA's Noise Policy for Industry. It also found that surrounding industrial and childcare receivers would also meet relevant noise levels, including sleep disturbance levels.
- The Department has reviewed the noise assessment and is satisfied it provides a conservative consideration of the development's noise impacts, complying with the relevant noise policies.
- To ensure the development's operational noise impacts are consistent with the predictions in the Noise Impact Assessment, the Department has recommended a condition that sets the predicted noise levels as operational noise limits. Given the distance from residential receivers and potential for other noise sources to interfere with noise monitoring readings, the Department has recommended these limits be set at surrounding industrial receivers.
- The Department's assessment concludes operational noise from the development will meet relevant noise criteria, subject to implementation of the recommended conditions of consent.

3.2 HOURS OF WORK

The SSDA approved construction hours are as follows:

- | | |
|-----------------------------|-------------------|
| • Monday to Friday: | 7:00am to 6:00pm |
| • Saturday | 8:00am to 1:00pm |
| • Sunday or Public Holidays | No Work Permitted |

4 EXISTING BACKGROUND NOISE LEVELS

Unattended long-term noise monitoring has been conducted by RWDI and detailed in the approved SSDA Acoustic report (*ref: 2303300 dated 25 October 2023*).

Table 3-3 from the report repeated below details the results of unattended noise monitoring conducted for the project site.

Table 3-3: Unattended Noise Monitoring Results – Ambient Noise Levels, dBA

Location	Time Period ¹	L _{Aeq,period}	RBL
L01	Day	75	63
	Evening	74	61
	Night	72	50
L02	Day	56	45
	Evening	53	42
	Night	51	41

Note 1: Daytime (6am – 7pm), Evening (7pm – 10pm), and Night time (10pm – 6am).

Note 2: The evening RBL at his location was measured as 41dBA. The daytime RBL has been adopted as per *NPfI* methodology for high evening and night levels

Figure 3: Unattended noise monitoring results excerpt from the Acoustic Report prepared by RWDI.

Based on the above, the more stringent RBLs will be utilised to establish the Noise Management Levels outlined by the ICNG.

5 NOISE AND VIBRATION MANAGEMENT LEVELS

5.1 NOISE OBJECTIVES - EPA INTERIM CONSTRUCTION NOISE GUIDELINE

5.1.1 RESIDENTIAL RECEIVERS

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" (NML).* Where construction noise is predicted to exceed the "noise effected" 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" (HANML).* Where noise emissions are such that nearby properties are "highly noise effected", 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.

5.1.2 INDUSTRIAL AND COMMERCIAL RECEIVERS

Section 4.12 and 4.1.3 of the guideline also specifies management levels for land used for other than residential. The ICNG states the following for commercial and industrial premises receivers:

4.1.3 Commercial and industrial premises

Due to the broad range of sensitivities that commercial or industrial land can have to noise from construction, the process of defining management levels is separated into three categories. The external noise levels should be assessed at the most-affected occupied point of the premises:

industrial premises: external LAeq (15 min) 75 dB(A)

offices, retail outlets: external LAeq (15 min) 70 dB(A)

other businesses that may be very sensitive to noise, where the noise level is project specific as discussed below.

Examples of other noise-sensitive businesses are theatres and child care centres. The proponent should undertake a special investigation to determine suitable noise levels on a project-by-project basis; the recommended 'maximum' internal noise levels in AS 2107 Acoustics – Recommended design sound levels and reverberation times for building interiors may assist in determining relevant noise levels (Standards Australia 2000).

The proponent should assess construction noise levels for the project, and consult with occupants of commercial and industrial premises prior to lodging an application where required.

During construction, the proponent should regularly update the occupants of the commercial and industrial premises regarding noise levels and hours of work.

5.1.3 Summarised Noise Management Levels

A summary of the recommended noise levels from the ICNG is presented in the tables below.

Table 1 – Noise Management Levels – Other Sensitive Receivers

Type of Receivers	Noise Management Level dB(A)$L_{eq}(15min)$	Highly Noise Affected Level dB(A)$L_{eq}(15min)$
Industrial (IN1, IN2, IN3)	75 (External)	-
Commercial (C1)	70 (External)	-
Residential	BG(56)+5 = 61	75

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

5.2 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, the evaluation criteria presented in the British Standard BS 6472:1992 *Guide to Evaluate Human Exposure to Vibration in Buildings (1Hz to 80Hz)* for low probability of adverse comment.

5.2.1 Structure Borne Vibration (Building Damage Criteria)

German Standard DIN 4150-3 (2016) provides a guideline for acceptable levels of vibration velocity in building foundations, to assess the effects of vibration on structures. The table give guidance on the maximum accepted values of velocity at the foundation and in the plane of the highest floor of various types of buildings, to prevent any structural damage.

The table following lists the peak particle velocity, which is the maximum absolute value of the velocity signals for the three orthogonal components. This is measured as a maximum value of any of the three orthogonal component particle velocities when 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.

It is noted that if measured vibration levels do not exceed the guidelines listed in the following table, damage that will reduce the serviceability of the building will not occur, and if damage to the building does occur, it is assumed that the damage is related to other causes. Furthermore, the DIN4150-3 guideline states the following regarding the limits presented in Table 1 of the standard:

"Exceeding the guideline values does not necessarily lead to damage. Should they be exceeded, however, further investigations may be necessary, such as determining and evaluating the stresses as detailed in 4.3 and 4.4."

Table 2 – DIN 4150-3 (2016) – Guideline values for vibration velocity, $v_{i,max}$, for evaluating the effects of short-term vibration on structures)

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

NOTE Even if guideline values as in line 1, columns 2 to 5, are complied with, minor damage cannot be excluded.

- At frequencies above 100 Hz, the guideline values for 100 Hz can be applied as minimum values.
- It may be necessary to lower the guideline value markedly to prevent minor damage

Nearby industrial receivers would be classified as a Type 1 structure.

5.2.2 Assessing Amenity

The NSW EPA document “*Assessing Vibration: A Technical Guideline*” 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 regulate vibration within the excavation/construction site.

Table 3 – 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
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

5.2.3 Discussion

It is noted that receiver catchment IN1 contains a data centre within its boundary. Given that the data centre may contain vibration sensitive equipment, Vaughan Constructions are to consult with the data centre operators to determine the vibration requirements of the equipment.

6 NOISE AND VIBRATION ASSESSMENT AND RECOMMENDATIONS

6.1 ACTIVITIES TO BE CONDUCTED AND THE ASSOCIATED NOISE LEVELS

Typically, the most significant sources of noise generated during a construction project will be demolition and ground works. The sound power levels associated with the works are as follows:

Table 4 - Sound Power Levels of the Proposed Equipment

Equipment / Process	Sound Power Level – dB(A)*
Demolition & Excavation	
Excavator Mounted Hydraulic Hammering	120
Excavator (Bucket)	115
Large Trucks	110
Piling	
Piling Rig with Drill	115
Construction	
Large Trucks	110
Mobile Cranes (Diesel), Forklifts	105
Concrete Pump	108
Concrete Boom	105
Handheld Jack Hammering	113
Powered Hand Tools	100

***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, namely:

- Table A1 of Australian Standard 2436-2010.
- Data held by this office from other similar studies.

6.2 PREDICTED NOISE LEVELS

Noise levels will vary depending on where in the construction site the work is undertaken. To address this, a range of predicted noise levels is provided. Predicted noise levels are presented below. Predictions take into account the noise reduction as a result of distance only.

NML – Noise Management Level

6.2.1 Noise Emission Predictions to IN1

Activity	Predicted Level – dB(A) $L_{eq}(15min)$ (External Areas)	Comment
Demolition & Excavation		
Excavator Mounted Hydraulic Hammering	80-86	Exceeds the NML
Excavator (Bucket)	73-87	
Large Trucks	50-53	Generally below the NML
Piling		
Piling Rig with Drill	66-75	Generally below the NML
Construction		
Large Trucks	50-53	Generally below the NML
Mobile Cranes (Diesel), Forklifts	48-68	
Concrete Pump	71-80	Will occasionally exceed the Industrial NML, particularly when operating close to receiver boundary
Concrete Boom	68-77	Generally below the NML however may marginally exceed occasionally when operating close to receiver boundary
Handheld Jack Hammering	76-85	Generally exceeds the NML
Powered Hand Tools	52-72	Generally below the NML

6.2.2 Noise Emission Predictions to IN2

Activity	Predicted Level – dB(A) $L_{eq}(15min)$ (External Areas)	Comment
Demolition & Excavation		
Excavator Mounted Hydraulic Hammering	57-59	Generally below the NML
Excavator (Bucket)	63-70	
Large Trucks	48-53	
Piling		
Piling Rig with Drill	57-61	Generally below the NML
Construction		
Large Trucks	48-53	Generally below the NML
Mobile Cranes (Diesel), Forklifts	59-63	
Concrete Pump	66-71	
Concrete Boom	63-68	
Handheld Jack Hammering	71-76	Generally below but occasionally exceed the NML.
Powered Hand Tools	52-63	Generally below the NML

6.2.3 Noise Emission Predictions to IN3

Activity	Predicted Level – dB(A) $L_{eq(15min)}$ (External Areas)	Comment
Demolition & Excavation		
Excavator Mounted Hydraulic Hammering	57-63	Generally below the NML
Excavator (Bucket)	58-64	
Large Trucks	53-62	
Piling		
Piling Rig with Drill	49-55	Generally below the NML
Construction		
Large Trucks	53-62	Generally below the NML
Mobile Cranes (Diesel), Forklifts	53-57	
Concrete Pump	56-60	
Concrete Boom	53-57	
Handheld Jack Hammering	61-65	
Powered Hand Tools	48-52	

6.2.4 Noise Emission Predictions to C1

Activity	Predicted Level – dB(A) $L_{eq}(15min)$ (External Areas)	Comment
Demolition & Excavation		
Excavator Mounted Hydraulic Hammering	62-66	Generally below the NML.
Excavator (Bucket)	63-67	
Large Trucks	58-65	
Piling		
Piling Rig with Drill	51-58	Generally below the NML.
Construction		
Large Trucks	58-65	Generally below the NML.
Mobile Cranes (Diesel), Forklifts	53-57	
Concrete Pump	56-60	
Concrete Boom	53-57	
Handheld Jack Hammering	61-65	
Powered Hand Tools	48-52	

6.3 DISCUSSION – NOISE

With respect to the predicted noise levels and the respective receivers presented above, we note the following:

- The nearest residential receivers identified are more than 1km away from the location of the site. In addition, there are other noise generating industrial warehouses operating within this radius distance, therefore the noise impacts from construction works to the residential receivers are expected to be minimal.
- The closest receivers at the joining boundary of the site are industrial and commercial type receivers, which are high noise generating uses themselves. Notwithstanding, receiver IN 1 and IN 2 will be the worst affected during the demolition and excavation phases due to the proximity of these receivers to the works to be undertaken.
- It is expected that ground works equipment like excavators, hydraulic hammers and piling will generate the highest noise levels, however, the duration of these activities is relatively short.
- Finally, once the façade is erected, fitout work and other activities carried out internally will have a lesser impact on the amenity of neighbouring receivers and are expected to generally comply with the noise affected level.
- To assess whether mitigation of any exceedances is feasible or reasonable” the ICNG indicates the following should be considered:
 - The levels of impact including noise levels and the number of people affected.
 - The benefits of noise mitigation and the number of people protected.
 - Cost effectiveness of mitigation.
 - Community views.
- Based on the relatively limited number of activities that will cause exceedances of the noise management levels, the short duration of the small number of affected receivers and that the majority of noise levels at these receivers are generally low in an absolute sense with respect to noise from typical industrial processes, no specific mitigation is indicated beyond what is considered “good practice” management of the works,

Refer to Section 6.5 below for detailed general recommendations.

6.4 DISCUSSION - VIBRATION

- For vibration generating activities, it is difficult to predict without detailed monitoring conducted. Typical equipment like jackhammering and excavators will have the greatest potential for vibration impacts particularly when demolition and excavation works occur.
- Given that the data centre located in the IN 1 receiver catchment may house vibration sensitive equipment we recommend vibration monitoring to be undertaken throughout the demolition, excavation and piling phase to ensure vibration impacts do not adversely affect these receivers. It is expected that vibration impacts to other receivers will be below vibration management levels based on the distance between the site and these receivers.

Refer to Section 6.5 for recommended vibration monitoring locations.

6.5 GENERAL RECOMMENDATIONS

The following general management controls should be implemented to minimise construction noise impacts from the works to surrounding receivers:

- The scheduling of construction activities should be undertaken to reasonably minimise noise and vibration impacts to all surrounding residents. Hours of work are not to exceed the requirements of the SSDA Approval Document, being:
 - Monday to Friday: 7:00am to 6:00pm
 - Saturday 8:00am to 1:00pm
 - Sunday or Public Holidays No Work Permitted
- Community consultation is recommended to be undertaken throughout the construction process. In this regard regular letterbox drops detailing site progress and scheduled works is proposed. In particular, these should detail the extent and times of hammering and piling which is planned to be undertaken during demolition and excavation stages.
- Quiet work methods/technologies:
 - The primary noise generating activity at the site will be the demolition and bulk excavation period. As much as practicable, use of quieter excavation methods is adopted.
 - Where rock strength permits, use of rock rippers (as opposed to hydraulic hammers and rock saws) should be considered.
- Vehicle Siting
 - Vehicle movements, siting, stationary plant and the like should be located further away from the receiver where possible.
 - Trucks should turn off their engines whenever possible on site (unless needed for concrete pumping or similar).
- 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.
 - Avoid careless dropping of construction materials into empty trucks.
- Complaints handling:
 - An afterhours contact number is to be 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 9 are adopted.
 - Where persistent noise complaints are received from surrounding properties, attended noise measurements can be undertaken at affected to quantify the level of construction noise typically emitted from the site. This may be used to inform any mitigation strategies which could be implemented.

6.6 VIBRATION MONITORING

- Vibration Monitoring
 - Vibration monitoring service is to be carried out by the Acoustic Consultant. We recommend minimum one Texcel type monitors with externally mounted geophones installed at the nearest building façade of the affected receiver.
 - Refer to the figure below for indicative locations. In the event on-going complaints are received from other receivers, additional monitoring or attended noise/vibration measurements are to be carried out.

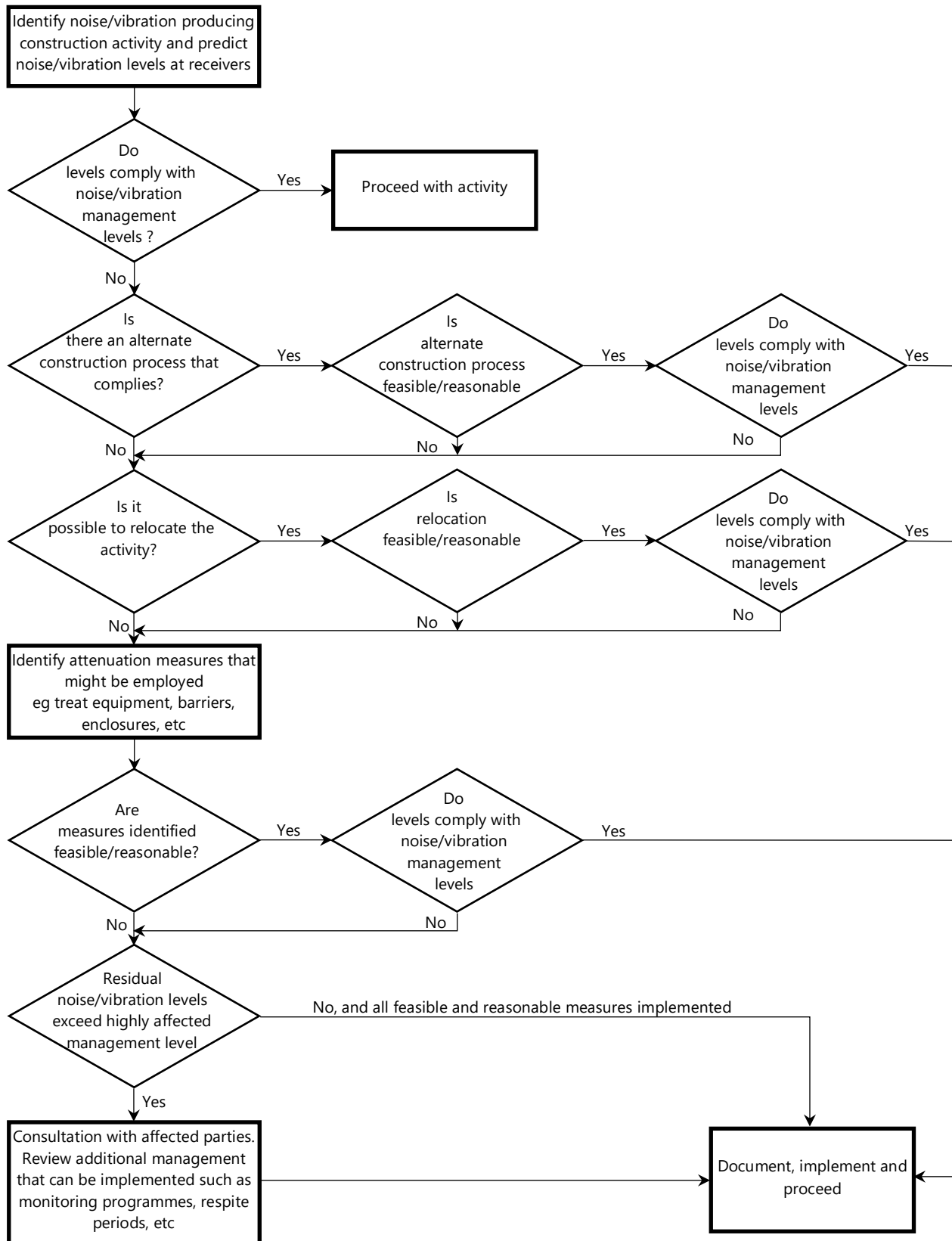


Figure 3 – Proposed Vibration Monitoring Locations

- The monitors are proposed to be fitted with GSM modem and audible alarms for vibration exceedance. The vibration loggers will be downloaded remotely using the GSM modem. The vibration monitors should be programmed to issue alerts (whether visual or via SMS alert) as detailed below to notify the relevant parties of potential exceedances of the DIN 4150-3 criteria (refer to Section 5.2.1).
- Industrial Receivers
 - Monitors are to be installed as close as possible to the footing of industrial building.
 - Based on the DIN4150(2016) standard for the type of receiver for IN 1, the following vibration limits applies:
 - Alarm Level – 15mm/s PPV at vibration at receiver location, SMS alarm message will be sent to operator, project manager and acoustic engineer if magnitude of vibration events exceed this level. Project manager shall respond immediately by taking courteous work methodology.
 - Stop work level – 20mm/s PPV at vibration at receiver location, SMS alarm message will be sent to operator, project manager and acoustic engineer if magnitude of vibration events exceed this level. Project manager shall stop the work at geophone immediately.
 - Given that the data centre located in the IN 1 receiver catchment may house vibration sensitive equipment we recommend Vaughan constructions to consult with the affected party to determine appropriate vibration limits for any sensitive equipment. House within the site.

7 CONTROL OF CONSTRUCTION NOISE AND VIBRATION – PROCEDURAL STEPS

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



Noise and Vibration Management Flow Chart

8 ADDITIONAL NOISE AND VIBRATION CONTROL METHODS

In the event of complaints, there are a number of noise mitigation strategies available which can be considered. The determination of appropriate noise control measures will be dependent on the particular activities and construction appliances. This section provides an outline of available methods.

8.1 ACOUSTIC BARRIER

Given the position of adjacent development, it is unlikely that noise screens will provide significant acoustic benefit, but will provide noticeable improvement for those on ground level.

The placement of barriers at the source is generally only effective for static plant. 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 15dB(A) can be affected. 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.

8.2 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).

8.3 COMBINATION OF METHODS

In some cases it may be necessary that two or more control measures be implemented to minimise noise.

8.4 NOISE MONITORING TECHNIQUES

Noise monitoring may be undertaken in the event of a complaint. Where noise monitoring is undertaken (either by attended short-term measurements or long-term unattended noise monitoring), it should be conducted at a practical location representative of the impact to nearby noise sensitive receivers. Where this is not possible, noise measurements of construction processes should be taken such that noise levels can be accurately predicted to receivers. Any reporting of noise measurement results may include the following information:

- The date and time that the measurements were undertaken;
- The location of measurements, noise receivers and construction processes. A site map should be included for clarity.
- A description of the construction processes being undertaken during the measurement period.
- The measured noise construction noise levels, and the noise level at the façade of nearby receivers (if noise levels are predicted).
- A comparison to the NSW EPA Interim Construction Noise Guideline noise management levels.

9 DEALING WITH COMPLAINTS

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

If a noise complaint is received the complaint should be recorded. Any 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.

10 CONCLUSION

This document presents a Construction Noise and Vibration Management Plan for the demolition, excavation and construction works to be conducted 6 Grand Ave, Rosehill address the SSDA approval document (SID: 55522478 Assessment Report dated July 2024).

The assessment of noise and vibration indicates that:

- Demolition and excavation activities associated with the subject site are likely to generate noise levels that will occasionally exceed noise management levels at the nearest receivers to the site. The analysis indicates that no significant mitigation of these is required under the ICNG beyond what is considered best practice management of the works. Notwithstanding, general recommendations have been provided to minimise noise impacts as far as is practicable.
- Ground vibration goals have been set in this report to safeguard existing structures close to the project site. In this regard:
 - Unattended vibration monitoring is proposed during high vibration intensive works at the nearest affected structures, being the data centre located south of the site. Vaughan constructions are to consult with the affected party to determine appropriate vibration limits for any sensitive equipment.
 - Vibration monitors will alert the demolition/excavation contractor as well as site foreman in the event of any vibration exceedance. Where this occurs a detailed review of the activities generating exceedance and potential mitigation techniques may be explored.
 - In the event of complaints from neighbouring properties, attended noise or vibration measurements may be considered where access is permitted.

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

Yours faithfully,



Acoustic Logic Pty Ltd
Samantha Wong