Styles Group
Acoustics & Vibration Consultants

DRAFT CONSTRUCTION NOISE AND VIBRATION MANAGEMENT PLAN

STAGE 2
DRURY CENTRE PRECINCT

PREPARED FOR

Kiwi Property No. 2 Limited

DATE

18 March 2025

Draft construction noise and vibration management plan prepared by Styles Group for Kiwi Property No. 2 Limited.

REVISION HISTORY

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Table of Contents

1.0 Introduction 1

2.0 Contacts 1

3.0 Project conditions 1

4.0 Duration of works and hours of construction 1

5.0 Project construction noise limits 2

6.0 Project construction vibration limits 2

6.1 Construction vibration limits for occupied buildings 3

6.2 Construction vibration limits for avoiding building damage 3

7.0 Closest receivers 4

8.0 Community liaison 5

9.0 Complaints about noise and vibration 5

10.0 Noise emissions and separation distances 6

11.0 Noise mitigation measures 8

11.1 General noise mitigation measures 8

11.2 Acoustic barriers 9

11.2.1 Localised / portable acoustic barrier specifications 10

12.0 Vibration mitigation measures 10

12.1 Vibration in occupied buildings 11

13.0 Noise and vibration monitoring and reporting 11

14.0 Corrective action measures 12

15.0 Amendments to CNVMP 14

16.0 General requirements 14

Appendices

Appendix A Glossary of terms

Appendix B Recommended consent conditions

Appendix C The construction site

Appendix D Noise monitoring form

1.0 Introduction

Kiwi Property No. 2 Limited has engaged Styles Group to prepare a draft Construction Noise and Vibration Management Plan (**CNVMP**) to enable appropriate management of the construction noise and vibration effects associated with the construction of Stage 2 of the Drury Metropolitan Centre.

The Site, as referred to in this plan, is located at 64, 68, 108, 120 and 132 Flanagan Road, 139, 133, 155, 173, 189 Fitzgerald Road and 61 Brookfield Road, Drury (the **Site**).

This CNVMP has been prepared in accordance with the recommended project conditions and Appendix E of NZS 6803:1999 *Acoustics – Construction noise*. It is designed to ensure appropriate management of noise and vibration effects during the construction period.

This CNVMP is a 'living document' that will be updated as the works progress and if changes become necessary. It will be certified by Auckland Council once the resource consent has been granted and the construction methodology for the development is confirmed.

A glossary of the acoustical terms used in this document is provided as Appendix A.

2.0 Contacts

The contact for queries or complaints regarding the project, and the manager responsible for implementing this CNVMP is:

TBA ph:

The consultant engaged to provide construction noise and vibration monitoring and advice is:

Styles Group Acoustics & Vibration Consultants ph: 09 308 9015

3.0 Project conditions

The recommended conditions of consent controlling construction noise and vibration are reproduced in Appendix B.

Please refer to Sections 5.0 and 6.0 of this CNVMP for interpretation of the construction noise and vibration limits in accordance with the working hours and receiving sites.

4.0 Duration of works and hours of construction

Noisy construction works can be undertaken from Monday to Saturday between 7:30 am and 6:00 pm only. There can be no noisy works in the evening or on Sundays.

Quieter activities and internal works may be undertaken outside of these hours if they are generally inaudible at the neighbouring sites.

The indicative programme of works is set out in Table 1.

Table 1: Indicative programme of works

Stage	Activity	Time frame
To be completed		

5.0 Project construction noise limits

The applicable construction noise limits for the project are set out in Table 2 below. The noise limits apply at 1 m from the façade, and 1.2 to 1.5 m above the relevant floor level, of any building not on the Site that is occupied during the works (the **Receivers**). The noise limits do not apply at buildings on the Site or at any other unoccupied buildings.

The land surrounding the Site is planned for intensification and several large infrastructure projects. Table 2 shall be updated to identify the occupied buildings that physically exist at the time of construction work.

Table 2: Applicable noise criteria for the works

Receiver	Noise limit L_{Aeq}	Noise limit L_{AFmax}
54 Flanagan Road	80 dB	95 dB
117 Fitzgerald Road	80 dB	95 dB
*Any future receivers on 54 Flanagan Road, 117, 121 and 131 Fitzgerald Road and potential future development within Stage 1 of the Drury Centre**	80 dB	95 dB
**To be updated based on occupied buildings that exist at the time that construction work commences, as required.*		
All other receivers	70 dB	85 dB

6.0 Project construction vibration limits

The applicable vibration limits for the project are set out in Table 3 below:

Table 3: Applicable vibration limits

Location	Limit
All occupied buildings	5 mm/s PPV
All other buildings, at all times	DIN 4150 guideline values

All construction vibration will be measured and assessed in accordance with DIN 4150-3:1999 *Structural Vibration – Part 3 Effects of vibration on structures*.

6.1 Construction vibration limits for occupied buildings

The construction vibration limit for occupied buildings not on the Site is 5 mm/s PPV. If measured or predicted vibration from construction activities exceeds 2mm/s PPV at an occupied building not on the Site, the building occupants will be consulted as set out in Section 12.1.

6.2 Construction vibration limits for avoiding building damage

Construction vibration must comply with the limits set out in DIN 4150-3:1999 at all buildings not on the Site.

The DIN 4150-3:1999 Standard uses a three-tiered classification system for buildings according to their susceptibility to vibration damage, as follows:

Line 1: *Buildings used for commercial purposes, industrial buildings and buildings of similar design (Line 1);*

Line 2: *Dwellings and buildings of similar design and/or occupancy (Line 2);*

Line 3: *Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value e.g. buildings listed buildings under preservation order (Line 3).*

The DIN Standard is specifically concerned with the structure of the building, not the effect of the vibration on the people within the building. Assessment is in terms of a reduction in 'serviceability' as defined in the DIN standard, which includes minor cosmetic damage such as cracked plaster.

The DIN standard frequency-dependant vibration limits for short-term vibration are reproduced overleaf in graphical form as Figure 1. Line 2 of the DIN criteria is very typically applied to residential dwellings unless the receiving structure is particularly sensitive to vibration. A suitably qualified structural expert should be consulted: where there are concerns about a building's susceptibility to vibration; or where the appropriate assessment classification under DIN 4150–3:1999 requires confirmation.

The DIN standard includes many other recommendations and prescribes more stringent limits for long-term vibration (which may induce fatigue or resonant movement). The DIN standard should therefore be referred to in full when being applied.

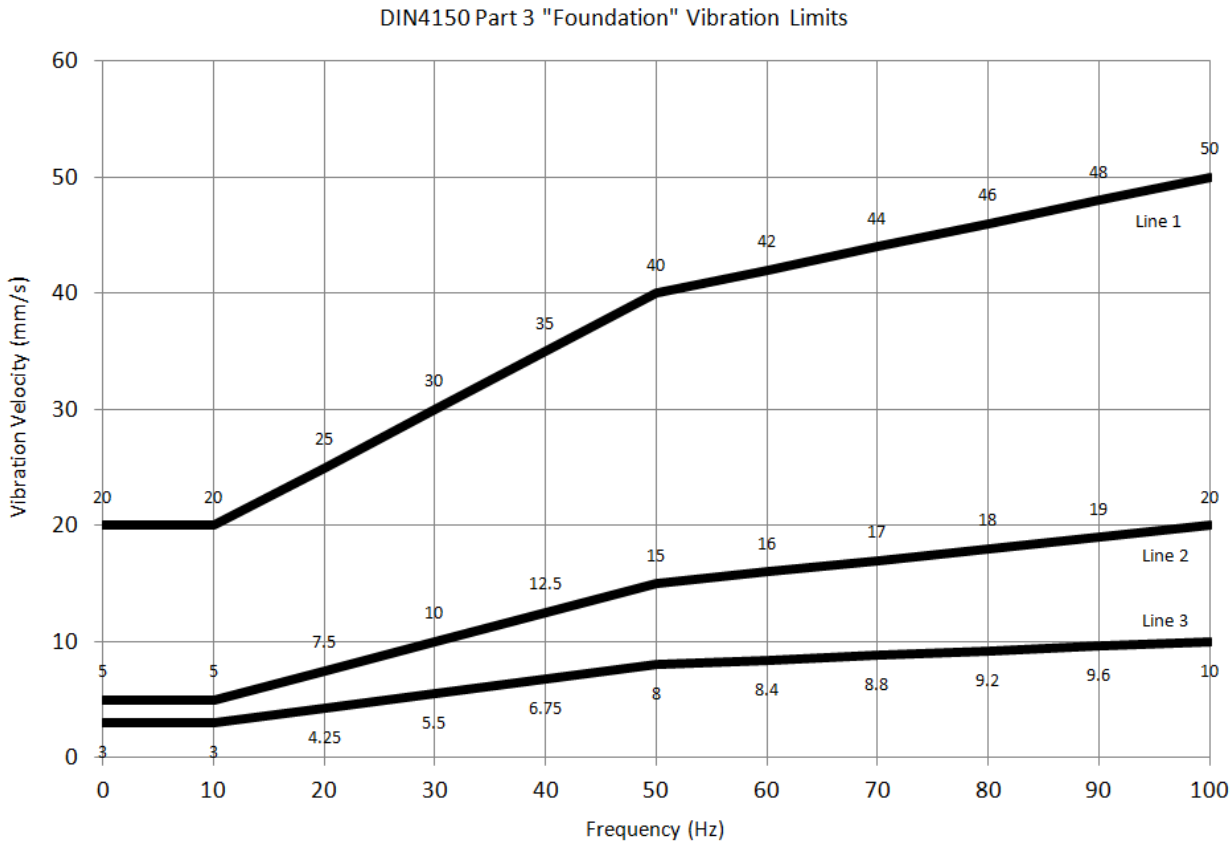


Figure 1: Curves for guideline values (short-term vibration) specified in DIN 4150-3:1999

7.0 Closest receivers

The land surrounding the Site is planned for intensification and several large infrastructure projects. Table 4 shall be updated to identify the occupied buildings that physically exist at the time of construction work.

The nearest receivers that exist at the time of this report are set out in Table 4 below.

Table 4: Closest receivers to the site

Address	Distance to site boundary	Closest area of works	Building type
54 Flanagan Road	2.5 m	Sub-precinct A	Single level dwelling
117 Fitzgerald Road	12 m	Sub-precinct A	Single level accommodation facility
To be updated, as required			

The properties near the works will experience the highest levels of construction noise and vibration. The receivers within 50 m of the works are identified in the attached Appendix C. Those more distant will be deemed to comply where the noise levels at the closest receivers are compliant.

Potential noise emissions are discussed in Section 9.0 *Likely Noise Emissions*. The separation distances detailed in Section 9.0 will be used at each stage of the works to identify where mitigation measures are required to allow compliance with the project limits at the nearest receivers.

8.0 Community liaison

In accordance with Condition 6, all receivers within 50 m of works will be informed of the following information by letter drop at least 5 working days before works commence on site:

i. A brief overview of the works
ii. The expected start date of works
iii. The expected duration of the works
iv. The days and hours of the week when works may be undertaken
v. The approximate timing of the highest noise and vibration activities
vi. The noise and vibration mitigation to be implemented
vii. The availability of noise and vibration monitoring to address any concerns
viii. Contact details for the receipt of any noise or vibration complaints or concerns.

9.0 Complaints about noise and vibration

Any complaints received by staff from the public will be directed to the Site Manager (see Section 2.0 for contact details). Staff must not otherwise debate noise or vibration issues with members of the public.

A register will be kept and maintained on site to record the details of any complaints, including:

i. The time and date of the noise and/or vibration giving rise to the complaint

ii. The nature of the noise and/or vibration and what it was caused by (if known)

iii. The name and contact number of the complainant (if given)

iv. The action taken in response to the complaint

v. Any corrective action measures implemented in accordance with Section 14.0.

The complaints register will be made available to Auckland Council on request.

10.0 Noise emissions and separation distances

Table 5 sets out minimum separation distances for noise sources on site that may require mitigation to comply with 70 dB L_{Aeq}.

Table 6 sets out minimum separation distances for noise sources on site that may require mitigation to comply with 80 dB L_{Aeq}.

The minimum separation distances are the shortest distances that the activities can be undertaken from the most exposed facade of the nearest occupied building whilst remaining compliant with the relevant noise limit.

If works are required closer to an occupied building than the separation distances stated in the table below, further noise mitigation measures, such as localised screening, will be required (see Section 11.0).

Table 5: Noise sources levels and minimum separation distances – 70 dB L_{Aeq}

Construction activity	Unmitigated $L_{Aeq(15\ min)}$ noise level at 10 m	Unmitigated compliance distance	Mitigated compliance distance (with noise barrier)
Bored piling with a 20-t excavator	79 dB	38 m	12 m
Chainsaw works to remove trees (33% on-time)	77 dB	30 m	10 m
D6, D7, or D8 bulldozer working in small area	76 dB*	27 m	9 m
Padfoot vibratory compaction roller 15t – 20-t	76 dB*	27 m	9 m
Cut and fill, clearing, and loading trucks with a 40-t – 50-t excavator	72 dB	17 m	6 m
Cat 825 static compactor 30-t	72 dB*	17 m	6 m

Construction activity	Unmitigated $L_{Aeq(15\ min)}$ noise level at 10 m	Unmitigated compliance distance	Mitigated compliance distance (with noise barrier)
Cut and fill, clearing, and loading trucks with a 20-t excavator	69 dB	12 m	4 m
Cat 815 static compactor 18-t	69 dB*	12 m	4 m
Concrete pump and truck discharging	69 dB	12 m	4 m
Cut and fill, clearing, and loading trucks with a 12-t excavator	67 dB	10 m	3 m
Large generator	66 dB	9 m	3 m
Terrex TS14 30-t motor scraper	65 dB*	8 m	3 m
7,000 L watercart	65 dB	8 m	3 m
Grader	62 dB*	6 m	2 m
Idling delivery truck, dump truck, moxy, tractor	62 dB	6 m	2 m
Paving works (with all ancillary equipment operating)	75 dB	25 m	8 m

* Reference noise level is for a moving noise source.

Table 6: Noise sources levels and minimum separation distances – 80 dB L_{Aeq}

Construction activity	Unmitigated $L_{Aeq(15\ min)}$ noise level at 10 m	Unmitigated compliance distance	Mitigated compliance distance (with noise barrier)
Bored piling with a 20-t excavator	79 dB	12 m	4 m
Chainsaw works to remove trees (33% on-time)	77 dB	10 m	< 4 m
D6, D7, or D8 bulldozer working in small area	76 dB*	9 m	< 4 m
Padfoot vibratory compaction roller 15t – 20-t	76 dB*	9 m	< 4 m

Construction activity	Unmitigated $L_{Aeq(15\ min)}$ noise level at 10 m	Unmitigated compliance distance	Mitigated compliance distance (with noise barrier)
Cut and fill, clearing, and loading trucks with a 40-t – 50-t excavator	72 dB	6 m	< 4 m
Cat 825 static compactor 30-t	72 dB*	6 m	< 4 m
Cut and fill, clearing, and loading trucks with a 20-t excavator	69 dB	4 m	< 4 m
Cat 815 static compactor 18-t	69 dB*	4 m	< 4 m
Concrete pump and truck discharging	69 dB	4 m	< 4 m

* Reference noise level is for a moving noise source.

Where it is predicted or measured that any activity will exceed the noise limits for the project, Sections 14.0, 11.0 and 12.0 of this CNVMP will be referred to and mitigation implemented wherever practicable to reduce the noise effects at the nearest occupied sites.

11.0 Noise mitigation measures

The contractor will take all practicable steps to reduce the noise associated with the works by implementing the noise mitigation measures listed below:

11.1 General noise mitigation measures

- The minimum separation distances set out in Section 10.0 must be complied with at all times unless the noise levels can be made to comply using other methods (e.g. screening).
- The quietest plant, machinery, and methods available will be used wherever practicable. This includes using plant that is no larger than necessary to complete the works.
- All construction equipment will be maintained throughout the project to ensure it is not generating unnecessary noise. For example, all tracked plant will be greased to reduce squeaking.
- When machinery or plant is not required to be running, it should be switched off and not left idling.

- Noisy plant and machinery should be strategically positioned on the site to reduce the effects on neighbours where practicable.
- All plant on site will utilise broadband reverse alarms in place of traditional pure tone 'beepers' where practicable.
- The tail gates of trucks will be closed with care and not slammed or allowed to fall closed.
- Material will not be dropped from height into empty trucks. Softer materials will be loaded into trucks first, where possible.
- Tools and equipment will not be dropped on hard ground. Materials will not be dragged along the ground.
- Vehicle horns will not be used unless in the case of an emergency.
- Any radios or music played on site will be used quietly so they are inaudible at the nearest dwellings.
- Stationary equipment such as pumps and generators will be located as far from occupied dwellings as practicable.
- There will be no shouting or swearing on site. Communication over distance will be by radio or phone.
- Equipment generating excess or unnecessary noise will be stopped (where safe) and reported to the Site Manager.
- Daily pre-start meetings held by the Site Supervisor will include discussions about any noise and vibration issues, and any complaints received.
- All workers on site shall be familiar with the provisions of this CNVMP and made aware of the potential impacts of noise on neighbours.

11.2 Acoustic barriers

- All acoustic barriers will be at least 2.0 m high, have a surface mass of no less than 10 kg/m^2 and be solid with no gaps between panels or between the barriers and the ground. Proprietary construction noise barriers (such as Echo Barrier[1], Soundbuffer[2] or Hushtec[3]) with a lower surface mass may be used only if they equal or exceed the overall noise reduction properties of the barriers otherwise specified in this condition. All acoustic barriers must block line of sight between the noise source and the receiver and be positioned as close as practicable to the noise source.

[1] https://supplyforce.co.nz/echo-barrier

[2] http://soundbuffer.co.nz

[3] https://duraflex.co.nz/hushtec

- Acoustic barriers will be used where any construction plant must be operated within the unmitigated compliance distances (Table 5).
- Acoustic barriers will be located as close as practicable to the noise sources to improve its effectiveness.
- Quiet machinery and structures should be positioned to provide as much screening as possible to noisy equipment on the site.

11.2.1 Localised / portable acoustic barrier specifications

- Localised acoustic barriers can be U-shaped and wrap around the noise source or in a straight line.
- If a U-shaped barrier is used it will need to be 3 m high, and at least 2 m x 3 m x 2 m wide. The proprietary flexible screens used to line the scaffolding should have a mass of at least 6 kg/m^2 and there should be no gaps between the sheets.
- If a straight barrier is used it needs to be solid with no gaps and should block line-of-sight from the noisiest part of the plant/machinery to the receiver by as much as possible (including windows at upper-level facades).
- The acoustic barrier should extend past the noise source by a distance of 1.5 times the height of the plant/machinery. If possible, the screening should partially surround the noise source.

12.0 Vibration mitigation measures

The operation of tracked excavators, vibratory compaction rollers, and other heavy plant and vehicles on site has the potential to generate vibration that may be felt within the nearest dwellings,

The vibration received within the nearest dwellings will depend largely on the equipment used, the separation distance, the ground conditions, how the plant is operated, and the response of the receiving structure.

The following measures will be observed when working within 50 m of any occupied dwelling, to ensure that vibration complies with the project conditions and does not cause unreasonable disturbance:

- Workers will be informed of the need to reduce vibration effects at the nearest dwellings and the mitigation measures available to achieve this.
- Excavators and heavy vehicles will be driven slowly (fast movement across an uneven site can generate high vibration levels).
- The lightest plant practicable and available will be used for the works.
- Wheeled plant will be selected over tracked plant where practicable.

- Excavator operators will avoid banging buckets on the ground.
- Any vibratory compaction works necessary will be undertaken making passes parallel to the site boundary. The operator will not change direction or stop in the nearest part of the site to an occupied dwelling.

Equipment generating excessive or unnecessary vibration will be stopped (where safe) and reported to the Site Manager.

12.1 Vibration in occupied buildings

The vibration limit for occupied buildings is 5 mm/s PPV. If measured or predicted vibration from construction activities exceeds 2mm/s PPV at an occupied building, the building occupants will be consulted to:

i. Discuss the construction activities and the days and hours when higher vibration levels are proposed to occur.

ii. Determine whether the higher vibration activities could be timed or managed to reduce the effects on the occupants.

iii. Provide details of the location and duration of the works, a phone number for complaints and the name of the site manager in writing, no less than three days prior to the vibration generating works commencing.

13.0 Noise and vibration monitoring and reporting

This section sets out requirements for construction noise and vibration monitoring during the project.

Noise and vibration measurements will be performed:

i. At the beginning of any activity within the mitigated (with barrier) setback distances specified in Table 5 to monitor compliance with the project noise limits.

ii. If the noise or vibration from any activity on the site appears excessive in the opinion of the Site Manager or Auckland Council.

iii. Following the receipt of any reasonable construction noise or vibration complaint.

iv. By a suitably qualified and experienced person (e.g., MASNZ) or any person trained by the project construction noise and vibration consultant.

v. Using a sound level meter conforming to at least IEC651 Type 2 criteria, and in accordance with NZS 6803:1999 Acoustics - Construction Noise (noise only).

vi. In accordance with DIN 4150-3:1999 Structural Vibration – Part 3 Effects of Vibration on Structures (vibration only).

A noise monitoring form is attached as Appendix D.

The results of any site and plant specific noise and vibration monitoring will be used to update this CNVMP to ensure that minimum compliance distances and mitigation measures are specifically tailored to the project.

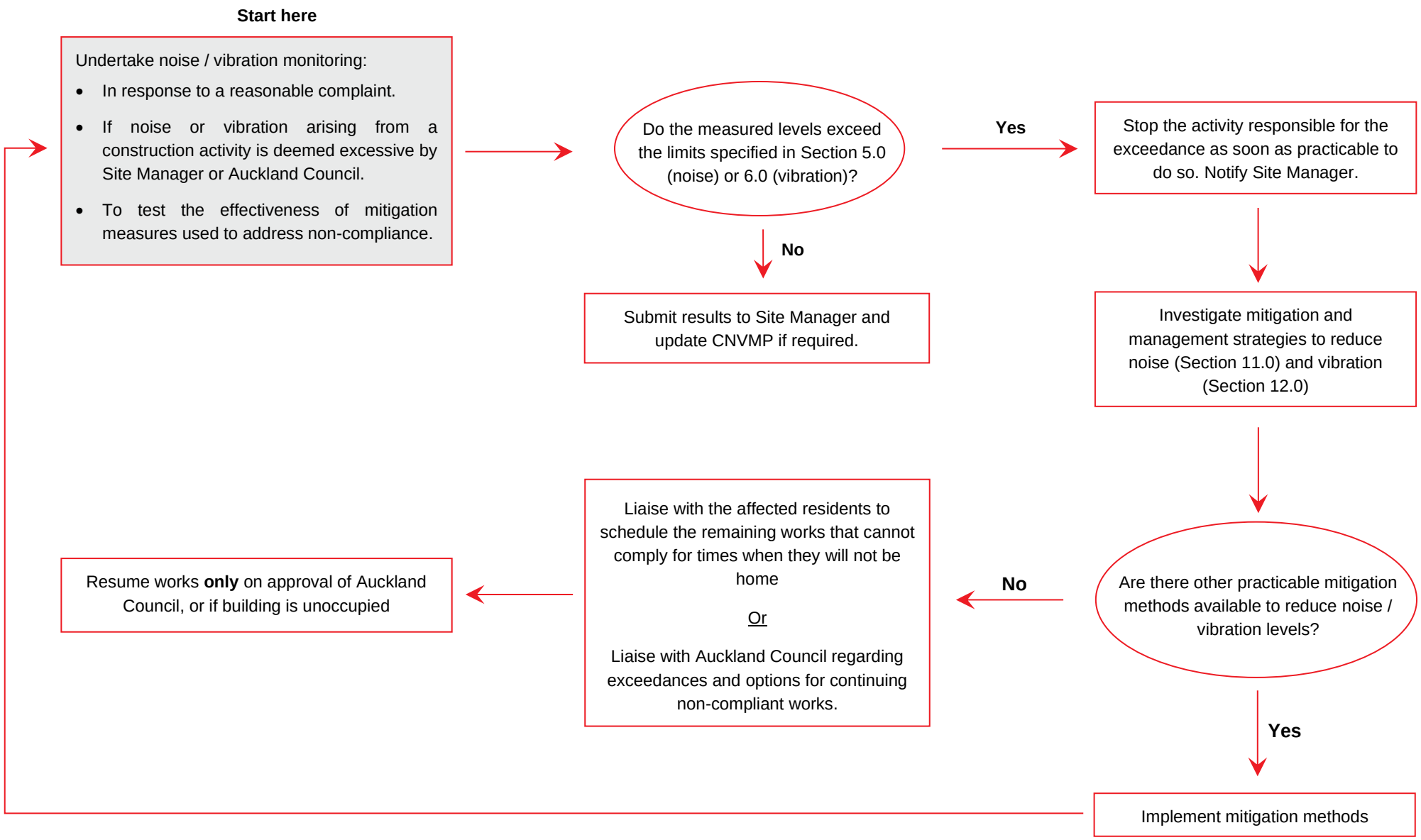
The results of all noise and vibration monitoring will be retained for the duration of the project and made available to Auckland Council on request.

Any non-compliance with the noise limits identified through monitoring will be addressed by following the corrective action measures in Section 14.0 of this CNVMP.

14.0 Corrective action measures

The corrective action measures illustrated overleaf in Figure 2 will be followed if non-compliance with the project noise or vibration limits is identified through monitoring.

Figure 2: Process for corrective action measures



15.0 Amendments to CNVMP

The CNVMP is a living document and it will be updated throughout the works if necessary to adapt to changing work methodologies or a changing receiving environment.

Any material updates to the certified CNVMP will be clearly marked using underlining for additional text and strikethrough for any deletions. The amended CNVMP will be provided to Auckland Council for verification before being actioned.

All activities will be undertaken in accordance with the latest version of the certified CNVMP.

16.0 General requirements

A copy of this CNVMP will be kept at the work site for the duration of the project.

This CNVMP may be updated throughout the works with the approval of the Project Manager and in consultation with Auckland Council.

All personnel will be informed about the need to reduce noise and vibration to a minimum and about the effects of excessive noise on the neighbouring sites. As part of their training, special attention will be given to:

i. Proper selection, use and maintenance of tools and plant.

ii. Positioning of machinery on site.

iii. Avoidance of unnecessary noise.

iv. Procedures for receiving, reporting and investigation of noise and vibration complaints.

Appendix A Glossary of terms

Noise	A sound which serves little or no purpose for the exposed persons and is commonly described as 'unwanted sound'. The Resource Management Act definition of noise is "includes vibration".
dB (decibel)	The basic measurement unit of sound. The logarithmic unit used to describe the ratio between the measured sound pressure level and a reference level of 20 micropascals (0 dB).
A-weighting	A frequency filter applied to the full audio range (20 Hz to 20 kHz) to approximate the response of the human ear at lower sound pressure levels.
$L_{Aeq(t)}$ (dB)	The A-weighted equivalent sound pressure level with the same energy content as the measured varying acoustic signal over a sample period (t). The preferred metric for sound levels that vary over time because it takes into account the total sound energy over the time period of interest.
L_{AFmax} (dB)	The maximum A-weighted sound pressure level recorded during the measurement period using a fast time-weighting response.
NZS 6803:1999	N.Z. Standard NZS 6803:1999 *Acoustics – Construction noise*.
DIN 4150–3:1999	German Standard DIN 4150-3:1999 *Structural Vibration – Part 3: Effects of vibration on structures*. Typically adopted for the assessment of structure borne vibration in New Zealand.
PPV	Peak particle velocity, measured in mm/s. The standard metric for the measurement of ground borne vibration in New Zealand. The instantaneous maximum velocity reached by a vibrating element as it oscillates about its rest position.
CNVMP	Construction noise and vibration management plan. A document to help the contractor manage noise and vibration emissions during construction works.

Appendix B Consent conditions

To be updated if required when consent is granted

Construction Noise and Vibration Management Plan

1. *The consent holder must prepare a Construction Noise and Vibration Management Plan (CNVMP) with reference to Annex E2 of NZS 6803: 1999 Acoustics - Construction Noise and submit it to the Council for certification. Where construction of the project approved as part of this consent is staged, the CNVMP submitted for certification must be for that project stage. The certified CNVMP must thereafter be implemented for the duration of earthworks and construction activity.*

The objectives of the CNVMP are to:

- *Identify the Best Practicable Option and define the procedures to manage and minimise construction effects;*
- *Inform the duration, frequency and timing of works to manage disruption; and*
- *Require engagement with affected receivers and timely management of complaints, including identification of remedial actions to address identified adverse effects, where appropriate.*
- *The CNVMP must include specific details relating to avoiding, remedying or mitigating adverse noise effects on the environment and neighbouring properties from construction and management of all works associated with this development as follows:*
    - *i. Contact details of the appointed contractor or project manager (phone number, email, postal address);*
    - *ii. A general outline of the construction programme for each stage of development;*
    - *iii. Applicable site noise criteria set out in these conditions;*
    - *iv. Identification of surrounding noise and vibration sensitive receivers;*
    - *v. Details about the works, including:*
        - *When the higher noise and vibration levels can be expected;*
        - *The likely sources or causes of noise;*
        - *Methods for monitoring and reporting on noise; and*
        - *Working hours,*
    - *vi. The procedure for monitoring construction noise and vibration at the most exposed surrounding buildings; and*
    - *vii. The process to record and investigate all construction noise complaints that includes the following steps being taken as soon as practicable.*

Construction Noise

2. *Construction noise levels at occupied buildings must comply with the following limits, when measured and assessed in accordance with NZS 6803:1999: Acoustics- Construction Noise except for where otherwise stated in Condition 3.*

Time of Week	***Time Period***	***Noise Limit, dB***	
		$L_{Aeq(30min)}$	L_{Amax}
Weekdays	*7:30 am - 6:00 pm*	*70*	*85*
	6:00 pm - 8:00 pm	*65*	*80*
Saturdays	*7:30am - 6:00 pm*	*70*	*85*
	6:00 pm - 8:00 pm	*55*	*80*
Sundays and public holidays	*7:30 am - 6:00 pm*	*55*	*80*
At all other times		*45*	*70*

3. *Construction noise levels may exceed the noise limits in condition 2 that apply from Monday to Saturday between 7.30am and 6.00pm by 10dB (80dB L_{Aeq} and 95dB L_{AFmax}) where the CNVMP sets out the specific scenarios where the noise limits in condition 2 can be exceeded, the specific receivers where the higher noise limits apply and the specific noise mitigation measures that will be applied to minimise the noise effects.*

Construction Vibration – Structural

4. *The guideline vibration limits set out in the DIN standard and in Standard 25.6.30(1)(a) must not be exceeded.*

Construction Vibration – Amenity

5. *If measured or predicted vibration from construction activities exceeds 2mm/s PPV at an occupied building, the consent holder shall consult with the occupants where an exceedance is predicted or measured, to:*

    i. *Discuss the nature of the work and the anticipated days and hours when the exceedances are likely to occur; and*

    ii. *Determine whether the exceedances could be timed or managed to reduce the effects on the receiver; and*

    iii. *Provide in writing, no less than three days prior to the vibration-generating works commencing, details of the location of the works, the duration of the works, a phone number for complaints and the name of the site manager.*

    <u>Advice Note:</u>

    If the building is not occupied, then the vibration limit specified above (2mm/s PPV) does not apply. This allows high noise or vibration work to be scheduled

when receivers are not present, subject to compliance with building damage criteria and compliance with the controls at other nearby buildings that are occupied. The consent holder shall maintain a record of these discussions and make them available to the Council on its request

Neighbour notification

6. *The consent holder must advise in writing the occupants of all properties located within 50m of the extent of the project area. The advice must be provided no less than two (2) weeks prior to bulk earthworks or construction activities commencing. The written advice must set out an overview of the works, the expected duration and working hours, mitigation measures, expected levels of noise and vibration, a contact phone number for any complaints, and the name of the site manager.*

Appendix C The construction site

The construction site (red) and nearest noise and vibration receivers (yellow) are illustrated in Figure C.1. The blue dashed line indicates the receivers within 50 m of the site boundary who will need to be advised of the works in accordance with Section 8.0.

To be updated with receivers existing at commencement of and during construction

Figure C.1: The construction site and nearest receivers

Appendix D Noise monitoring form

Name: Date:

Notes for noise monitoring

All sections of this form must be completed when undertaking construction noise measurements for the project. Please provide a sketch of the area, sound sources and measurement position on the rear of this form.

Measurements are to be undertaken at 1 m from the façade of the receiving building most exposed to the sound under investigation, and 1.2 m to 1.5 m above the relevant floor level. No adjustment to the measured level is to be made for reflected sound from the façade. Valid measurements cannot be undertaken in persistent rain or in wind speeds greater than 5 m/s.

Adjustments to the measured level may be required to correct for distance and façade reflections if measurements must be undertaken at a proxy location.

Sound source and instrumentation

Location of works	
Description of construction activity being monitored	
Measurement instrumentation (type and serial number)	
Date of most recent laboratory calibration	
Field calibration check (time and adjustment)	

Meteorological conditions

Cloud cover (octas)	
Rain	
Wind speed and direction	

Methodology

Location/orientation of microphone	
Height of microphone above ground and distance to facade of receiving building	
Distance between microphone and sound source	
Ground conditions between sound source and microphone	
Any barriers or objects between sound source and microphone	
Distance to any reflective surfaces other than receiving facade	
Extraneous noise sources	

Measurement results

Sample start time	Duration of sample	L_{Aeq} (dB)	L_{AFmax} (dB)	Sound source controlling the measured levels	Adjustments required for distance, facade correction or barriers

Do the measurements show full compliance with the project noise limits?

Yes: *The measurement results shall be used to update the site specific noise levels and construction separation distances within the CNVMP.*

No: *The CNVMP shall be referred to for the appropriate corrective action measures and further noise mitigation options*