StylesGroup
Acoustics & Vibration Consultants

CONSTRUCTION NOISE AND VIBRATION MANAGEMENT PLAN

AUCKLAND SURF PARK COMMUNITY - STAGE 2

STAGE 2

PREPARED FOR

AW Holdings 2021 Limited Partnership

DATE

11 February 2026

Styles Group
Acoustics & Vibration Consultants

Construction noise and vibration management plan prepared by Styles Group for AW Holdings 2021 Limited Partnership.

REVISION HISTORY

1	27/11/25	Draft	Martyn Chambers Senior Consultant Styles Group	Jon Styles, MASNZ Director and Principal Styles Group
1	11/02/26	Final Draft	Martyn Chambers Senior Consultant Styles Group	Jon Styles, MASNZ Director and Principal Styles Group

This draft CNVMP will be updated to refer to the approved resource consent conditions and the confirmed construction methodology and staging of works. The final CNVMP must be certified by Auckland Council prior to commencement of construction.

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1.0 Purpose of this CNVMP

AW Holdings 2021 Limited Partnership has engaged Styles Group to prepare a Construction Noise and Vibration Management Plan (**CNVMP**) to facilitate the appropriate management of construction noise and vibration effects from the construction of Stage 2 of the Auckland Surf Park Community (ASPC). Any construction works not covered by this consent is outside the scope of the CNVMP.

The purpose of this CNVMP is to set out the measures that must be implemented throughout the construction phase to ensure noise and vibration generated from construction work will comply with the *recommended*[1] Project Conditions.

This draft CNVMP will be updated to refer to the approved resource consent conditions and the confirmed construction methodology and staging of works. The final CNVMP must be certified by Auckland Council prior to commencement of construction.

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

The reference maps in Appendix C highlight the key requirements detailed in this CNVMP that the contractor must follow to achieve compliance with noise and vibration limits. The outlined work practices will also help to minimise noise and vibration impact on nearby residents.

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

The contact email address for complaints regarding the project is:

TBC

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

Styles Group Acoustics & Vibration Consultants ph: 09 308 9017

[1] At the time of preparing this report, the resource consent conditions have not yet been issued.

1.1 Objective of this CNVMP

The objective of the CNVMP is to ensure that the Best Practicable Option is adopted so construction noise and vibration levels comply with the project noise limits, and to ensure that effects on receivers (occupied dwellings) are minimised to the greatest extent practicable.

This CNVMP focuses on noise and vibration generated by construction activities when they occur within 40m of existing receivers (occupied dwellings) adjacent to the Site.

The 40m area is referred to as the **Noise Management Zone.**

2.0 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.

3.0 Receivers of construction noise and vibration

Figure **1** shows the Site boundaries and the extent of the Noise Management Zone for works within proximity to the existing receivers adjacent to the Site. Table 1 provides the approximate separation distance from the closest building façade of these receivers to the nearest site boundary.

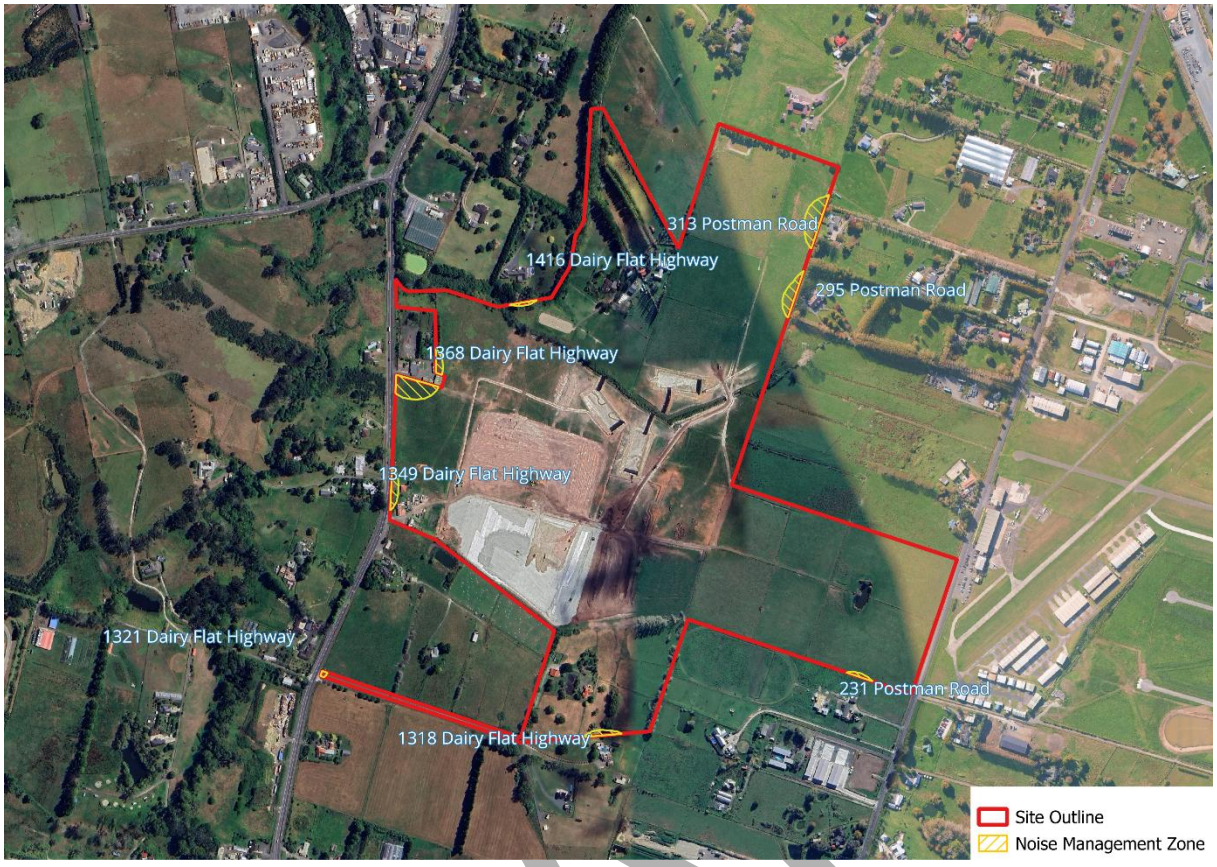


Figure 1: Existing receivers and Noise Management Zone

Table 1 Existing sensitive receivers within 40 m of site boundary

Address	Approximate separation distance from building façade to nearest site boundary (m)
1318 Dairy Flat Highway	29
1321 Dairy Flat Highway	30
1349 Dairy Flat Highway	30
1368 Dairy Flat Highway	12
1416 Dairy Flat Highway	35
231 Postman Road	33
295 Postman Road	20
313 Postman Road	12

4.0 Construction noise limits

The applicable construction noise limits for the project are set out in Table 2.

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 on an adjacent Site that is occupied during the works.

The noise limits do not apply at buildings within the Site or at any other unoccupied buildings.

Table 2: Noise limits for all construction work on the Site

Time Period	Maximum noise levels	
General Daytime	$L_{Aeq(15min)}$	L_{AFMax}
07:30am to 6:00pm, Monday to Saturday	70 dB	85 dB

4.1 Quieter activities

Noisy construction works may only 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 occur outside these hours. Examples include light vehicle movements, works set well back from receivers, site meetings or necessary monitoring activities.

If the contractor is unsure whether an activity qualifies as a quieter activity, they must carry it out during normal construction hours or seek advice before doing it outside those hours.

5.0 Management of construction noise levels

Table 3 lists the equipment that is proposed and typical for this type of project.

Table 3 sets out minimum separation distances required for the equipment to comply with the General Daytime noise limits of 70 dB L_{Aeq} and 85 dB L_{AFmax}.

Table 3: Noise sources levels and minimum separation distances where a noise limit of 70 dB applies

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
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
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

Construction activity	Unmitigated $L_{Aeq(15\ min)}$ noise level at 10 m	Unmitigated compliance distance	Mitigated compliance distance (with noise barrier)
Paving works (with all ancillary equipment operating)	75 dB	25 m	8 m

If any of the equipment / activities in **Table 3** are proposed within the Unmitigated Compliance Distance, then the following mitigation procedures must be followed:

1. Use smaller/quieter equipment if practical or one piece of noise generating equipment at a time.
2. Carry out works when the property is unoccupied (noise limits do not apply to unoccupied dwellings).
3. Position localised screening (see Section 5.1.1) as close to the activity as possible to block the line of sight between works and the receiving building.
4. Seek advice from Styles Group (details on cover page). This may include on-site noise measurements to confirm whether exceedances will occur.

5.1 Acoustically effective screening (barriers)

Figure 2 shows the locations where fixed or localised noise barriers are required when the specific construction activities identified in **Table 3** are undertaken within the unmitigated compliance distances to an occupied dwelling on an adjacent site.

The noise barriers presented in **Figure 2** include:

- A 2.4 m noise barrier along the boundary with 1368 Dairy Flat Highway
- A 2m noise barrier along the western boundary of 313 Postman Road.

Localised barriers (as specified in Section 5.1.1) are an alternative option if a fixed barrier at the specified location is not practicable. Localised temporary barriers may be a more practical option for the boundary with 313 Postman Road given there is less construction work proposed in this area.

We recommend that the contractor installs the barriers whenever any of the noisy construction work (shown in Table 3) takes place in the "Noise Management Zones" shown in **Figure 2**.

Figure 2 Noise barrier locations

5.1.1 Specifications for fixed acoustics barriers

Fixed acoustic barriers shall meet the following specifications:

- The fixed acoustic barrier shown in **Figure 2** would need to be 2.4 m in height, to limit noise the effects of any bund construction near 1368 Dairy Flat Highway. All other fixed noise barriers should be a minimum of 2 m in height.
- All acoustic barriers must have 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[2], Soundbuffer[3] or Hushtec[4]) 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 section.
- 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.

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

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

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

- 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.

5.1.2 Specifications for a localised / portable acoustic barrier

Localised 2m high acoustic barriers should be used where fixed noise barriers are not practical to install or would not be effective to screen line of sight between construction work inside the Noise Management Zone and any occupied building.

These localised barriers should be positioned to break the line of sight between the noise source and the dwelling and shall be installed in accordance with the following 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.

5.2 General noise mitigation measures to be observed during all construction work

The contractor will take all practicable steps to reduce noise on site, particularly when construction works occur within the 40m Noise Management Zone. The following mitigation measures listed below should be implemented where practical:

- The minimum separation distances identified in this CNVMP must be complied with at all times unless the noise levels can be made to comply with the relevant noise limits 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.
- When machinery or plant is not required to be running, it should be switched off and not left idling for extended periods.

- 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.
- Any regular 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.

6.0 Management of vibration effects

6.1 Project construction vibration limits

The proposed[5] vibration limits for the project are set out in Table 4 below:

Table 4: Applicable vibration limits

Location	Limit
All buildings, at all times	5 mm/s

All construction vibration will be measured and assessed in accordance with DIN 4150-3:1999 *Structural Vibration – Part 3 Effects of vibration on structures*. No proposed construction activity is predicted to exceed 5mm/s or cause building damage at any building.

6.2 Vibration management protocol

Vibration may be experienced inside buildings experienced as small jolts or short periods of steady vibration that are perceptible (up to 2mm/s). These effects may still cause disturbance to receivers. Some receivers may also be concerned about damage at these levels.

The vibration may at times reach levels that are clearly felt and high enough to rattle crockery and glassware (levels between 2 mm/s and 5 mm/s PPV). This level of vibration may cause disturbance and complaints, particularly if residents are not provided with advanced notice of works.

Vibration levels of between 2 mm/s and 5 mm/s PPV may be generated by the operation of heavy plant, compaction, or bored piling.

6.2.1 Occupants of 1368 Dairy Flat Highway and 313 Postman Road to be consulted when vibration levels exceed 2mm/s

The vibration limit for occupied buildings is 5 mm/s PPV. If measured or predicted vibration from construction activities (heavy plant, compaction, or bored piling) exceeds 2mm/s PPV at an occupied building on 1368 Dairy Flat Highway and 313 Postman Road, the building occupants shall 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.

[5] The Assessment of Noise Effects includes non-compliance with the 2mm/s vibration amenity limit as a reason for consent at 1368 Dairy Flat Highway

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.

6.3 General vibration mitigation measures

The following measures shall be observed when construction works on the Site are within 20m of occupied dwellings on 1368 Dairy Flat Highway and 313 Postman Road, to ensure that vibration complies with the vibration limits and does not cause unreasonable disturbance:

- Workers must 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 must be driven slowly (fast movement across an uneven site can generate high vibration levels).
- The lightest plant practicable and available must be used for the works.
- Wheeled plant must be selected over tracked plant where practicable.
- Excavator operators must avoid banging buckets on the ground.
- The highest vibration levels occur when compaction equipment stops or changes direction. The operator must plan the work route to avoid stopping or turning in the part of the site nearest to any occupied dwelling.
- Equipment generating excessive or unnecessary vibration must be stopped (where safe) and reported to the Site Manager.

7.0 Community liaison and complaints

7.1 Community liaison

All receivers within 50m of works must be informed of the following information by letter drop at least 10 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. Contact details for the receipt of any noise or vibration complaints or concerns.

7.2 Complaints about noise and vibration

Any complaints received by staff from the public must be directed to the Site Manager. Staff must not otherwise debate noise or vibration issues with members of the public.

A register must be kept and maintained 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.

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

8.0 Noise and vibration monitoring and reporting

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

Noise and vibration measurements shall be undertaken in the following circumstances:

i. If the noise or vibration from any activity on the site appears excessive in the opinion of the Site Manager or Council's Monitoring Officer.

ii. Following the receipt of any construction noise or vibration complaint established to be reasonable by the Site Manager or Council's Monitoring Officer.

iii. At the beginning of any activity inside the mitigated (with barrier) setback distances specified in **Table 3** where monitoring may be required to confirm compliance with the project noise limits.

Noise and vibration measurements shall be undertaken by a suitably qualified professional (such as Styles Group or Member of the Acoustical Society of New Zealand (MASNZ) in accordance with the following standards:

i. NZS 6803:1999 Acoustics - Construction Noise, using a sound level meter conforming to at least IEC651 Type 2 criteria.

ii. DIN 4150-3:1999 Structural Vibration – Part 3 Effects of Vibration on Structures

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.

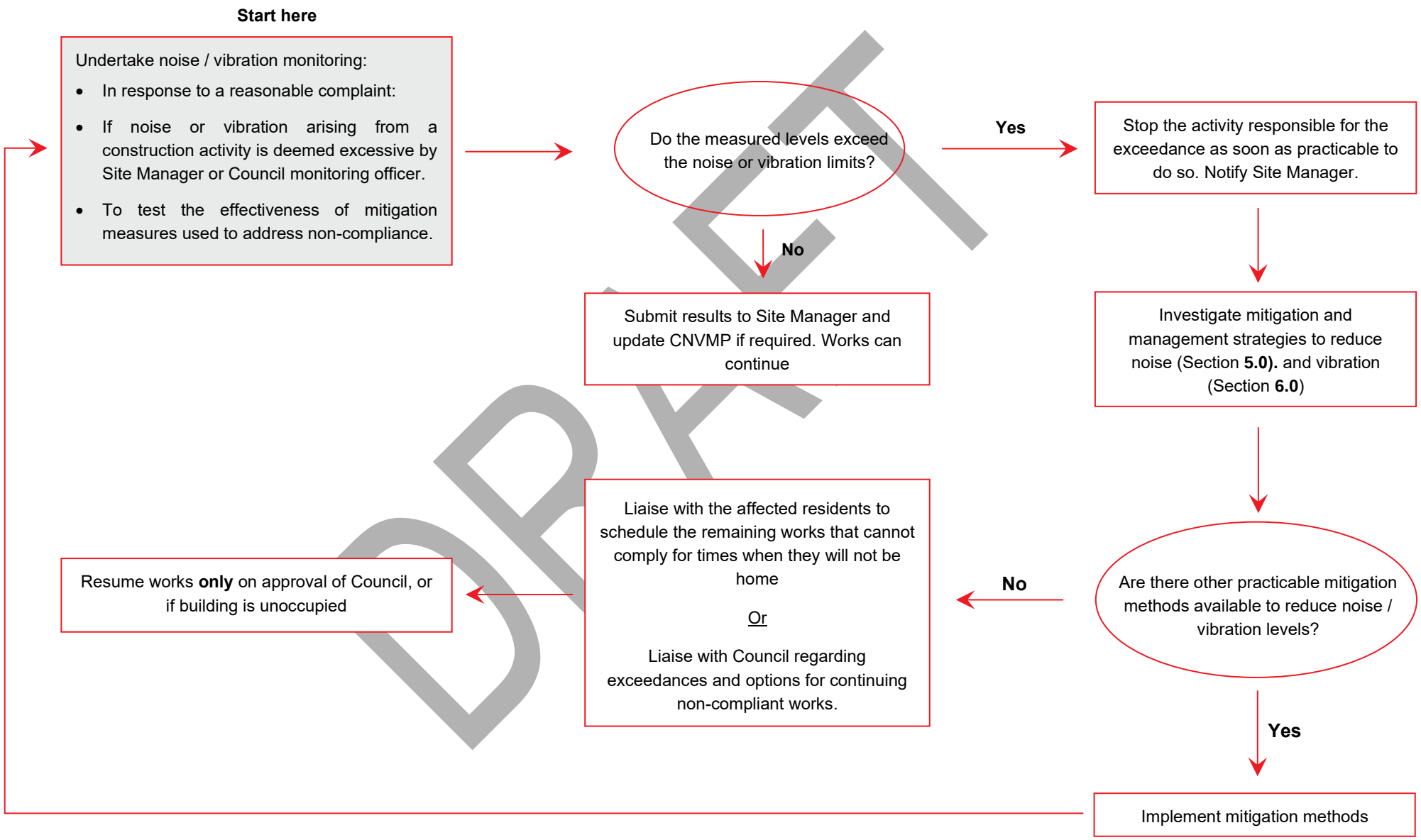
The results of all noise and vibration monitoring will be retained for the duration of the project and made available to Auckland Council on request.

Any non-compliance with the noise limits identified through monitoring will be addressed by following the corrective action measures in Section 9.0 of this CNVMP.

9.0 Corrective action measures

The corrective action measures illustrated overleaf in Figure 3 must be followed if non-compliance with the project noise or vibration limits is identified through monitoring.

Figure 3: Process for corrective action measures



10.0 Amendments to this 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 review before being actioned.

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

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.
LAeq(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.
LAFmax (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 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

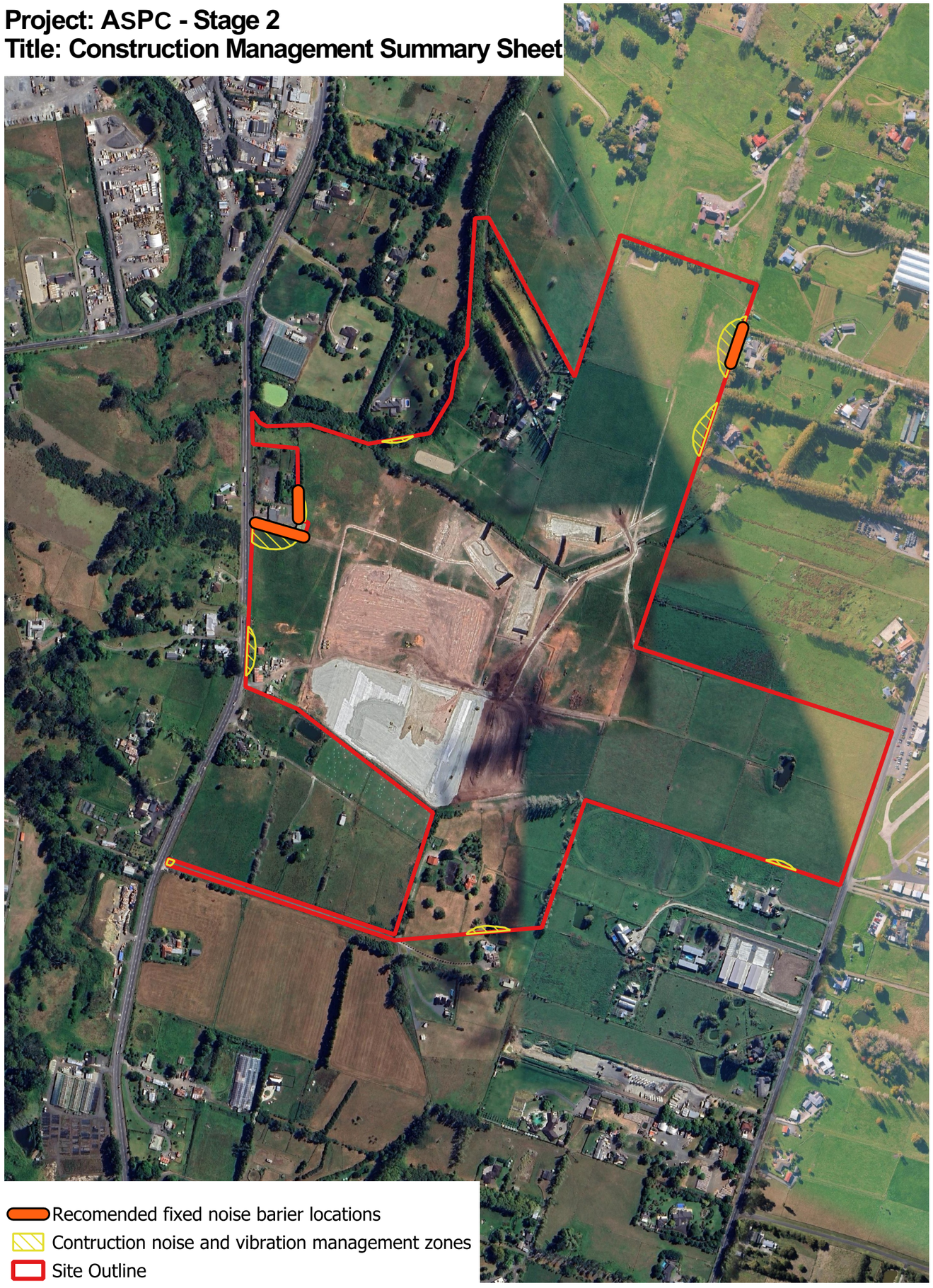
Do the measurements show full compliance with the project noise limits?

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*

Appendix C CNVMP summary sheet

Project: ASPC - Stage 2
Title: Construction Management Summary Sheet



Permitted days and hours of construction work

The permitted days and hours of construction work are: **Monday to Staurday 7:30am to 6:00pm**

Noise Management:

Location: Within **40 m** of the from the facades of occupied buildings.

Key noise mitigation measures to comply with construction noise limits:

1. Check the separation distances between the construction activity and the closest receiver using the unmitigated and mitigated compliance distances in Table 1

2. Confirm that the type and location of construction activity can achieve the compliance distances in Table 1. Contact **Styles Group** for support if required.

3. Where mitigation is required to achieve compliance, implement the following measures:

- Where possible, undertake work when property is unoccupied.
- Use the smallest plant possible if work occurs when buildings are occupied.
- Install a 2.4 m fixed acoustic barrier along the boundary of 1368 Dairy Flat Highway.
- Install 2 m high noise barrier along boundary with 313 Postman Road.
- Use localised / portable acoustic barriers where required in mitigation zone

Table 1: Minimum separation distances to comply with permitted construction noise limits

Construction activity	Unmitigated compliance distance	Mitigated compliance distance
Bored piling with a 20-t excavator	38 m	12 m
Chainsaw works to remove trees (33% on-time)	30 m	10 m
D6, D7, or D8 bulldozer working in small area	27 m	9 m
Vibratory compaction roller 15t – 20-t	27 m	9 m
Cut and fill, clearing, and loading trucks with a 40-t – 50-t excavator	17 m	6 m
Cat 825 static compactor 30-t	17 m	6 m

Vibration Management:

Location: Within **20 m** of the façades of dwellings.

Construction activities requiring management inside the Vibration Management Zone: Operation of heavy compaction, large excavators or other large mobile plant.

Key actions required where heavy plant is operated inside Vibration Management Zone:

1. Ensure machinery operators are aware of the need to select and operate machinery in a way that avoids excessive or unnecessary vibration.

2. Consult with residents when heavy plant, compaction, or bored piling occurs within 20m of an occupied building.

3. Contact: **Styles Group** for monitoring setup and support where vibration levels are generating concerns.

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Date: 11/02/25

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