

Construction noise and vibration management plan

[This is a template that may be used to help prepare a project specific construction noise and vibration management plan.

All notes in square brackets should be deleted or edited and should not form part of the plan without modification.

In many cases, parts of this draft plan will be included in the overall construction management plan or environmental management plan for the project. In those instances the construction noise and vibration management plan should simply include a reference to where the information is located.

Further information on preparing and implementing a construction noise and vibration management plan is provided in the State highway construction and maintenance noise and vibration guide, which is available from www.acoustics.nzta.govt.nz.

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Record of amendment

Amendment number	Description of change	Effective date	Updated by

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1. Introduction

This construction noise and vibration management plan details noise and vibration criteria, predicted levels, mitigation measures, monitoring requirements, and communication and complaint procedures, for:

- State Highway: [click and type SH number]
- Project: [click and type project name]
- Construction location: [click and type location]
- Construction start date: [click and type date]
- Construction finish date: [click and type date]
- NZTA CSVue permit numbers: [click and type CSVue permit numbers]

[CSVue is an online consent/designation compliance management system used by the NZTA. This construction noise and vibration management plan should relate to a consent or designation. Each consent or designation has a unique permit number in CSVue, which should be entered above. These numbers are usually the same as the local authority consent/designation numbers.]

[CSVue can be found at www.csvue.com - contact Georgina Cranswick (georgina.cranswick@nzta.govt.nz) for help with this system and log-on information.]

The objective of this plan is to provide a framework for construction noise and vibration management to ensure that noise and vibration levels at neighbouring buildings remain within reasonable limits throughout the works.

1.1 Contact details

Table 1. Contacts

Role	Name	Organisation	Phone	Email
Client		NZTA		
Engineer				
Acoustics advisor				
Contractor				
Contractor's acoustics advisor				
Council - Noise/ Environmental Health				
Public complaint contact number				

[click and type name of responsible person - normally contractor] will be responsible for ensuring that this construction noise and vibration management plan is correctly implemented. He/she will review all documentation relating to construction noise and vibration before it is issued.

All site personnel will be required to read and sign the construction noise and vibration induction form appended to this plan and any relevant schedules. If required, specific training will be provided for site personnel.

2. Project overview

[click and add a brief description of the project]

2.1 Construction methodology

[click and add a brief description of the construction methodology]

2.2 Timeframe

[click and add outline details of the proposed timeframe for the major works - if appropriate attach a full programme]

2.3 Hours of operation

To comply with the noise and vibration criteria detailed in Section 3, work at the site will only be conducted on [click and type days of work i.e. weekdays and saturday] between [click and type morning start time] and [click and type evening finish time].

[click and type any exceptions]

2.4 Location plan

[Insert an aerial photograph showing the project area and locations of key construction activities including staging areas.

If required, aerial photographs can be copied from the NZTA Spatial Viewer - <https://spatialviewer.nzta.govt.nz/>]

3. Criteria

3.1 Noise

The following conditions relating to construction noise apply to these works:

[click and type/insert applicable designation/consent conditions]

In summary, the following [NZS 6803:1999/Project Specific] criteria apply at [one metre from the façades of the nearest neighbours]:

Table 2. Noise criteria

Day	Time	$L_{Aeq(1h)}$	L_{AFmax}
Weekdays	0630h - 0730h	[level] dB	[level] dB
	0730h - 1800h	[level] dB	[level] dB
	1800h - 2000h	[level] dB	[level] dB
	2000h - 0630h	[level] dB	[level] dB
Saturday	0630h - 0730h	[level] dB	[level] dB
	0730h - 1800h	[level] dB	[level] dB
	1800h - 2000h	[level] dB	[level] dB
	2000h - 0630h	[level] dB	[level] dB
Sundays and public holidays	0630h - 0730h	[level] dB	[level] dB
	0730h - 1800h	[level] dB	[level] dB
	1800h - 2000h	[level] dB	[level] dB
	2000h - 0630h	[level] dB	[level] dB

[click and type details of any circumstances where the noise criteria cannot be achieved such as night works. If so, detail:

- the justification for breaching the criteria,
- the agreement reached with council, and
- alternative criteria to be adopted.

Provision for any such variation from the criteria should have been addressed in the Notice of Requirement. Contact Rob Hannaby (rob.hannaby@nzta.govt.nz) for further assistance]

3.2 Vibration

The following conditions relating to construction vibration apply to these works:

[click and type/insert applicable designation/consent conditions]

In summary, the following criteria apply:

[The main issues for construction vibration are building damage and human perception/response. The following criteria are recommended by the State highway construction and maintenance noise and vibration guide. Replace with criteria from the conditions if they differ.

Note that different criteria may apply at different locations for the same type and time period]

Table 3. Vibration criteria

Type	Location	Details	Category A	Category B
Occupied dwellings	Inside the building	Daytime 0630h - 2000h	0.3 mm/s ppv	1 mm/s ppv
		Night-time 2000h - 0630h	1 mm/s ppv	5 mm/s ppv
Other occupied buildings	Inside the building	Daytime 0630h - 2000h	2 mm/s ppv	5 mm/s ppv
All other buildings	Building foundation	Transient vibration	5 mm/s ppv	BS 5228-2 Table B.2
		Continuous vibration		50% of BS 5228-2 Table B.2

[click and type details of any circumstances where the vibration criteria cannot be achieved. If so, detail:

- the justification for breaching the criteria,
- the agreement reached with council, and
- alternative criteria to be adopted.

Provision for any such variation from the criteria should have been addressed in the Notice of Requirement. Contact Rob Hannaby (rob.hannaby@nzta.govt.nz) for further assistance]

5. Stakeholder engagement

A key aspect of this construction noise and vibration management plan is stakeholder engagement. The site contact for the public for the duration of the works will be [click and type name]. There will be the following communication with the community regarding construction noise issues:

[The following communication measures need to be customised to the particular project.

The specific measures should be consistent with the NZ Transport Agency Public Engagement Policy and Guidelines Document, <http://www.nzta.govt.nz/resources/public-engagement-manual/docs/pem-part1.pdf>

Examples of project stakeholder communications relating to construction noise will be provided on www.acoustics.nzta.govt.nz.]

- There will always be a contact person available on site, and their contact details will be prominently displayed at the entrance to the site so that they are clearly visible to the public.
- Prior to the works a newsletter or similar will be distributed to all neighbours within at least 100 metres of the works. The newsletter will provide contact details and will detail the overall nature of the works. The same information will also be published in an advertisement in a local newspaper.
- Individual notification will be provided and meetings offered to all neighbours within 50 metres of the works. For any neighbours within approximately 20 metres of the works individual consultation will be continued throughout the works.
- Further information will be regularly provided to all neighbours with an update on the progress of the works, and the specific activities (including locations) due to be undertaken next. This may be provided by newsletters or possibly by email. Updates will be provided every two or three months.
- Prior to any particularly noisy processes identified in a construction noise management schedule, the nearest affected neighbours will be contacted individually. Neighbours will be informed of the proposed timing of the specific works and where practicable any times which are particularly sensitive for neighbours will be avoided.

7. Vibration sources

The following table shows key activities likely to generate vibration and details of equipment. Where available, measurements/estimates of vibration from that equipment have been included. The validity of this data will be confirmed and adjusted where necessary once site works have commenced.

Table 7. Key vibration sources

Activities	Equipment	Equipment details	Vibration data
[e.g. piling for bridge X foundations]	[e.g. piling rig type]	[e.g. energy per cycle]	[e.g. 0.51 mm/s ppv @ 10 m]

8. Mitigation

Indicative calculations have been conducted for the main items of equipment based on the outline construction methodology and minimum distances to the nearest neighbours. On this basis the following general noise and vibration control measures have been identified as likely to be required to maintain compliance with the construction noise and vibration criteria and conform to good practice.

Table 8. Noise mitigation

Equipment/process	General noise control measures
	[See State highway construction and maintenance noise and vibration guide for guidance on mitigation measures]

Table 9. Vibration mitigation

Equipment/process	General vibration control measures
	[See BS 5228 and State highway construction and maintenance noise and vibration guide for guidance on mitigation measures]

9. Schedules

For each significant activity/location within 50 metres of neighbours a separate noise and/or vibration schedule will be prepared. The schedule will identify the potentially affected neighbours and confirm the proposed methodology and equipment to be used, along with specific mitigation.

[In urban areas, where most locations are within 50 metres of a neighbouring property not all works will require a separate schedule to be prepared. A schedule might not be required if calculations show that the predicted noise levels are significantly below the noise criteria.]

Predictions of construction noise will be made using the calculator on the NZTA Transport Noise website (www.acoustics.nzta.govt.nz). These calculations will be used to identify where specific mitigation is required and to determine compliance with the project noise criteria (refer Section 3.1) for the time of operation.

Predictions of vibration can be made using the guidance in BS 5228-2.

The schedule will detail any specific monitoring or communication requirements.

The schedule will be read and signed by all site personnel involved in the work, prior to the activity commencing.

10. Monitoring

10.1 Noise

Noise monitoring shall be conducted by the following staff in accordance with NZS 6801:2008 and NZS 6803:1999, using the NZTA construction monitoring survey sheet and procedures (www.acoustics.nzta.govt.nz).

Trained noise monitoring staff:

- [click and type name(s)]

[Noise monitoring will be conducted using the dedicated sound level meter kit detailed below which will be stored in [click and type equipment storage location] for the duration of the project.] The calibrator will be verified by an accredited laboratory annually and the sound level meter and microphone biannually.

Equipment	Make	Model	Serial	Last verification
Sound level meter				[click and type date]
Software				[click and type date]
Microphone				[click and type date]
Calibrator				[click and type date]
Wind shield				
Tripod				
Other				

[The following monitoring requirements need to be customised to the particular project]

Monitoring will be conducted as follows,

- When the works start to verify the sound levels assumed for each of the major items of equipment, and to assess the effectiveness of noise control measures and implementation of this plan.

- At regular intervals during the works, at least every two weeks, to check ongoing compliance with the construction noise criteria.
- During critical phases of construction, such as during the use of heavy earth moving machinery, rock breaking, and other noisy activities within 50 metres of neighbours.
- As required by a construction noise management schedule.
- If required, in response to construction noise related complaints.

Following each noise survey, the results will be reported on the NZTA survey report template and any issues discovered will be investigated. Results will be recorded on the project web page on www.acoustics.nzta.govt.nz.

If noise monitoring indicates that project noise criteria are being exceeded, and that was not anticipated in the management schedule (Section 9) for the activity/location, then the management schedule will be immediately reviewed. A schedule will be prepared if one doesn't already exist.

10.2 Vibration

Vibration monitoring shall be conducted by the following staff in accordance with [click and type measurement standard].

Trained vibration monitoring staff:

- [click and type name(s)]

[Vibration monitoring will be conducted using the equipment detailed below which will be available from [click and type equipment location].]

Equipment	Make	Model	Serial	Last verification
Vibration meter				[click and type date]
Accelerometer/geophone				[click and type date]
Other				

[The following monitoring requirements need to be customised to the particular project]

Monitoring will be conducted as follows:

- [Add project monitoring requirements].

10.3 Building condition surveys

For all locations within 50 metres of a significant vibration source as identified in Section 7, a building condition survey will be conducted prior to the works.

Qualified building survey staff who will conduct building condition surveys:

- [click and type name(s)]

A report will be prepared for each building surveyed including:

- A description of the building condition and any existing cosmetic and structural damage,
- Sketches and photographs showing the location and extent of any existing damage such as cracks, and
- Verification of the report by the surveyor and building owner.

Following the works all building condition surveys will be repeated. Reports will be prepared including:

- Sketches and photographs of any new damage, and
- Verification of the report by the surveyor and building owner.

11. Complaints

The following procedure shall be followed for all noise and vibration complaints:

1. All noise and vibration complaints should be immediately directed to [click and type name].
2. As soon as the complaint is received it will be recorded either on the project complaints register or on the project web page on www.acoustics.nzta.govt.nz.
3. An initial response will be made and recorded. Depending on the nature of the complaint the initial response could be to immediately cease the activity pending investigation, or to replace an item of equipment. However, in some cases it might not be practicable to provide immediate relief. The complainant and council will be informed of actions taken. Contact details for council are recorded in the Introduction section of this plan.
4. Where the initial response does not address the complaint, further investigation, corrective action and follow-up monitoring shall be undertaken as appropriate. The complainant [and council] will be informed of actions taken.
5. All actions will be recorded on the project complaints register or project web page and the complaint will then be closed.

12. Documentation

12.1 File

A construction noise and vibration management file will be held by [click and type name] and kept [click and type file location]. All electronic files relating to construction noise and vibration will be kept in: [click and type computer directory name]. The construction noise and vibration management file will contain the following sections:

- Section 1 – Construction noise and vibration management plans
 - This Construction Noise and Vibration Management Plan and any revisions
 - Construction Noise and/or Vibration Management Schedules
 - Construction noise induction sheets
- Section 2 – Consultation and complaints registers
- Section 3 – Noise and vibration monitoring
 - Site survey sheets and associated aerial photographs
 - Site survey summary sheet
 - Survey reports
 - Survey and equipment operating procedures
 - Current and past equipment kit details and calibration summary
 - Copies of calibration certificates
- Section 4 – Mitigation register

12.2 Web site

The following information will also be recorded on the project construction noise web page on www.acoustics.nzta.govt.nz:

- This Construction Noise and Vibration Management Plan and any revisions,
- Construction Noise and/or Vibration Management Schedules,
- Noise and vibration survey results, and
- Complaints.

The project area on this web site will be administered by [click and type name]. It will be made accessible to the following people listed in the contacts table in the Introduction of this plan: [click and type list of names]

12.3 Reporting

As required by designation or consent condition [click and type condition reference], the following information will be provided to [click and type designated council officer] as listed in the contacts table in Section 1 of this plan, within the timeframes stated. [Usually only some of this information will be required and the table should be edited accordingly]

Table 10. Information reporting requirements

Information	Timeframe
Construction Noise and Vibration Management Plan	At least one week before works commence
Construction Noise/Vibration Management Schedules	At least one week before specific works commence
Noise/vibration survey reports	Within one week of monitoring
Noise/vibration complaint initial report	Within twenty-four hours
Noise/vibration complaint closed	Within one week of closing complaint

This information will all be sent by email with files in pdf format to: [click and type email address]

13. Construction noise and vibration induction

Project: [click and type project name]

There are several residential and commercial neighbours in close proximity to the works, where noise and vibration criteria apply. To ensure criteria are achieved, all staff are responsible for good noise and vibration management.

[The following management controls need to be customised to the particular project]

1. When arriving at work, please drive slowly on site and keep revs to a minimum. Keep stereos off and do not slam doors.
2. No shouting or swearing on site. Either walk over and talk to somebody or use a radio/phone.
3. Be careful with tools and equipment. Place them down and do not drop them.
4. Do not drag materials on the ground. Place them down when you arrive at the work area.
5. Equipment and vehicles should not be left running when not in use.
6. When loading trucks try not to drop material from a height. Load softer material at the bottom.
7. Noise enclosures should always have all doors/hatches closed when the equipment is in use.
8. Stationary equipment such as pumps and generators should be located away from neighbours.
9. All equipment is to be well maintained.
10. No work that could cause noise and/or vibration disturbance shall be conducted outside the hours of 0730h to 1800h Monday to Saturday (and no work at all shall be conducted outside the hours of 0630h to 2000h).

[For many projects night works are essential as lane closures are not possible during the day due to high traffic volumes. In such cases this management control would not be appropriate.]

11. If you see anything/anyone making unnecessary noise then stop it/them. If the source cannot be stopped then report it to [click and type name].
12. It is essential that good relationships are maintained with the local community. Any queries from members of the public should be responded to politely and referred to [click and type name]. Staff shall assist the public to make contact with this person. Staff shall not enter into debate or argue with members of the public.
13. No work that could cause noise and/or vibration disturbance is to be conducted until all staff involved in the task have read and signed the Construction Noise/Vibration Management Schedule for that task.

Name	Company	Signed	Date
