Construction Noise and Vibration Management Plan

Te Kowhai East Industrial Development

Te Kowhai East Limited Partnership

Prepared by:

SLR Consulting New Zealand Limited

SLR Project No.: 810.032016.00001

28 August 2026

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Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
0.1	28 August 2026	L. Jansen	P. Runcie	DRAFT

Basis of Report

This report has been prepared by SLR Consulting New Zealand Limited (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Te Kowhai East Limited Partnership (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid. SLR may have used AI in the preparation of this document.

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Glossary

A' weighted	A frequency adjustment which represents how humans hear sounds.
Ambient noise level	The all-encompassing sound associated with an environment or area.
dB	Decibel
dBA	'A' weighted decibel
DIN 4150-3	German Industrial Standard DIN 4150-3 (2016): Structural vibration – Part 3 Effects of vibration on structures.
Free field	A monitoring location where the microphone is positioned sufficiently far from nearby surfaces for the measured data to not be influenced by reflected noise.
Hz	Hertz
Impulsive noise	Noise with a high peak of short duration, or sequence of peaks.
Intermittent noise	Noise which varies in level with the change in level being clearly audible.
L90, L10, etc.	Statistical exceedance levels, where LN is the sound pressure level exceeded for N% of a given measurement period.
LAeq	The 'A' weighted equivalent noise level. It is defined as the steady sound level that contains the same amount of acoustical energy as the corresponding time-varying sound.
LAmax	The A' weighted maximum sound pressure level of an event.
Low frequency	Noise containing energy in the low frequency range.
LP or SPL	Sound Pressure Level.
Lw or SWL	Sound Power Level.
NZS 6801:2008	New Zealand Standard NZS 6801:2008 "Measurement of Environmental Sound".
NZS 6802:2008	New Zealand Standard NZS 6802:2008 "Assessment of Environmental Noise."
NZS 6803:1999	New Zealand Standard NZS 6803:1999 "Acoustics – Construction Noise."
Octave-band	A frequency band where the highest frequency is twice the lowest frequency.
Tonality	Noise containing a prominent frequency.

1.0 Introduction

This Construction Noise and Vibration Management Plan (**CNVMP**) has been prepared for the Te Kowhai East Industrial Development (**TKE**) and sets out the framework for managing construction noise and vibration associated with the staged development of the site.

The purpose of this CNVMP is to identify the applicable construction noise and vibration criteria and establish procedures for the management of construction related noise and vibration. The CNVMP outlines mitigation measures, stakeholder engagement procedures, complaints management processes, and monitoring requirements to assist in achieving the Best Practicable Option (**BPO**).

This CNVMP is a live document and may be updated to reflect changes in construction methodology, staging, monitoring results, stakeholder feedback, or other project specific requirements. Any material amendments shall be undertaken by, or in consultation with, a suitably qualified and experienced acoustic specialist.

This document should be read in conjunction with:

1 NZS 6803:1999 Acoustics – Construction Noise.

2 DIN 4150-3:2016 Structural Vibration – Effects of Vibration on Structures.

2.0 Project Description and Surrounding Land

Construction of TKE involves earthworks, site formation, installation of infrastructure services and the construction of internal roading and associated civil infrastructure.

Initial construction activities are expected to include bulk cut and fill operations, compaction, and the establishment of stormwater, water supply, and wastewater networks. Construction activities will occur progressively across the site and will vary in location, scale, and duration depending on staging and contractor methodology.

Construction noise and vibration levels at receivers will vary as active work areas move across the site and are primarily influenced by the nature of the activity, plant in use, proximity to receivers, and duration of works.

2.1 Surrounding Receivers

The surrounding environment comprises a mix of rural and urban land uses, including rural residential dwellings within the Waikato District and existing and anticipated residential receivers within Hamilton City.

The receivers identified in **Table 1** represent the nearest noise sensitive receivers relevant to the management of construction noise and vibration effects.

Receivers closest to the site boundary are most susceptible to construction noise and vibration due to their proximity to works. Representative receivers have been identified for CNVMP purposes based on proximity and sensitivity (refer **Figure 1** and **Figure 2**).

2.2 Construction Methodology

Detailed construction methodologies, sequencing, and plant selection have not yet been finalised and will be confirmed by the contractor prior to works commencing.

Standard construction plant is expected to be used, with the type and quantity varying throughout the construction programme.

Construction noise and vibration will be managed in accordance with this CNVMP.

Figure 1 Nearest Identified Receivers – Northern Section

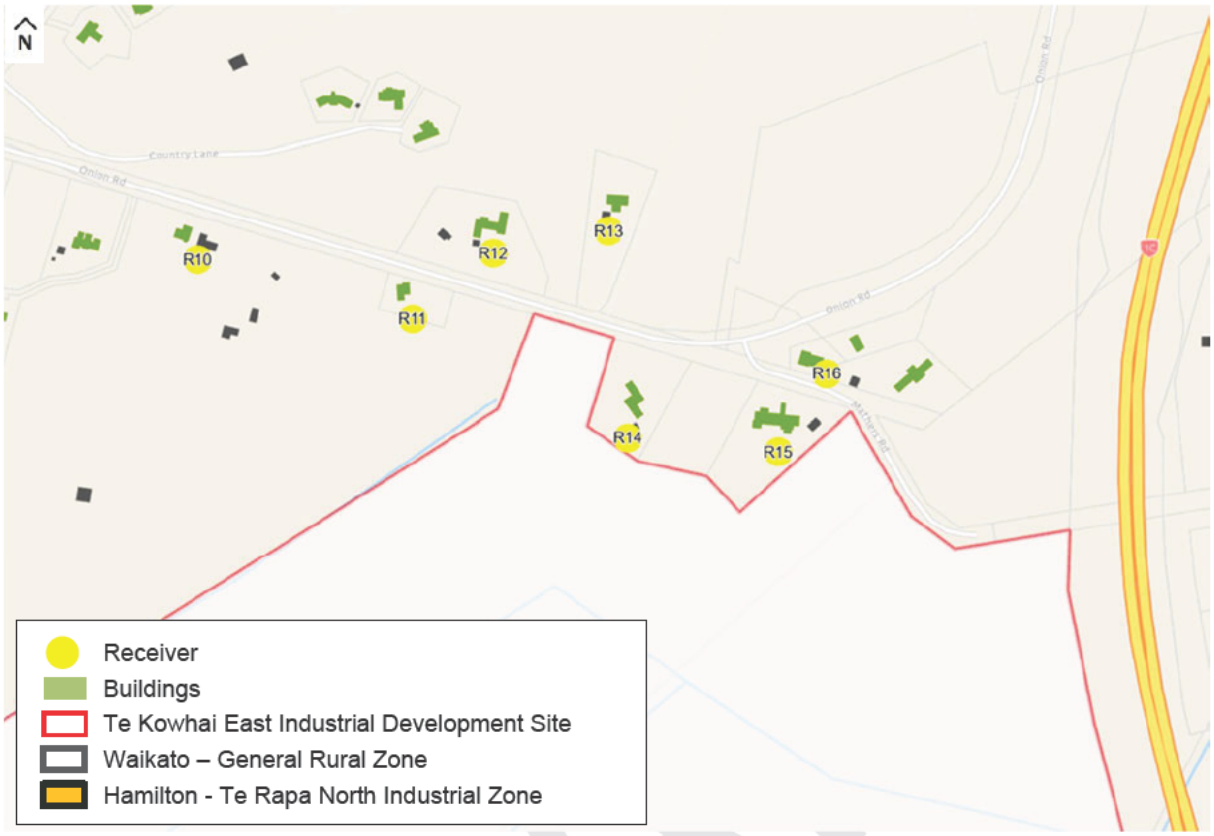

Figure 2 Nearest Identified Receivers – Southern Section

Table 1 List of identified nearest receivers

Receiver	Address	District Zoning	Approximate Shortest Distance to Site Boundary	Comment
Written Approval Provided (identified as a green circle on Figure 1 and Figure 2)				
R01	244 Te Kowhai Road	Waikato District – General Rural Zone	<10	Single storey dwelling
R02	244 Te Kowhai Road	Waikato District – General Rural Zone	20	Single storey dwelling
R04	248 Te Kowhai Road	Waikato District – General Rural Zone	<10	Single storey dwelling
R07	268 Te Kowhai Road	Waikato District – General Rural Zone	40	Single storey dwelling
R08	282 Te Kowhai Road	Waikato District – General Rural Zone	<10	Single storey dwelling
Properties Considered in the Assessment (identified as a yellow circle on Figure 1 and Figure 2)				
R03	245 Te Kowhai Road	Hamilton City – Medium Residential Zone	80	Single storey dwelling
R05	252 Te Kowhai Road	Waikato District – General Rural Zone	20	Single storey dwelling
R06	254 Te Kowhai Road	Waikato District – General Rural Zone	50	Single storey dwelling
R10	302A Te Kowhai Road	Waikato District – General Rural Zone	40	Single storey dwelling
R26	196 Onion Road	Waikato District – General Rural Zone	285	Single storey dwelling
R30	218 Onion Road	Waikato District – General Rural Zone	110	Single storey dwelling
R31	231 Onion Road	Waikato District – General Rural Zone	75	Single storey dwelling
R32	239 Onion Road	Waikato District – General Rural Zone	100	Single storey dwelling
R33	246 Onion Road	Waikato District – General Rural Zone	20	Single storey dwelling
R34	256 Onion Road	Waikato District – General Rural Zone	20	Single storey dwelling
R35	3 Mathers Road	Waikato District – General Rural Zone	45	Single storey dwelling
R46	216 Te Kowhai Road	Hamilton City – Future Urban Zone	115	Single storey dwelling

2.3 Programme and Hours of Operation

Construction of TKE will occur progressively in stages. The detailed construction programme will be confirmed by the contractor prior to the commencement of works.

Construction activities are generally expected to occur during daytime hours between 7:00 am and 6:00 pm, Monday to Saturday. Construction activities are not anticipated on Sundays or public holidays. Should out of hours works be required, these will be limited to activities that generate lower noise levels where practicable or can show that compliance with the relevant noise and vibration limits can be achieved.

3.0 Roles and Responsibilities

A project team representative must be assigned to be the responsible person for implementation of this CNVMP. All documentation relating to construction noise and vibration shall be reviewed by the Project Manager (or nominated representative) before it is issued.

3.1 Contact Details

The key personnel and contact details for management of construction noise and vibration of the development are provided in **Table 2**.

Table 2 Table for Key Personnel and Contact Details

Role	Name	Organisation	Phone	Email
Project Manager	TBC	TBC	TBC	TBC
Contractor Project Manager	TBC	TBC	TBC	TBC
Complaints Contact	TBC	TBC	TBC	TBC
Acoustic Specialist	LJ Jansen	SLR	[redacted]	[redacted]

3.2 Staff Training and Inductions

Construction noise and vibration management training shall be provided as part of the site induction programme for personnel working on the site. This requires personnel to participate in an induction training session when they commence work.

Inductions must include a briefing on this CNVMP, with attention given to the following aspects in particular:

- Roles and responsibilities for the management of construction noise and vibration.
- Relevant noise and vibration criteria.
- Information about noise and vibration sources on-site and locations of critical surrounding receivers.
- Noise and vibration mitigation measures and management procedures.
- Complaints management procedures.

Activities with the potential to generate elevated noise and/or vibration levels shall be identified and discussed during toolbox meetings prior to the works being undertaken. The tool-box meetings should also be used to address any concerns or complaints that have been raised.

4.0 Construction Noise and Vibration Criteria

4.1 Noise

Construction noise shall be measured and assessed in accordance with NZS 6803:1999 *Acoustics – Construction Noise*.

The construction noise limits are reproduced in **Table 3**. These limits apply at a position 1 metre from the most exposed façade of occupied buildings.

Table 3 Construction Noise Limits

Time of Week	Time Period	Long-term duration of Construction work (more than 20 weeks)	
		dB L_{Aeq}	dB L_{Amax}
Weekdays	6:30 am – 7:30 am	55	75
	7:30 am – 6:00 pm	70	85
	6:00 pm – 8:00 pm	65	80
	8:00 pm – 6:30 am	45	75
Saturdays	6:30 am – 7:30 am	45	75
	7:30 am – 6:00 pm	70	85
	6:00 pm – 8:00 pm	45	75
	8:00 pm – 6:30 am	45	75
Sundays and public holidays	6:30 am – 7:30 am	45	75
	7:30 am – 6:00 pm	55	85
	6:00 pm – 8:00 pm	45	75
	8:00 pm – 6:30 am	45	75

4.2 Vibration

Construction vibration shall be measured and assessed in accordance with DIN 4150-3:2016 *Structural Vibration – Effects of Vibration on Structures*.

The construction vibration limits are reproduced in **Table 4**. These criteria are intended to avoid cosmetic building damage (e.g., plaster or paint cracking).

Table 4 Guideline Values for Vibration

Line	Type of Structure	Guideline values for vibration in mm/s				
		Short-term Vibration				Long-term Vibration
		Vibration at the foundation at a frequency of:			Vibration at horizontal plane of highest floor at all frequencies	Vibration at horizontal plane of highest floor at all frequencies
		1-10Hz	10-50Hz	50-100Hz		
1	**Commercial type building**	20	20-40	40-50	40	10
2	**Residential type building**	5	5-15	15-20	15	5
3	**Listed buildings and sensitive to vibrations**	3	3-8	8-10	8	2.5

5.0 Stakeholder Engagement

Effective communication with surrounding receivers is an important component of managing construction noise and vibration effects. Clear and proactive engagement assists in setting expectations, reducing disruption, and addressing concerns in a timely manner.

Stakeholder engagement will be undertaken throughout construction of TKE, particularly where activities have the potential to generate noise or vibration close to the limits at nearby receivers.

5.1 Liaison with Community

Prior to the commencement of construction, occupiers of nearby buildings (within 50m of the work areas) should be informed of the proposed works where those works have the potential to generate audible noise or perceptible vibration effects.

Communication should include as a minimum the following:

- a description of the proposed construction activities;
- anticipated working hours;
- the expected duration of works;
- the nature of activities likely to generate elevated noise or vibration levels;
- mitigation and management measures proposed; and
- contact details for site personnel.

Where higher noise or vibration generating activities are proposed in proximity to neighbouring receivers, advance notification may be provided to affected parties regarding the timing, duration, and nature of the works.

Ongoing communication may include letter drops, email updates, project newsletters, meetings, or direct engagement with affected receivers, as appropriate to the scale and nature of the works.

Records of stakeholder engagement should be maintained for the duration of the Project and made available to Council on request.

5.2 Liaison with Council

The Contractor Project Manager (or nominated representative) shall be responsible for communication with the relevant Council(s) during construction.

This may include:

- responding to enquiries from Council officers;
- providing updates on construction activities where required;
- reporting on complaints received and actions taken;
- providing monitoring results where monitoring has been undertaken; and
- coordinating monitoring and mitigation measures where required.

6.0 Construction Equipment Emission Data

6.1 Noise Emission

Table 5 presents typical construction plant noise levels and indicative setback distances to achieve the daytime construction noise criteria.

The noise emission levels are based on representative construction equipment and are intended to identify activities where construction noise management measures are most likely to be required.

Table 5 Plant Items and Typical Noise Emission Levels

Activity	Plant Item	Sound Pressure Level at 10m	Approximate setback distance without mitigation – for compliance with 70 dB L_{Aeq}
Excavation / levelling site	Excavator (5-20t) fitted with a bucket attachment	70 dB L_{Aeq}	15 m
	Excavator (20-30t) fitted with a bucket attachment	75 dB L_{Aeq}	25 m
	Excavator (≥30t) fitted with bucket attachment	80 dB L_{Aeq}	45 m
	Dozer (≤10t or ≤80kW)	75 dB LAeq	25 m
	Dozer (10-25t or 80-165kW)	80 dB L_{Aeq}	45 m
	Dozer (25-40t or 165-275kW)	80 dB L_{Aeq}	45 m
Compaction	Non-vibratory roller (<15t)	65 dB L_{Aeq}	10 m
	Vibratory Plate Compactor (<250kg)	70 dB L_{Aeq}	15 m
	Vibratory roller (<8t)	75 dB L_{Aeq}	25 m
	Vibratory roller (8-12t)	80 dB L_{Aeq}	45 m
	Vibratory roller (>12t)	80 dB L_{Aeq}	45 m
Piling works	Excavator (20-30t) fitted with auger piling attachment	75 dB L_{Aeq}	25 m

Notes:
A) The setback distance for the compactor is based on six movements (passing an individual receiver) every 15 minutes, as the compactor is anticipated to move across the site rather than operate from a fixed location.

6.2 Vibration Emission

Table 6 provides indicative vibration levels and corresponding setback distances for typical construction plant. The indicative vibration levels are based on representative construction plant and are intended to identify situations where additional management measures or monitoring may be appropriate.

These values are indicative only and will vary with ground conditions, plant type, and operation. Vibration effects are generally limited to short distances and are most likely where works occur close to buildings.

Table 6 Plant Items and Typical Vibration Levels

Activity	Plant Item	Approximate Distance to 5mm/s PPV
Bored Piling	Excavator (≤20) with piling attachment	1-2m
Compaction	Vibratory plate compactor (≤100kg)	1-2m
	Vibratory Single drum roller <7t[3]	6-10m
	Non - Vibratory single drum roller <7t[3]	<1m
	Padfoot roller 12t- vibration mode on	3m
	Padfoot roller 12t - vibration mode off (static)	<1

Where vibration generating works are undertaken within the indicative setback distances identified in **Table 6**, site specific management measures, including vibration monitoring where necessary, shall be implemented.

7.0 Mitigation and Management Measures

The recommended noise and vibration mitigation measures provided in **Table 7** have been identified to control construction generated noise and vibration levels such that they generally comply with the relevant applicable noise and vibration requirements. These recommended mitigation measures are considered to be the Best Practicable Options (BPO) and should be implemented as far as is feasible and practicable.

Table 7 Recommended Noise and Vibration Mitigation Measures

Activity	Recommended Mitigation Measures
General Site Management	• Plant and equipment shall be maintained in good working order. • The smallest and quietest practicable plant shall be used where practicable. • Equipment shall be fitted with silencers or mufflers and maintained accordingly. • Machines not in use shall be shut down or throttled down. • Delivery vehicles shall not idle unnecessarily. • Materials and tools shall not be dropped from height where practicable. • Higher noise activities shall be undertaken during daytime periods where practicable. • Broadband reversing alarms shall be used where practicable. • Where construction plant, equipment, or methodologies differ materially from those assumed in this CNVMP, advice from the Acoustic Specialist shall be sought.
Earthworks, Site Formation and Clearing	• Drop heights for materials shall be minimised where practicable. • Truck movements shall be planned to minimise reversing movements. • The number of trucks operating concurrently shall be minimised where practicable. • Tailgate slamming shall be avoided where practicable. • Higher noise plant shall be located as far from neighbouring receivers as practicable. • Stationary plant shall be located away from neighbouring receivers where practicable. **Excavation equipment setup** • Excavation equipment to be limited to a 5-20 t excavator with bucket attachment at distance greater than 15 m of occupied dwelling. • Excavation equipment to be limited to a 20-30 t excavator with bucket attachment at distance greater than 25 m of occupied dwelling. • Excavation equipment >30 t excavator with bucket attachment at distances greater than 45 m of occupied dwelling. **Clearing and Levelling equipment setup** • Dozer to be limited to a <10 t at distance greater than 25 m of occupied dwelling. • Dozer to be limited to 10-25 t at distance greater than 45 m of occupied dwelling. • Dozer <25 t at distances greater than 45 m of occupied dwelling. If Earthworks, Site Formation and Clearing works are required within 15 m for excavators and within 25m for dozers of an occupied dwelling , , the works should be carried out by a low noise generating plant or temporary acoustic fencing should be in place between the source and receiving building – mitigation measures should be to be confirmed by the Acoustic Specialist.

Activity	Recommended Mitigation Measures
Piling Works	• Lower noise piling methods shall be used where practicable. • Lower noise or lower energy methods shall be adopted where practicable. • Additional mitigation measures, including temporary acoustic screening, staging controls, or alternative methodologies, shall be implemented where practicable. • Unnecessary revving of plant shall be avoided. • Monitoring shall be undertaken where required to verify effects or investigate complaints. **Piling equipment set up:** • Auger Piling with an excavator (20-30t) fitted with an auger piling rig at distance greater than 25 m of occupied dwelling. • Impact piling at distance greater than 75 m of occupied dwelling. If piling works are required within 25 m of an occupied dwelling, the works should be carried out with mitigation measures as identified by the Acoustic Specialist.
Compaction Works	• Compaction plant shall be selected and operated to minimise noise and vibration effects. • Unnecessary concurrent operation of compaction plant and other higher noise equipment shall be avoided where practicable. • Vibratory compaction near buildings shall be avoided where practicable or operated in static mode where appropriate. • Plant shall not idle or operate unnecessarily near receivers. **Compaction equipment set up:** • Non-vibratory compaction rolling for work that is at distance greater than 10m of an occupied dwelling. • Vibratory plate compaction (<250kg) for work at distance greater than 15m of an occupied dwelling. • Vibratory comparison with a compaction roller (<8 t) for work at distance greater than 25m of an occupied dwelling. • Vibratory comparison with a compaction roller (>8 t) for work at distance greater than 45m of an occupied dwelling. Where compaction works are required within 15 m for excavators and within 10 m of an occupied dwelling, the works should be carried out by a low noise generating plant or temporary acoustic fencing should be in place between the source and receiving building – mitigation measures should be confirmed by the Acoustic Specialist.

8.0 Complaint Handling

A Public Complaints Contact shall be appointed (refer **Table 3**) and shall be responsible for receiving and managing all construction noise and vibration complaints.

All complaints shall be recorded in complaints register and managed as follows:

- record details of the complaint (date, time, location, nature of concern, and contact details where provided)
- acknowledge the complaint and advise it will be investigated
- investigate by reviewing site activities and, where appropriate, observing noise or vibration levels
- implement mitigation where practicable if construction activities are contributing to the complaint
- advise the complainant of the outcome and actions taken
- record the outcome and any mitigation measures implemented

Where a complaint indicates higher than anticipated effects, monitoring may be undertaken where appropriate to verify levels, investigate the complaint, and inform further mitigation.

Where a complaint cannot be resolved through standard mitigation measures, the construction methodology shall be reviewed and additional mitigation, monitoring, or engagement with the affected receiver shall be undertaken where reasonably practicable.

Complaint records shall be made available to Council on request.

9.0 Monitoring

Monitoring should be undertaken on a targeted basis to verify effects during higher risk construction activities subject to finalised equipment and methodology selection, respond to complaints, and support adaptive management.

9.1 Noise

Construction noise monitoring should be undertaken:

- in response to reasonable noise complaints
- where higher noise generating activities are undertaken within approximately 50 m of sensitive receivers
- where verification of noise levels is required to inform management actions

Noise monitoring, where required, shall:

- be undertaken by a suitably qualified and experienced person
- be conducted in general accordance with NZS 6803 and NZS 6801
- be undertaken at a position representative of the most affected receiver
- reflect the construction activities being carried out at the time

Where practicable, measurements shall be undertaken at a location approximately 1 metre from the façade of the most exposed building. Where access to such a position is not available, measurements shall be taken at an alternative representative location.

9.2 Vibration Monitoring

Construction vibration monitoring should be undertaken:

- in response to reasonable vibration complaints
- where vibration generating activities are undertaken within the indicative vibration setback distances identified in Table 6
- where verification of vibration effects is required

Vibration monitoring, where required, shall:

- be undertaken in accordance with DIN 4150-3
- measure peak particle velocity (PPV) at a location representative of the nearest affected building
- reflect the construction activities being carried out at the time

Where monitoring indicates that vibration levels are approaching or exceeding the applicable DIN 4150-3 guideline values, construction activities shall be reviewed and appropriate management measures implemented.

10.0 Reporting

The Contractor shall maintain records of:

- stakeholder engagement
- complaints and actions taken
- monitoring undertaken and results
- mitigation measures implemented

Records shall be retained for the duration of construction and made available to Council on request.

Where monitoring is undertaken, a summary of results and any actions taken shall be made available to Council on request.

Example templates for stakeholder engagement and complaints are provided in:

- **Appendix A** – Record of Stakeholder Engagement
- **Appendix B** – Complaints Register

These templates may be adapted by the contractor as required.

Reporting under this CNVMP is intended to support the ongoing management of construction noise and vibration effects and provide transparency in how effects are being addressed.

Appendix A Example Template for Discussions with Neighbours

Construction Noise and Vibration Management Plan

Te Kowhai East Industrial Development

Te Kowhai East Limited Partnership

SLR Project No.: 810.032016.00001

28 August 2026

A.1 Neighbour Discussion

Date and Time:	
Location:	
Contractor's Representative:	
Public Member Individual/Representative/Group:	
Discussion Topics:	
Feedback:	
Outcome:	

Appendix B Example Complaints Record

Construction Noise and Vibration Management Plan

Te Kowhai East Industrial Development

Te Kowhai East Limited Partnership

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28 August 2026

B.1 Complaints Record

Date and Time:	
Location:	
Contractor's Representative:	
Complainant details (name and contact number/email):	
Nature of the Complaint:	
Comments:	
Outcome:	

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