REPORT

Tonkin+Taylor

Construction Noise Management Plan

Wellington Airport Seawall Renewal

Prepared for
Wellington International Airport Limited
Prepared by
Tonkin & Taylor Ltd
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Table of contents

1 Introduction

1.1 Overview

Wellington International Airport Limited (WIAL) has engaged Tonkin & Taylor Ltd (T+T) to provide a Construction Noise and Vibration Management Plan (CNVMP) for the Southern Seawall Renewal Project (the Project) at Wellington International Airport (the Airport).

The existing Airport-wide Construction Noise Management Plan (ACNMP)[1] outlines procedures to manage noise during general construction and maintenance works in the Airport area. The ACNMP is required under WIAL's Airport Designations[2]. While the Southern Seawall Renewal Project (the Project) is not being authorised under the designation, consistent with the intent of the designation, T+T has prepared a project specific management plan for airborne noise and ground-borne vibration from activities associated with the construction works relating to the Project.

The purpose of the CNVMP is to:

1 Minimise the adverse effects of construction noise on sensitive receivers within the local community.

2 To minimise the adverse effects of construction noise on marine fauna.

3 Document the measures to be employed by the Consent Holder to minimise construction noise on noise sensitive receivers and marine fauna.

4 Set out monitoring and reporting requirements to demonstrate the effectiveness of the mitigation measures implemented in the CNVMP to manage the effects of construction related noise.

This CNVMP applies to all construction activities undertaken as part of the Project; this includes but is not limited to:

- The construction and operation of three yards:
  - The Miramar Golf Course Yard (MGC Yard)
  - The George Bolt Street Yard (George Bolt Yard)
  - The Moa Point Yard
- The Southern Seawall site enablement works, which incorporates:
  - Site preparation
  - Ground improvement (which will involve micro piling)
- Kororā Colony construction
- The Eastern Bank Remediation works
- Southern Seawall construction

The CNVMP also considers:

- Underwater noise generated by the works and marine mammals
- The impact on kororā (little penguins)
- Traffic movements for the delivery of rock and armour units to the yards

Activities that are not specifically recognised as part of this CNVMP will be addressed as they are identified.

[1] WIAL Airport wide Construction Noise Management Plan – May 2023
[2] WIAL4 and WIAL5.

If appropriate, this CNVMP will be updated to reflect activities as they occur and when assumptions (plant, methodologies etc.) differ to those projected to be carried out as part of this project. Any such updates will be subject to the processes specified in the conditions of consent for the Project.

1.2 Contact details

The contractor's project manager will be responsible for providing management of the onsite day to day noise and vibration emissions from the construction site. T+T, acting as WIAL's acoustic consultant will provide technical oversight of all noise and vibration issues. This CNVMP provides guidance on how this management should be undertaken.

Table 1.1: Roles and responsibilities

Role	Name	Organisation	Phone	Email
WIAL Project Manager	Trent Kleinsman	WIAL		
WIAL Complaint Manager	Jo Lester	WIAL		
Complaints hotline		WIAL		
Contractor's Project Manager	Craig S Campbell	McConnell Dowell		
Council Compliance Monitoring Officer	Lindsay Hannah	WCC		
Acoustic advisor	Darran Humpheson	T+T		

WIAL will be the central focus for communication for the Project and will coordinate communications (including complaints) between the community, WCC and the contractor (McConnell Dowell). The contractor will manage the day-to-day effects of noise from construction activities, with input from the acoustic consultant, WIAL and the construction team on site.

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 description

2.1 Overview

The Project involves part renewal and strengthening of the existing airport runway seawall defences within Lyall Bay. Figure 2.1 shows the scale of the Project and the proximity of the different aspects of the work to the airport and the larger area.

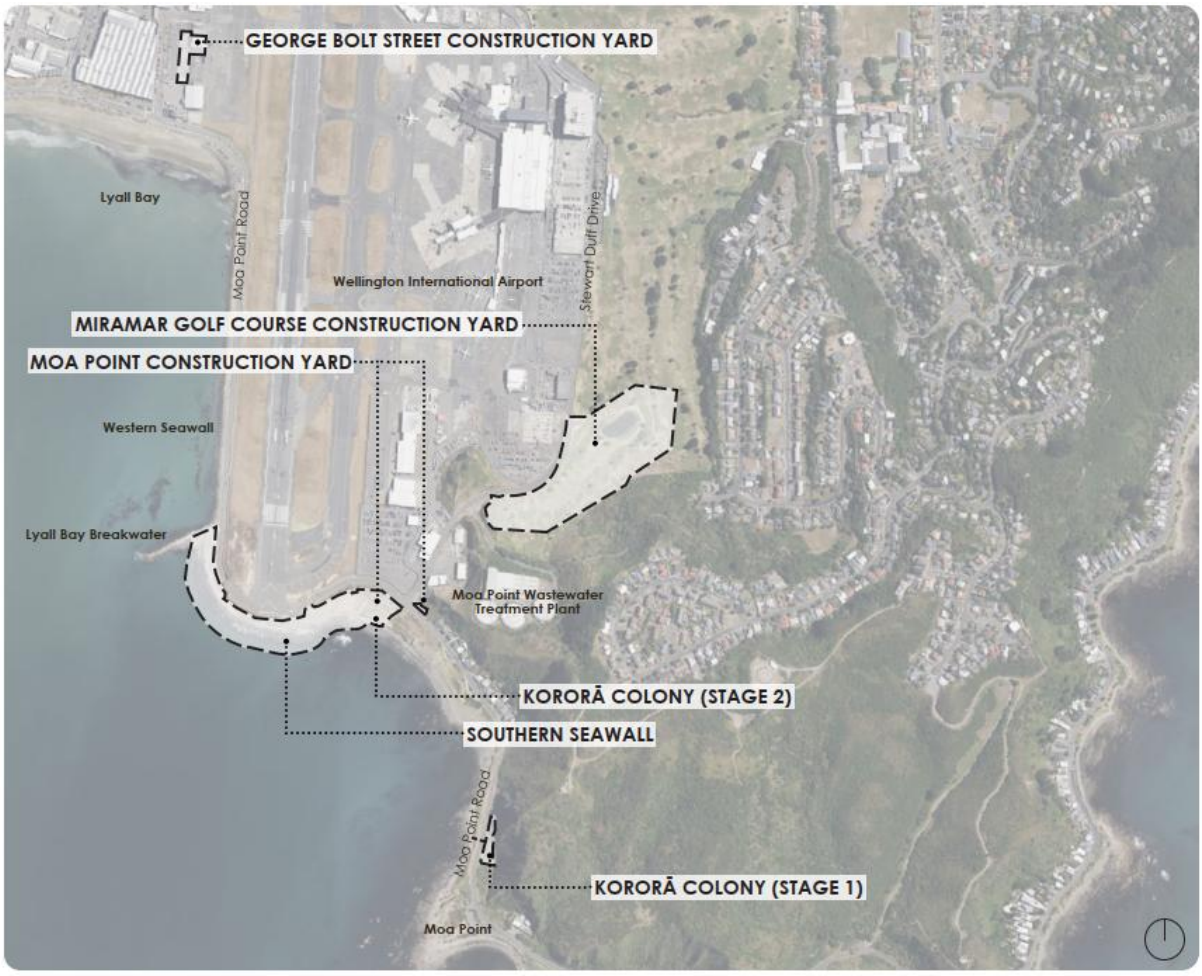

Figure 2.1: Overall site location plan showing sea defences and yards.

2.1.1 Obstacle limitations surface (OLS)

The presence of the OLS means that a significant amount of the Southern Seawall work will need to be performed during the 1 am to 6 am night period when the Airport's curfew operates.

2.2 Miramar Golf Course Yard (MGC Yard)

The MGC Yard will serve as the primary storage area for the Project. It will be used to stockpile rock, Cubipods and other materials and store plant and equipment. The MGC Yard is needed in advance of the seawall works to facilitate the gradual stockpiling of rock and small numbers of Cubipods over multiple years. The yard will also house a site office and staff welfare facilities. Site establishment will begin as soon as consents are granted and will require extensive earthworks and associated activities to level the site to an appropriate grade and provide services, drainage, erosion and sediment control, and to form unbound access roads and construct concrete entry / exit crossings.

MGC yard construction will take place from 7:30 am to 6:00 pm, Monday to Saturday. Other ancillary works, not involving large plant, may be undertaken between 6:30 am and 7:30 am.

The MGC Yard will operate fully from 7:30 am to 6:00 pm, Monday to Friday, and from 7:30 am to 6:00 pm on Saturday and Sunday. On weekdays between 6:30 am and 7:30 am and 6:00 pm and 8:00 pm, heavy vehicle access will be restricted to Stockpile 4 only (highlighted in Figure 2.2), with the remainder of the yard closed to heavy vehicles during these times. Outside of these hours, access to the yard will be limited to light vehicles only.

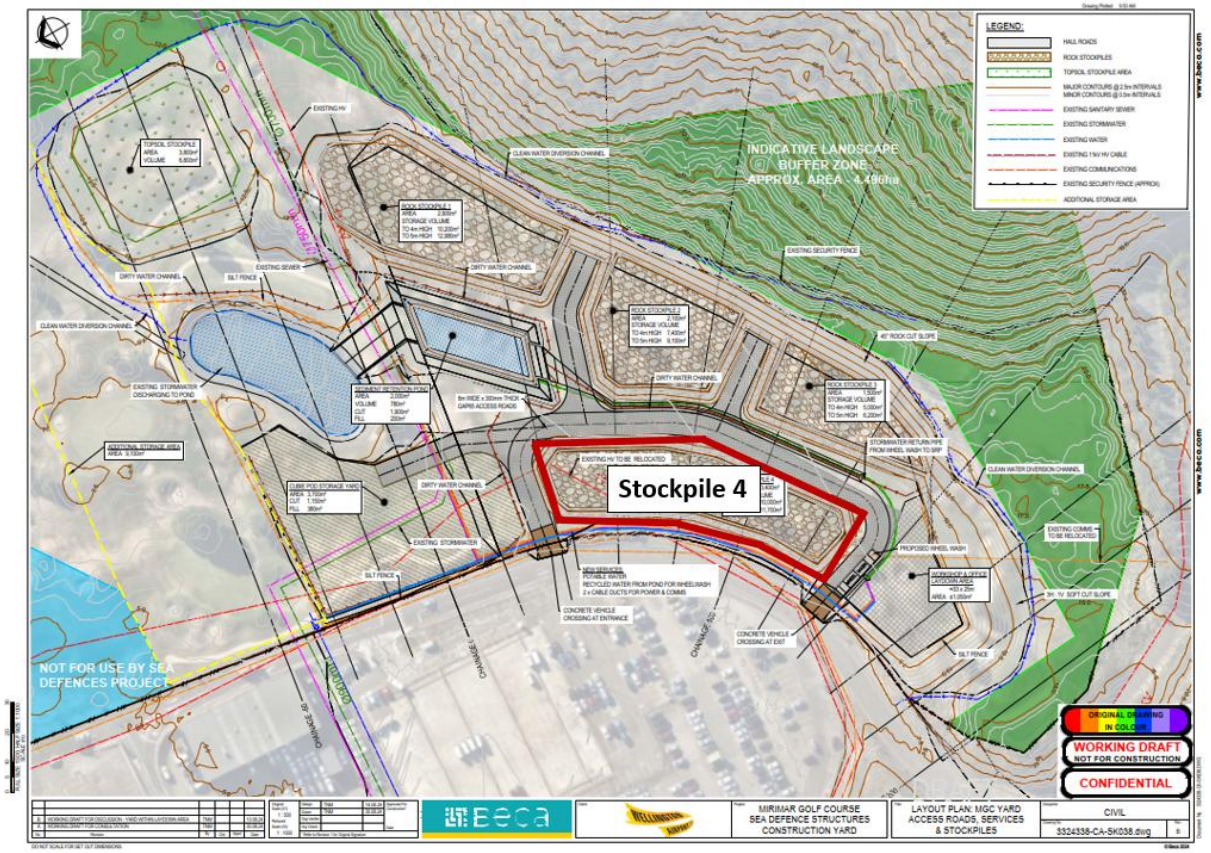

Figure 2.2: MGC yard layout.

2.3 George Bolt Yard

The George Bolt Yard is currently used for various storage activities. During the Project, the yard will be used to store construction materials, plant, equipment, and maintenance area. The yard will operate 24 hours a day, 7 days a week. Upon Project completion, the yard may continue to be used for armour unit storage or other airport related activities.

2.4 Moa Point Yard

Construction of the Moa Point Yard will take place from 7:00 am to 6:00 pm, Monday to Saturday. Prior to the commencement of seawall construction, deliveries of rock and armor units to the Moa Point Yard for storage purposes will take place during the following times:

- Weekdays: 6:30 am – 8:00 pm
- Weekends and public holidays: 7:30 am – 6:00 pm

During seawall construction, Moa Point Yard will serve as the main operational hub, operating 24 hours a day, 7 days per week. The site will be recontoured and all-weather unbound access roads will be formed to facilitate yard activities. Once operational, the yard will store construction materials and support general plant setup and maintenance. Rock, Cubipods and construction materials and equipment to support the seawall works will be transported from the MGC Yard to the Moa Point Yard during the day to ensure ready access to necessary materials overnight, thereby improving construction efficiency and minimising overnight truck movements. Upon Project completion, the yard will be rehabilitated.

2.5 Ground improvements

Discrete ground improvements adjacent to the existing Southern Seawall will be required to safely support construction equipment. Ground improvements will comprise cement stabilised hardstanding, using steel piles to provide additional support.

Circa 300 sacrificial reinforced micro piles (250 – 300 mm diameter) will be installed using a low head height piling rig to drive temporary steel casings to the designed embedment depth. The excavated temporary steel casings will be reinforced and backfilled with tremie poured concrete to the designed embedment depth.

The plant and equipment required to conduct the micro piling will be able to operate under the OLS, therefore, construction hours will be:

- Weekdays: 6:30 am – 8:00 pm
- Weekends and public holidays: 7:30 am – 6:00 pm

2.6 Southern Seawall construction

Once the site is established, the construction process includes removing existing reno mattresses, gabion baskets, Akmons and rock from the seawall crest area; excavating the seawall toe trench; smoothing rock pinnacles; and breaking existing Akmons and placing underlayer rock and reused Akmons. A double layer of Cubipods will be installed over the underlayer. Additional tasks include placing a seaward crest wall, re-constructing the wave trap, and replacing backslope rock armour.

The upgraded Southern Seawall will extend approximately 400 m (measured along the crest) from Lyall Bay Breakwater to the end of the existing informal Eastern Area rubble seawall. The majority of the work will be done using shore-based equipment, with marine based equipment potentially used as needed. The construction is expected to take approximately 24-30 months, operating up to 24 hours a day, 7 days a week, with activities that will penetrate the Airport's OLS scheduled to occur overnight; outside the Airport's core operating hours.

2.7 Eastern Bank Remediation

The Eastern Bank Remediation involves protecting approximately 80 m of bank with rock to reduce erosion. The plant and equipment required for works on the Eastern Bank Remediation will be able to operate under the OLS, therefore, construction hours will be:

- Weekdays: 6:30 am – 8:00 pm
- Weekends and public holidays: 7:30 am – 6:00 pm

It will take approximately three months to construct the Eastern Bank Remediation.

2.8 Kororā colonies

The Stage 1 Kororā Colony – located on the landward side of Moa Point Road, south of the Airport – will be constructed early in the Project, in advance of the main seawall construction. This will allow for the relocation of kororā before habitat within the construction footprint is lost. The Stage 2 Kororā Colony will be constructed on the south-eastern part of the Moa Point Yard (following site demobilisation), on completion of the Southern Seawall.

Construction of the Stage 1 Kororā Colony will involve the installation of a precast concrete underpass beneath the road, and placement of rocks to enhance the kororā passage entrance. Piles of hand placed rocks will be used to improve kororā access, shelter and nesting opportunities, based on ecological advice. Minor earthworks will be required to improve kororā access, shelter and nesting opportunities at the Stage 2 site.

The plant and equipment required for works on the kororā colonies will be able to operate under the OLS, therefore, construction in this area will occur within daylight hours. It will take approximately three to six months to construct each stage of the kororā colonies.

2.9 Traffic movements

Traffic movements[3] will consist of deliveries of rock and armour units (Cubipods). The rock will either originate from the Taranaki region and arrive via road, or from the South Island through a central marine port. The bulk of the rock will be stored at the MGC Yard before being relocated to the Moa Point Yard when needed for construction. Armour units will be delivered by road, with 85% of them being transported directly to the Moa Point Yard and the remainder to the MGC Yard.

As part of the establishment works, approximately 100,000 m^3 of earth are proposed to be removed from the MGC Yard. For sustainability purposes and to reduce the number of traffic movements, the earth will be carried by the rock/armour unit supply trucks whenever feasible. These trucks will bring in the rock and armour units and load up with earth upon departure.

It is anticipated that there will be an average of 67 vehicle movements per day over the eight years of the Project. Approximately 68% (or 52 movements) will be heavy vehicle movements[4]. Peak movements numbers could reach 165 movements. There are proposed to be no deliveries during the night, with stockpiles created at Moa Point Yard during the day.

2.10 Indicative Project timeline

The Project is a large, multi-year project, with various external dependencies. The programme will be determined by factors such as lead times for materials, specialist plant availability, safe sea state operating conditions, weather conditions and airport operational requirements. However, the indicative programme is as follows:

- Enablement works at the MGC Yard: Up to 8 years. Rock and Cubipod storage and associated seawall renewal activities within the MGC Yard: 4 to 8 years.
- Establishment and use of the George Bolt Yard (establishment and use activities may occur concurrently): Up to 8 years.

[3] A movement equates to a trip to or from the site, i.e. one trip is two movements.
[4] A heavy vehicle movement is assumed to be a truck and trailer.

- Establishment of the Moa Point Yard (excluding kororā management): 6 months.
- Southern Seawall construction and Eastern Bank remediation: 24 to 30 months.

Elements of the construction programme will overlap; the overall construction programme will take approximately 6 to 8 years to complete.

3 Criteria

3.1 Airport management plans

The Airport has an ANMP to assist stakeholders in complying with the relevant conditions of the Wellington Airport Purposes Designations contained within the WCC District Plan. The ANMP also contains guidance around consultation and complaint handling. The document is geared towards managing noise from normal activities at the Airport, and references the Airport wide ACNMP (referred to above), which is intended for general airport construction and maintenance works. The Airport Purposes designation also requires that more complex construction works, such as those with a longer duration, require a project specific CNMP.

The ACNMP is a requirement of the designation conditions for the Wellington Airport Main Site Area Designation (WIAL4), which has the following conditions regarding construction noise:

35. Construction noise from all construction work within the designation shall be managed so that it complies where practical with the requirements of New Zealand Standard 6803:1999 Acoustics Construction Noise. In managing construction noise, the Requiring Authority shall prepare and implement a Construction Noise Management Plan (CNMP) based on the Airport Wide Construction Noise Management Plan. The CNMP shall be prepared in accordance with the guidance provided by the ANMP. Any construction activity or work that cannot comply with the recommended limits of New Zealand Standard 6803:1999 Acoustics Construction Noise shall be identified and the duration for each activity shall be specified. The best practicable option for reducing noise to a reasonable level shall be adopted for these construction activities.

36. The CNMP shall include the process for identifying the specific management and mitigation required for any night-time construction activity, including measures for consultation with the potentially affected community, procedures for notification prior to night works, maximum duration and frequency of night works, and processes for minimising the need for night-time construction works.

The ACNMP contains a hierarchy of controls which are addressed by this project specific CNVMP. BPO should be adopted for all construction activities.

Risk for project noise is categorised in the ACNVMP as follows:

- **Low** – predicted noise levels are not considered to be significant and are below the relevant performance noise standard(s) of NZS 6803.
- **High** – predicted noise levels without mitigation are likely to meet or exceed the performance noise standard(s) of NZS 6803.

While the Project has not been authorised under the designation, the construction management approach described in this assessment seeks to ensure consistency with the designation.

3.2 Project criteria

A summary of the relevant noise standards for the proposed hours of construction (Monday to Sundays 7:30 am to 6 pm with potential weekends and night-time works) is provided in Table 3.1.

Table 3.1: Project criteria for construction noise

Time of week	Time period	Noise limit dB		Vibration PPV
		LAeq,15min	LAmax	Structural
Weekdays	6:30 am – 7:30 am	55	75	5 mm/s[4]
	7:30 am – 6:00 pm[1]	70	85	
	6:00 pm – 8:00 pm[2]	65	80	
	8:00 pm – 6:30 am[3]	45	75	
Saturdays	6:30 am – 7:30 am	45	75	
	7:30 am – 6:00 pm[1]	70	85	
	6:00 pm – 8:00 pm[2]	45	75	
	8:00 pm – 6:30 am[3]	45	75	
Sundays and public holidays	6:30 am – 7:30 am	45	75	
	7:30 am – 6:00 pm[1]	55	85	
	6:00 pm – 8:00 pm[2]	45	75	
	8:00 pm – 6:30 am[3]	45	75	

1 Referenced as the daytime noise limit.

2 Referenced as the evening noise limit.

3 Referenced as the night-time noise limit.

4 Guideline value increases with higher frequency (5 mm/s PPV for residential properties 1-10 Hz)

4 Noise sensitive receivers

A noise sensitive receiver (NSR) has been defined as a receiver that the assessment has identified as potentially being affected by the Project's construction activities. In relation to this assessment, these NSRs have been mostly identified as residential properties, except where otherwise stated. Transient receivers, such as a person conducting a leisure activity near the site, are not classed as NSRs, as they have the option to simply move away from the noise generating activity.

Given that the Project spans a broad geographical area, it is necessary to categorise the NSRs into distinct sections based on the specific Project elements that could potentially impact them, i.e. yards and physical seawall works.

4.1 MGC Yard receivers

The land next to the MGC Yard location rises above the golf course and provides a direct view across the proposed yard for residential properties situated on Nuku Street, Raukawa Street, Bunker Way, Kekerenga Street, and Ahuriri Street, Strathmore Park.

The Rydges Hotel has been classified as an NSR. However, due to its proximity to the runway, the hotel has been designed with a high degree of sound insulation, and therefore, construction noise from the MGC yard will have a minimal impact on the hotel's occupants.

The MGC yard and its proximity to NSRs is displayed in Figure 4.1.

4.2 George Bolt Yard receivers

The George Bolt Yard is located among commercial and industrial buildings. The third-party commercial units that directly surround the yard are The Warehouse, Repco Lyall Bay, Life Flight and Spruce Goose café. All units are accustomed to operating in the high noise environment adjacent to the Airport. The nearest residential receivers are to the north on Coutts Street and on the eastern side of the runway on Miro Street.

The George Bolt Yard and its proximity to NSRs is displayed in Figure 4.1.

4.3 Seawall works receivers

The closest dwellings to the proposed Southern Seawall construction area (including Moa Point Yard and Eastern Bank remediation) are the residential properties between 33 and 48 Moa Point Road. The nearest NSR at 33 Moa Point Road is approximately 33 m east of the nearest point of the works. The properties on Kekerenga Street are elevated above the golf course to the south.

WIAL owns all the properties between 33 and 48 Moa Point Road except for seven:

1 35 Moa Point Road
2 40 Moa Point Road
3 41 Moa Point Road
4 42 Moa Point Road
5 44 Moa Point Road
6 46 Moa Point Road
7 47 Moa Point Road.

All WIAL owned properties will be unoccupied during the night-time phase of the construction works. The properties maybe used construction staff during the day time period, however alternative accommodation will be provided to construction crew not working on during the night-

time. The proximity of NSRs to the Southern Seawall construction is displayed in Figure 4.1. The private and Airport owned properties on Moa Point Road are highlighted in Figure 4.2.

Figure 4.1: Project total work area and receivers.

Figure 4.2: Moa Point Road private and Airport owned recievers.

5 Activity risk assessment

5.1 Noise sources risk assessment

The following tables lists all significant equipment proposed to be used for each element of the Project. Sound levels for each item of equipment has been estimated from library data in British Standard BS 5228-1:2009 and data provided in the existing ACNMP. The source data can be found in Appendix A.

Every sound source for each activity has been graded low or high risk due to their potential to exceed either the daytime or night-time noise limit at the closest receivers to the area of works.

The rating is based on unmitigated levels, which assumes there is line of sight between the construction activities and the receiver. In a real-world scenario some pieces of equipment are unlikely to exceed the limits due to screening from site hoardings, localised screening using temporary noise barriers, topographic screening or existing buildings and structures.

- **Day** is classified as - 7:30 am – 6:00 pm – Monday to Saturday
- **Night** is classified as - 8:00 pm – 6:30 am – Seven days a week
- **All other times** is classified as any time not listed in point 1 or 2, including Sundays.

Table 5.1: MGC Yard proposed plant risk assessment

MGC equipment	Risk rating		
	Day	Night	All other times (Stockpile 4 only)
40t excavator	Low	N/A	Low
12t excavator	Low	N/A	Low
Bulldozer[1]	Low	N/A	N/A
Grader	Low	N/A	Low
Roller[1]	Low	N/A	N/A
120t crane	Low	N/A	Low
Truck	Low	N/A	Low
Loader	Low	N/A	Low

Note: [1] Proposed to be used for daytime works only.

Table 5.2: George Bolt Yard proposed plant risk assessment

George Bolt Yard equipment	Risk rating		
	Day	Night	All other times
12t excavator	Low	Low	Low
150t mobile crane	Low	Low	Low
Truck	Low	Low	Low
Forklift	Low	Low	Low
Road sweeper	Low	Low	Low
Loader	Low	Low	Low

Table 5.3: Moa Point Yard proposed plant risk assessment

Moa Point equipment	Risk rating		
	Day	Night	All other times
20t excavator	Low	High	Low
12t excavator	Low	High	Low
Grader	Low	High	Low
Truck	Low	High	Low
Loader	Low	High	Low
Roller	Low	High	High
Dozer	Low	High	High

Table 5.4: Ground improvement proposed plant risk assessment

Ground improvement equipment	Risk rating		
	Day	Night	All other times
Micro piling	Low	N/A	Low

Table 5.5: Eastern Bank remediation proposed plant risk assessment

Eastern Bank remediation equipment	Risk rating		
	Day	Night	All other times
90t excavator	High	N/A	High
30t excavator	Low	N/A	Low
Truck	Low	N/A	Low
Loader	Low	N/A	Low

Table 5.6: Southern Seawall construction proposed plant risk assessment

Southern Seawall equipment	Risk rating		
	Day	Night	All other times
30t excavator	Low	High	Low
100t crane	Low	High	Low
300t crane	Low	High	Low
Bulldozer	High	High	Low
Truck	Low	High	Low
Loader	Low	High	High
Roller	High	High	High
Barge	Low	High	Low

5.2 Vibration sources risk assessment

Piling is the only activity that is likely to cause significant vibration levels at local receivers. Table 5.7 provides a risk assessment based on the likelihood that the activity would exceed:

- 5 mm/s PPV, the vibration threshold that cosmetic damage has the potential to occur.
- 1 mm/s PPV, the vibration threshold when there is the potential for complaints by local receivers if they are not given prior warning.

If the threshold is likely to be exceeded at local receivers, the activity has been rated as high risk, if the threshold is not likely to be exceed it is rated low risk.

Table 5.7: Vibration generating plant risk assessment

Significant vibration generating equipment	Risk rating	
	5 mm/s	1 mm/s
Piling	Low	Low

5.3 Procedures for managing risk

An overview of the hierarchy of mitigation measures is set out in Table 5.8. The risk rating and colours correspond to those in Table 5.1 to Table 5.7. Where high risk works are to be undertaken works shall adopt the best practicable option to ensure that noise and vibration levels do not exceed a reasonable level. Table 5.8 is framed in general terms; the detailed mitigation measures proposed in respect of the Project are outlined in Section 6.

Table 5.8: Hierarchy of mitigation

Risk	Hierarchy of mitigation
Low	General measures: • Staff training and awareness • Stakeholder/community engagement • General equipment measures
High	Enhanced mitigation measures: • Where practicable place additional acoustic screens including at the source of the noise, i.e. if percussive breaking or concrete cutting is required. • Stakeholder engagement and confirmation of occupancy and times of greatest sensitivity to noise exposure (both residential and commercial). For specific receivers further engagement with specific properties may be required with works ideally arranged to be conducted when properties are unoccupied, or occupants inform the contractor that works will be less intrusive at specific times. • Methodology to be changed e.g. quieter/lower noise generating equipment selected.

6 Mitigation

The noise risk categorisation for the Project is high due to the extended duration of the Project, night-time working and the predicted exceedances of the Project's noise limits. Due to the high-risk categorisation, this project-specific CNVMP is proposed, consistent with the requirements of the ACNMP and BPO.

6.1 MGC Yard

Noise barriers are considered to have minimal mitigation benefits for the NSRs closest to the MGC Yard due to the NSRs being located on a hill above the yard. As such, noise barriers are not proposed for the MGC Yard for this Project.

The key mitigation measure for the MGC Yard is limiting the time and areas of use. The construction and operation of the main MGC Yard will only occur between 7:30 am and 6:00 pm from Monday to Friday, and between 7:30 am and 6:00 pm on Saturday and Sunday.

The Stockpile 4 area (highlighted in Figure 2.2) will be used exclusively on weekdays between 6:30 am and 7:30 am, and 6:00 pm and 8:00 pm, with the remainder of the yard closed to heavy vehicles during these times. Deliveries or collections during these times will also be limited to the Stockpile 4 area. At all other times, no significant noise-generating activities or deliveries will take place.

6.2 George Bolt Yard

With no exceedances of either the day or night-time noise limits, 24/7 yard operations would be classified as low risk in accordance with the ACNMP. No specific mitigation measures are required.

6.3 Moa Point Yard

Prior to the commencement of Southern Seawall construction, noise generating activities should be limited to the following:

- Weekdays: 6:30 am – 8:00 pm
- Weekends and public holidays: 7:30 am – 6:00 pm

At all other times, no significant noise generating activities or deliveries will take place. During Seawall construction, however, the yard will be required to operate 24/7.

Noise barriers around this area will have minimal impact on most NSRs due to their elevated locations above the site, such as those on Kekerenga Street. Where practicable, a 2 m high fixed noise barrier or site fence may be constructed along the eastern boundary of the yard. This would provide some noise reduction for properties along Moa Point Road. However, due to the geography of the site, the only non-WIAL owned property where a barrier could practically break the line of sight between the proposed yard and the receiver is 35 Moa Point Road.

The maximum noise reduction provided by this barrier would be 8 dB. However, this reduction will only occur when works are conducted close to the barrier. As the distance from the barrier increases, its effectiveness decreases. Further details on noise barrier limitations are provided in Section 6.10.1. Therefore, the installation of noise barrier at the eastern boundary should only proceed if there are no safety concerns, such as those associated with high winds.

The primary mitigation for reducing noise from the yard will involve adhering to general noise management best practices, as detailed in Sections 6.13 to 6.16.

6.4 Ground improvement (piling) mitigation

Although micro piling is not predicted to cause any noise exceedances, providing letter drops specifying the piling schedule to all occupied properties between 33 and 48 Moa Point Road would promote good community engagement.

6.5 30 to 32 Moa Point Road

The land belonging to 30–32 Moa Point Road, which is owned by WIAL, is currently unoccupied with no dwellings or structures. This is expected to remain the case throughout the construction process, providing a buffer zone between construction activities and NSRs.

If the land belonging to 30 Moa Point Road is required for site parking, individuals arriving at the site should drive slowly and keep engine revs to a minimum. Vehicle stereos should remain off, and vehicle doors should not be slammed. The area should not be used for smoking or recreational purposes, and voices should be kept at a respectful level.

6.6 WIAL owned Moa Point Road properties

It is recommended that the residential properties owned by WIAL along Moa Point Road are occupied by construction staff working on the project. This is particularly critical as Southern Seawall construction works will take place at night (scheduled for approximately three years).

6.7 Private residential properties on Moa Point Road

WIAL has previously offered to purchase the privately owned residential properties between 33 and 48 Moa Point Road. This offer will be repeated to the residents of these properties and will remain in place throughout the Project.

Occupiers of the private residential properties on Moa Point Road[5] will be kept up to date with the proposed construction schedule for the upcoming weeks and kept informed of progress. They will be offered regular meetings, in which specific concerns are addressed, especially if there are any specific activities creating unnecessary disturbance. The construction team will take these concerns onboard and assess whether alterations to the construction methodology can be made. If these alterations are not practicable, the reasons will be communicated to the residents, and going forward, information about when these activities will occur will be made available to the residents upon request.

6.8 Vehicle movements

Traffic movements, specifically rock and armour unit deliveries, will be staggered throughout the daytime period so that noise generated from the heavy vehicle movements is not concentrated over a short period. Further details are provided in the Traffic Management Plan. Deliveries of rock and armour units will not take place between the hours of 10 pm and 6 am. Material will mainly be moved from the MGC Yard to the Moa Point Yard between the hours of 7:30 am and 6 pm, to provide an appropriate surge pile at the seawall workface.

In terms of general vehicle noise management, appropriate mitigation measures include switching engines off for extended periods, no sudden acceleration or braking and the use of broadband reversing alarms rather than tonal beepers.

[5] Understood by T+T to be 35, 40, 41, 42, 44, 46 and 47 Moa Point Road.

6.9 Underwater noise

Rock milling at the Seawall toe should not be conducted at dawn or dusk when kororā are likely to be swimming to and from their burrows. All plant should be operated in a considerate manner, i.e. to curtail the potential for high noise levels and minimise the impact on kororā and marine fauna.

6.10 Noise barriers

Temporary portable noise barriers may be used at locations predicted to experience construction noise levels greater than relevant noise limits, where barriers would noticeably reduce the construction noise level, and where it is practicable to use temporary barriers. For example, it would be practicable to use barriers for stationary plant or activities but not for plant that moves.

Where practicable, panels should be positioned as close as possible to the construction activity to block line-of-sight between the activity and noise sensitive receivers. Additional local barriers may be necessary near the activity to ensure effective mitigation for sensitive receivers on upper floor levels. The panels should be a minimum height of 2 m, and higher if practicable to block line-of-sight. The panels must be abutted or overlapped to provide a continuous screen without gaps at the bottom or sides of the panels.

6.10.1 Noise barrier limitations

It is noted that wind loading on the temporary noise curtains and screens may limit their use. In cases when high winds may create a health and safety concern due to the noise barriers potentially blowing over, the health and safety of the site workers and aircraft will take priority over the installation of temporary noise barriers.

The noise reduction provided by a noise barrier is due primarily to path difference. A rule of thumb to calculate the reduction is:

- Completely blocking line of sight - 8 dB to 10 dB reduction
- Partially block line of sight - 3 dB to 5 dB reduction

As it is unlikely that a noise barrier would block line of sight with the properties on Raukawa Street above the MGC Yard, or the properties on Kekerenga Street overlooking the seawall construction works, these properties are unlikely to receive any perceptible benefit from noise barriers. Creating a noise barrier that separates Southern Seawall construction works from the Moa Point Road properties is also problematic due the angle of incident between Seawall works and the NSRs making it difficult to break line of sight (see Figure 6.1).

Decisions on the installation of noise barriers will be made on a case-by-case basis with the site management team conducting a risk and benefit assessment before they are installed.

Figure 6.1: Line of sight to Seawall works example

6.11 WIAL Quieter Homes scheme

The WIAL Quieter Homes scheme is designed to provide homeowners living near the airport with improved sound reduction in relation to aircraft noise[6]. As part of the scheme, a ventilation package is offered. This package has the added benefit, in the context of construction noise, of providing residents with an alternative method of ventilation, eliminating the need to open windows. This allows NSRs to keep their windows closed, thereby reducing the impact of construction noise within their properties.

Properties along Moa Point Road and Kekerenga Street are to be offered this ventilation package in 2026 as part of the WIAL Quieter Homes scheme.

6.12 Rock deliveries

Screening of rock deliveries will not be practicable in most cases due to the elevation of NSRs and health and safety constraints due to the high wind environment. Self-screening of trucks (i.e. orienting tipping bed away from receivers) is likely to have limited benefit and may be limited due to the site location. However, the following best practicable options should be followed for all deliveries:

1 Tip carefully close to stockpile
2 Rocks will be placed and not dropped
3 Ensure a soft landing for rock if practicable
4 Do not shake truck body to dislodge material
5 No slamming of tailgates – lower truck bed slowly when stationary

[6] WIAL offers offering homeowners within the Airport's Air Noise Boundary a subsidised package of acoustic mitigation treatment designed to reduce aircraft noise in habitable rooms to a day/night average (Ldn) of 45 decibels.

6 No tonal reversing alarms. Broadband alarms to be fitted and / or reversing minimised

7 No engine braking near the site

6.13 General noise and vibration management

Complaints can arise whether or not noise/vibration complies with the relevant limits. To avoid complaints, general mitigation and management measures include, but are not limited to, the following good practice (most of these requirements equally apply to vibration management, e.g. maintenance and operator best practice):

1 Avoid unnecessary noise, such as shouting, the use of horns, loud site radios, rough handling of material and equipment, and banging or shaking excavator buckets. This is more necessary for works around the seawall as these works are in closer proximity to local residential properties.

2 Locate equipment at a distance greater than the minimum set back distances where practicable. This is specifically relevant to the works on the Eastern Bank Remediation area.

3 Orient machinery to maximise the distance between the engine exhaust and the nearest sensitive building façade. This is specifically relevant to the works on the Eastern Bank Remediation area.

4 Selection of equipment and methodologies to restrict noise and vibration.

5 Utilise noise barriers and/or enclosures where appropriate or practical. It is recognised that the high wind environment makes temporary noise barriers impractical at a lot of locations.

5 A construction liaison group will be established to meet with neighbours and, where practicable, construction works for specific activities will be arranged for times that minimise their impact.

6 Trucks should enter site without engine brakes and leave site with smooth acceleration and low engine revs. This is specifically relevant to trucks entering and leaving Moa Point Yard.

7 When arriving at work, drive slowly on site and keep engine revs to a minimum. Keep stereos off and do not slam vehicle doors. This specifically relevant to the workers arriving at Moa Point Yard.

8 Equipment and vehicles should not be left running when not in use.

9 Limit vehicle horns to emergency purposes only.

10 Where possible, avoid reversing tonal beepers on trucks, opting for flashing lights, broadband alarms or rear sensors where practicable. This is particularly important for any night works to minimise tonal noise. This is more necessary for works around the seawall as these works are in closer proximity to local residential properties.

11 All equipment is to be well maintained - simple maintenance can reduce noise levels by as much as 50 %. For example, preventing tracked vehicles from ‘squealing’ will help to minimise disturbance.

12 Do not slam tailgates of vehicles. This specifically relevant to the workers using Moa Point Yard.

13 Do not drag materials on the ground. Place them down when you arrive at the work area.

14 When loading and unloading trucks do not drop material from a height. Load softer material at the bottom.

15 It is essential that good relationships are maintained with local residents. Any queries from members of the public shall be responded to politely and referred to Wellington Airport’s point of contact. Staff shall assist the public to contact this person. Staff shall not enter into a debate or argue with members of the public.

16 No potentially noisy work will be conducted until all staff involved in the task understands the required noise controls for that task.

6.14 Training

All staff will participate in an induction training session prior to the start of construction, with attention given to the following matter:

- Construction noise limits
- Activities with the potential to generate high levels of noise or vibration
- Noise mitigation and management procedures
- The sensitivity of receivers and any operational requirements and constraints identified through communication and consultation.

Awareness of current noise on, or near, active worksites will be addressed during regular site meetings and/or 'toolbox' training sessions.

6.15 General equipment selection

The Eastern Bank Remediation works proposes the use of a 90t excavator to enable up to 80% of the construction works to be conducted during the day. The use of this equipment during night-time operations will, where practicable, be limited, with the use of smaller excavator or cranes being prioritised. The use of a bulldozer and a roller in the MGC Yard will also be limited to day-time operations.

When selecting construction equipment, where practicable:

- Prioritise quieter construction methodologies
- Prioritise electric motors over diesel engines
- Prioritise rubber tracked equipment over steel tracked equipment
- Equipment should be suitably sized for the proposed task
- Equipment should be maintained and fitted with exhaust silencers and engine covers
- Avoid tonal reversing or warning alarms (suitable alternatives may include flashing lights, broadband audible alarms or reversing cameras inside vehicles).

6.16 General stakeholder engagement

Effective stakeholder engagement is a critical part of managing construction noise / vibration. Specifically, when it comes to works that create a high noise level at night that have limited options for physical mitigation. Stakeholder engagement can have a greater bearing on acceptance of the works than the actual noise levels. Neighbours who understand what, when and why the works are happening are often able to adjust their activities accordingly and are generally more tolerant of construction activities. Stakeholder engagement for construction noise should be integrated with the wider project requirements. Engagement measures include:

- A construction liaison group will be established to organise the communication with the local community throughout the construction.
- Updating the WIAL website[7] with a list of works both current and planned. The works will provide a list of specific times, and the activities proposed for construction activities that will take place during the Airport's curfew hours for the following two weeks. It is understood that these works maybe subject to change due to noncontrollable factors such as weather.

[7] https://www.wellingtonairport.co.nz/noise/construction-noise/

- Prior notification of the high risk works via directed email/letterbox drops or supplemented by other means (news article, website etc) to affected neighbours. The email/letterbox drop will provide contact details and will detail the overall nature and expected duration of the works. The current operation of the Airport is to send out a notification email to all residents signed up to the mailing list every Friday detailing any scheduled night works for the coming week.
- Stakeholder engagement should commence during the planning and mobilisation phase, with neighbours informed at least one week prior to construction works commencing. The information provided should include:
  - The reason for the works
  - The reason for the construction methodology proposed
  - The overall timeframe and timing of specific noisy or vibration producing activities
  - Reason for any night or weekend works
  - Expected noise and/or vibration effects
  - Point of contact including name and the air noise phone number - 0508 AIRNOISE (0508 247 664).

Occasionally works may need to be undertaken for emergency repairs/maintenance. In these situations, WIAL will use its best endeavours to provide advanced warning if works are to occur at night. In this situation, electronic means of notification is appropriate.

6.17 Complaints

6.17.1 Lodging a complaint

Complaints can be made to Wellington Airport via the following means:

- Email: airnoise@wellingtonairport.co.nz.
- Telephone: 0508 AIRNOISE (0508 247 664) (voicemail), or via main airport phone number 04 385 5100.
- Website: noise enquiry form (wellingtonairport.co.nz).
- Writing: Airport Noise Team, Wellington International Airport Limited, PO Box 14175, Wellington.

WIAL also receive complaints via:

- The Wellington City Council Noise Team.
- The representatives on the Aircraft Noise Management Committee (ANMC).

6.17.2 Complaint timescales

If a complaint is received, WIAL's response will meet the following timescale:

- Acknowledgement of the complaint as soon as possible and no later than one working day after receipt of the complaint.
  - Where complaints are made via an email or the website, an automatic response is sent to the complainant acknowledging receipt of the complaint.
  - For complaints made via the AIRNOISE voicemail, WIAL will respond to the complainant within 1 working day to let them know that their complaint has been received and that WIAL will investigate.
- Complaints will be notified to WCC as soon as possible and no later than one working day after receipt of the complaint.

- The complaint will be investigated and WIAL will report back to the complainant within 48 hours.
- The complaint will be closed out (with action taken as appropriate) within three working days from receipt of the complaint.
- WIAL will update WCC on the investigation and outcome following the complaint as soon as possible and no later than three working days after receipt of the complaint.

6.17.3 Complaint investigations

The following procedure shall be followed for all noise complaints:

- All noise complaints should be immediately directed to the WIAL Complaint Manager.
- As soon as the complaint is received it will be recorded on the Noise Enquiries Register as per Section 7 of the ANMP to detail:
  - Time and date the complaint was received and who received it.
  - Time and date of the activity subject to the complaint (estimated where not known).
  - The name, address and contact details of the complainant (unless they elect not to provide).
  - The complainant's description of the activity and its resulting effects.
  - Any relief sought by the complainant (e.g. scheduling of the activity).
- An initial response will be made and recorded within one working day. Depending on the nature of the complaint the initial response could be to determine if the complaint is justified and reasonable. If justified, then 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.
- Where the initial response does not address the complaint, further investigation, corrective action and follow-up monitoring shall be undertaken as appropriate. The complainant will be informed of actions taken.
- All actions will be recorded on the Noise Enquiries Register.

If complaints are made during construction about vibration, or if monitoring determines it necessary, then building condition surveys may need to be undertaken. This is considered unlikely for these works.

Full details of each complaint will be provided to WCC Noise Team (noiseteam@wcc.govt.nz) as per the timescales in Section 6.17.2, and will be included as an agenda item for each ANMC meeting to discuss any corrective actions if the complaint is deemed justified.

6.18 Noise monitoring

If and when measurements are required, they will be conducted at representative locations and not at all receivers. Construction noise levels will be monitored:

- In response to a reasonable noise complaint (Section 6.17);
- At 1 m from the most affected building façade, or proxy position and adjusted for distance and façade reflections where appropriate;
- By a suitably qualified and experienced specialist (e.g. Member of the Acoustical Society of New Zealand) in accordance with the requirements of New Zealand Standard NZS 6803: 1999 "Acoustics - Construction Noise"; and
- For a representative duration, reported with the measured level (e.g. 65 dB $L_{Aeq\ (30min)}$).

A noise monitoring flowchart is presented in Figure 6.2.

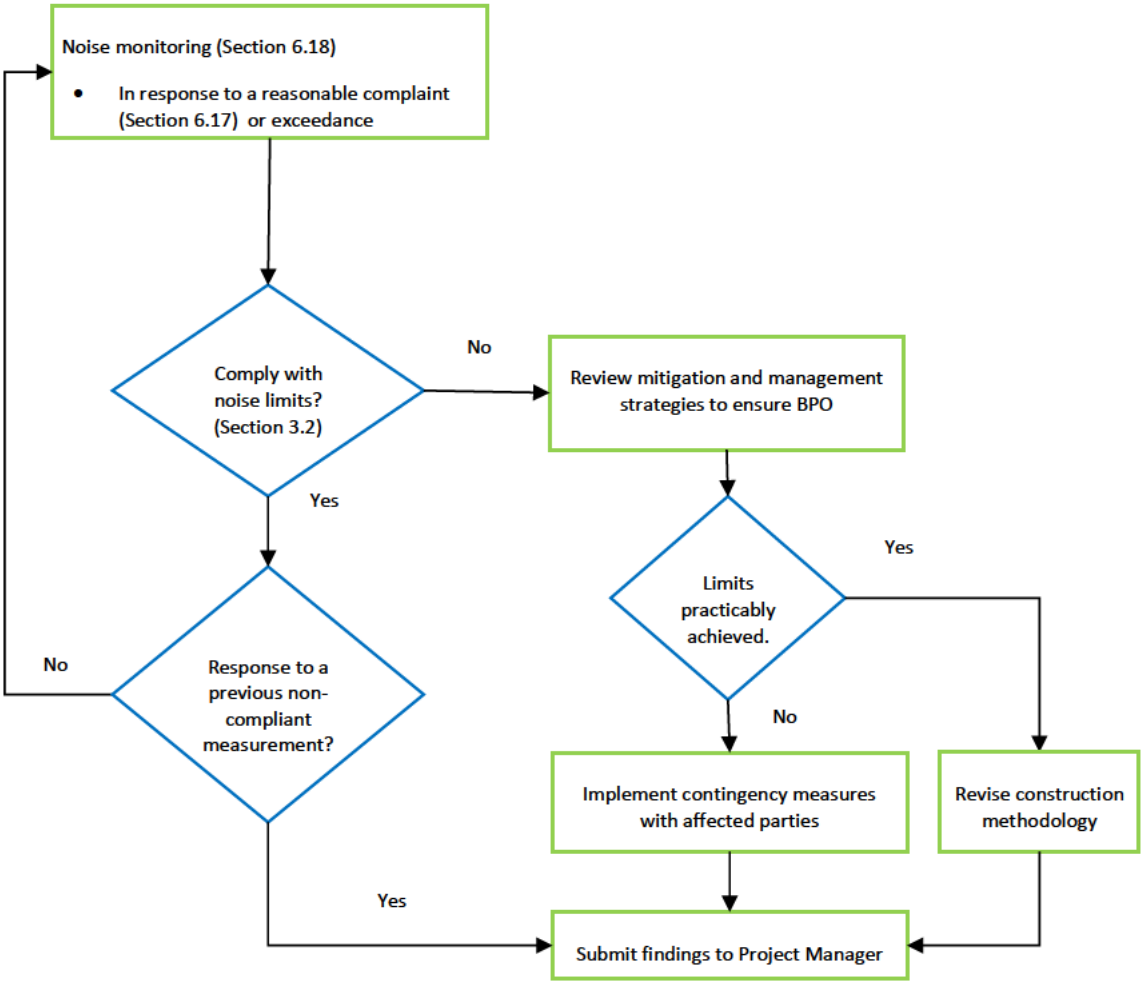

Figure 6.2: Noise Monitoring Flow Chart.

If noise monitoring indicates that Project's noise criteria are being exceeded, and that was not anticipated in the CNMP for the activity/location, then the management plan will be immediately reviewed. The schedule will provide an activity specific assessment together with management controls.

6.19 Documentation

All electronic files relating to construction noise and vibration will be kept by the Project Manager. This will include:

- Section 1: Construction noise and vibration management plans
  - This CNMP and any revisions
  - 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.

Appendix A Sound and vibration source data

Appendix A Table 6.1: Proposed plant noise level at 10 m

Key equipment	Assumed % operating time	Estimated LAeq,15min at 10m / dB
90t excavator	100%	86
40t excavator	100%	79
30t excavator	100%	75
12t excavator	100%	66
150t mobile crane	100%	73
300t crane	100%	76
Barge	100%	75
Bulldozer	75%	84
Forklift	75%	63
Grader	75%	81
Loader	100%	78
Micro piling	75%	80
Road sweeper	100%	70
Roller	75%	84
Truck	75%	73

Appendix A Table 6.2: Significant vibration generating equipment PPV at 10m

Key equipment	Vibration PPV at 10m
Piling	2 – 2.5 mm/s

Appendix B Construction noise and vibration induction

B1 Project: WIAL – Southern Seawall Renewal Project

There are residential 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.

1 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.

2 Upon being inducted into the site all staff will be briefed the relevant specific noise and vibration mitigation detailed in Section 6 of the Construction Noise and Vibration Management Plan (CNVMP).

3 When arriving at work, please drive slowly on site and keep revs to a minimum. Keep stereos off and do not slam doors.

4 No shouting or swearing on site. Either walk over and talk to somebody or use a radio/phone.

5 Be careful with tools and equipment. Place them down and do not drop them.

6 Do not drag materials on the ground. Place them down when you arrive at the work area.

7 Equipment and vehicles should not be left running when not in use.

8 When loading trucks try not to drop material from a height.

9 Stationary equipment such as pumps and generators should be located away from neighbours.

10 All equipment is to be well maintained.

11 If you see anything/anyone making unnecessary noise, then stop it/them. If the source cannot be stopped then report it to a member of the Project team.

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 the project team. Staff shall assist the public to make contact with this person. Staff shall not enter into debate or argue with members of the public.

Name	Company	Signed	Date

www.tonkintaylor.co.nz