

# Minutes

## Port Noise Liaison Committee Meeting: Napier Port Boardroom – 1530, Tuesday 6 May 2025

### 1. Attendance & Apologies

The meeting was opened at 3.39pm, with Eileen von Dadelszen welcoming all attendees.

#### Attendance:

**Committee members:** Hannah Strauss (Napier Port), David Broad (Napier Port), Adam Harvey (Napier Port), Jay Streatfield (Napier Port), Chris Lonergan (Napier Port), Craig Fitzgerald (Marshall Day Acoustics), Councillor Hayley Browne (NCC), Paulina Wilhelm (NCC Manager City Development), Kay Foley (Resident representative), Peter Edmead (Resident representative), Alan Petersen (Resident representative)

### 2. Apologies:

- Ross Jackson (Resident representative), Ian Emmerson (User Representative), Segun Cupido (HBRC), Todd Dawson (Napier Port), Councillor Keith Price (NCC – optional attendee)
- Adopted (Moved: Kay Foley / Seconded: Peter Edmead)

### 3. Confirmation of Previous Minutes

- Peter Edmead commended the quality of the minutes, noting they provided very useful records for tracking discussions, actions, and progress on noise management over time.
- Adopted as a true and accurate record (Moved: David Broad / Seconded: Hannah Strauss)

### 4. Matters arising from previous meeting

- Log Yard Noise Management – Peter Edmead reported that the new log storage yard at the western end of the Port has not generated any noise disturbance for nearby residents. He noted that no additional noise has been observed from this area since the operational change. Adam Harvey confirmed that the yard continues to be used primarily for stockpiling debarked logs ahead of export. While not in continuous use, the yard typically operates every 7 to 10 days when partial log parcels are prepared for shipment.

### 5. Agenda Review

- No additional items added.

### 6. NCC District Plan Update

Paulina Wilhelm (NCC Manager City Development)

- Paulina provided an update on the District Plan Hearings (Stream 4) scheduled for the following week. The hearing will consider all submissions on port noise and airport noise. Key points noted:

- An updated Section 42A report, including an addendum specific to noise, was published on the NCC website the day prior to the noise meeting.
- Jon Styles, an acoustic expert, has been engaged on behalf of the Council.
- Committee members were invited to attend the hearing in person or online.
  
- It was noted that Kay Foley would be presenting to the hearing on Monday, with Peter Edmead scheduled for Tuesday. Cr Hayley Browne noted that she is serving as one of the appointed commissioners hearing the evidence.

## 7. Low Frequency noise update from CEO

Craig Fitzgerald (Consultant, Marshall Day Acoustics) and Hannah Strauss (Environmental and Sustainability Manager, Napier Port) covered off this section in place of Napier Port CEO Todd Dawson

- Craig provided an update on the national vessel noise monitoring programme. Key points included:
- Nearly 90 vessels have now been measured across NZ ports, providing a reliable data set to distinguish between problematic and non-problematic vessels.
- The monitoring framework has proven consistent and repeatable, with early thresholds continuing to hold true.
- An Australian port is now considering adopting the same monitoring approach, which may offer future benefits through shared data and aligned management practices.
  
- Peter Edmead raised ongoing frustrations about the lack of progress from Maritime New Zealand (MNZ) in addressing low frequency ship noise. He noted he had written to MNZ but received little in the way of substantive updates. Craig and other members echoed this frustration, acknowledging that ports and communities are still waiting for MNZ leadership on this issue.
- Kay Foley asked what MNZ's next step should be. Craig explained that while acoustic experts can recommend management practices, regulatory and legal solutions lie with MNZ and government.
- Adam Harvey and Hannah Strauss encouraged residents to raise the matter with their local MP and the Associate Minister of Transport, who is responsible for MNZ. Adam reiterated that Napier Port and other NZ ports had previously attempted to implement a collective standard but were blocked by the Commerce Commission. This reinforces the need for a national regulatory solution.

## 8. Port Activities Update

Adam Harvey (COO, Napier Port)

- Log Yard Operations – The log yard remains fully operational and volumes are stable. Ernslaw One will continue to use rail for log deliveries, and there are no signs of the closed WPI mills restarting in the near future.

- Cruise bookings are forecast to reduce in the next two summer seasons due to:
  - Security issues in the Red Sea requiring longer, less commercially viable routing.
  - Sharp increases in MNZ and Customs levies imposed without consultation, limiting the ability of cruise lines to adjust pricing for customers.
  - Strict NZ biofouling rules, combined with no in-country hull cleaning facilities, creating significant compliance risks for operators.
- Adam noted these issues are part of a broader national industry challenge and are not unique to Napier.
- Container Operations – Post-cyclone recovery has seen a strong bounce-back in containerised exports, particularly squash and apples. Higher-than-usual volumes of empty containers arrived late in the season, creating operational congestion during March and April. Adam noted that while the Port aims to berth noisier ships on more sheltered berths (such as 5 Wharf) when possible, high congestion during peak periods sometimes limits this flexibility.

## 9. 6 Wharf Model Validation Update

Craig Fitzgerald (Consultant, Marshall Day Acoustics)

- Craig provided an update on the recent validation of the Port's future noise contours. He explained that measurements were finally carried out during a peak period in February under ideal weather conditions. These confirmed that the shape of the noise contours aligned closely with the future noise model including the operations on 6 Wharf, providing confidence in its accuracy. Craig confirmed he had documented the findings and Napier Port agreed to share this with the committee.
- Craig outlined the additional measurements taken at Bay View Road, including at Peter Edmead's property and on the nearby public stairway. He noted that noise from a vessel berthed on 6 Wharf was clearly audible from these locations, including a noticeable low frequency "throbbing" sound. While this noise is captured within the overall port noise model, Craig acknowledged it does not offer a solution to the specific character of low frequency noise.
- Kay Foley asked whether low frequency sound could be specifically measured. Craig confirmed that it is not excluded, but explained that standard port noise assessments focus on overall loudness (A-weighted decibels). This reflects how the human ear hears noise across all frequencies but does not highlight the character or "feel" of low frequency noise, which some ships generate. He noted that noise levels in the Bay View Road area sit around 50 dB Ldn (5-day), which is below the 55 dB Ldn (5-day) threshold that defines the Outer Control Boundary in the New Zealand Port Noise Standard and is adopted in the Napier City District Plan rules. As a result, no additional land-use controls or mitigation are triggered for properties in that area.
- Peter Edmead stressed that loudness is not the real issue, describing the persistent, low frequency "throb" as the most disruptive aspect of the noise. He noted that this noise had only become noticeable since 6 Wharf was built, changing the exposure for his property by allowing ship noise to carry around the headland into Bay View Road for the first time.

- Kay pointed out that ship noise had affected residents for years, and while the character and location of the noise had changed with 6 Wharf, the issue itself was not entirely new. She called for greater recognition from the Port that the wider residential community has lived with port noise impacts for a long time. Alan Petersen added that while some noise is annoying, it often remains technically compliant with the District Plan noise limits.
- Craig reminded the committee that port noise standards are designed to manage the overall level of noise, not to eliminate all effects. The standards are based on “material effects” exceeding 55 dB Ldn (5-day) meaning lower-level or character-related changes fall outside formal regulatory control. Craig confirmed the model remains the most accurate and repeatable of any he manages across New Zealand ports, but acknowledged that it does not provide a solution to the specific character of low frequency noise raised by residents.
- David Broad and Adam Harvey reinforced the importance of continuing to work with Maritime New Zealand to find a national solution, noting that shipping lines are not likely to respond to individual ports acting alone. Adam added that many vessels have changed since 6 Wharf opened, with different shipping lines and vessel types producing varying noise profiles. He confirmed the Port holds fortnightly meetings with shipping lines, where noise concerns are raised, but reiterated that collective national action is needed.
- Paulina Wilhelm suggested residents also escalate their concerns to their local MP and MNZ. Adam offered to assist residents by providing advice on who to contact.
- Committee members discussed the importance of specific and timely complaints, noting that only a small number of affected residents regularly report issues, despite wider community impact. Hannah Strauss stressed that the Port relies on these complaints both to investigate issues effectively and to record them in the national ship noise register. She confirmed that this register is shared with environmental teams across New Zealand ports to build a national picture of vessel noise performance, helping to strengthen industry-wide discussions and support calls for regulatory action at a national level. Hannah also agreed with earlier comments about the disconnect between those impacted by ship noise and Maritime New Zealand, which holds regulatory responsibility but has yet to take meaningful action.
- Eileen von Dadelszen suggested reframing the language used to encourage more residents to share their experiences, rather than seeing themselves as “complainers”. Peter Edmead agreed, noting that some residents may choose not to report simply because their immediate neighbours are not affected, even though they are. Eileen summarised the discussion by noting that ships are the source of the noise issues raised, not the Port or council, and acknowledged the limits on what local authorities can achieve without national regulation.
- Adam Harvey reinforced the value of detailed complaints, emphasising the importance of including vessel name (if known), date, time, and description of the noise. He noted that this information helps the Port investigate and respond more effectively to issues within its control.

## 10. Residents Update

Kay Foley and Peter Edmead (Resident Representatives)

- Kay Foley shared a resident's experience of increased port noise following tree removal near her home, highlighting how changes in the environment can influence how noise is experienced.
- Peter Edmead reiterated concerns about the ongoing impact of low frequency noise from specific vessels berthed at 6 Wharf. He acknowledged the Port's efforts to manage the issue where possible but stressed the need for greater regulatory intervention from MNZ.
- The committee discussed the importance of residents continuing to report specific and timely complaints, noting that this information supports both local noise management and the wider national effort to secure regulatory action through Maritime NZ.

## 11. Complaints received in last 6 months (previously circulated)

Hannah Strauss (Environmental and Sustainability Manager, Napier Port)

- Hannah presented the complaints summary covering the six months from November 2024 to April 2025. Key points included:
- The majority of complaints received during this period related to low frequency ship noise, particularly from vessels berthed at 6 Wharf. Even vessels with low positive NEPTUNES noise scores (such as Antwerp Bridge) generated complaints under certain operating conditions, such as high reefer loadings.
- Hannah noted that specific operational issues raised in previous complaints, such as reversing beeper noise, have led to operational adjustments, including the adoption of quieter visual alarms. Hannah and Adam both reiterated the importance of residents providing specific and timely complaints, emphasising that details such as the vessel name (if known), date, time, and nature of the noise help the Port investigate and act more effectively. It was also noted that operational oversight is provided by the Port's 24/7 security team and shift supervisors, who are available to respond to complaints as they arise.
- Recent complaints relating to ships at anchor were referred to the Harbourmaster, as these fall outside Napier Port's direct control.
- The Port continues to record all complaints in the national ship noise register, which is shared with environmental managers at other New Zealand ports. This helps build a picture of problematic vessels across the country and strengthens discussions with Maritime NZ and shipping lines.
- Peter Edmead commended the quality of the reports, noting they provided very useful data for understanding and tracking noise issues.

## 12. Other Business

- **Port Noise Mitigation Programme Update:** Hannah provided a brief update noting one new dwelling recently completed Stage 2 treatment and that two new dwellings had recently been

assessed – one offer was declined, and one is still awaiting a decision. Hannah confirmed she will share this information with the committee, with individual property details removed to protect residents' privacy.

- **NCC Representation:** Cr Hayley Browne noted her decision not to stand again for NCC but to instead stand for HBRC. Future NCC representation on the committee will be confirmed following the upcoming local government elections.
- **Seascape Update:** It was noted that Seascape, the residents' liaison group, had now formally ceased to operate. Members commented that the organisation had played a role in resetting the relationship between the Port and residents several years ago, with committee discussions now more focused and constructive.
- **Public Sharing of Minutes:** It was agreed that draft minutes would continue to be shared with the committee for review before being published on the Napier Port website.

### 13. Actions

- Napier Port to provide resident representatives with advice on appropriate contacts for raising concerns with MNZ and the Associate Minister of Transport.
- Hannah Strauss to share Noise Mitigation update, removing individual property details, available in Appendix 1 below.
- Napier Port to circulate the 6 Wharf validation report, available in the Appendix 2 below.

### 14. Next Meeting

Next meeting to be confirmed closer to the date. Meeting closed at 4.55pm.

### Appendix 1: Noise Mitigation update

Address	dBA	Batch	Stage 1	Stage 2	Stage 3
Seapoint Road	64	1	Complete	Complete	Declined by owner
Karaka Road	64	2	Complete	Complete	Declined by owner
Karaka Road	63	1	Complete	Complete	Declined by owner
Karaka Road	63	1	Complete	Complete	Declined by owner
Karaka Road	62	1	Complete	Complete	Declined by owner
Seapoint Road	62	2	Complete	Complete	Declined by owner
Seapoint Road	62	2	Complete	Complete	Declined by owner
Seapoint Road	62	2	Complete	Complete	Declined by owner
Seapoint Road	62		Declined by owner		Declined by owner
Karaka Road	61	1	Complete	Complete	Declined by owner
Seapoint Road	61	1	Complete	Complete	Declined by owner
Seapoint Road	61	1	Complete	Complete	Declined by owner
Thompson Road	61	2	Not required	Complete	Declined by owner
Breakwater Road	60	1	Complete	Complete	Declined by owner
Breakwater Road	60	1	Complete	Complete	Declined by owner
Hornsey Road	60	2	On Hold: No comms from owner		
Hornsey Road	60	2	Complete	Complete	Declined by owner
Seapoint Road	60	2	Complete	Complete	Declined by owner
Seapoint Road	60	2	Complete	Declined by owner	Declined by owner
Seapoint Road	60	1	Complete	Declined by owner	Declined by owner
Seapoint Road	60	1	Complete	Complete	Declined by owner
Seapoint Road	60	1	Complete	Complete	Declined by owner
Thompson Road	60	2	50%	On hold: Owner request	
Hornsey Road (new)	60	3	Declined by owner		Declined by owner
Seapoint Road (new)	60	3	Offer given: TBC from owner		

### Appendix 2: 6 Wharf validation report

31 March 2025

Napier Port  
PO Box 947  
Napier 4140

**Attention: Hannah Strauss**

## **WHARF 6 NOISE CONTOURS VALIDATION**

Dear Hannah

### **In summary: The port noise model provides an accurate representation of Wharf 6 operations**

Marshall Day Acoustics (MDA) first prepared a noise model for Port of Napier in 1994. The model has been regularly updated to reflect changes in operation, establish the City of Napier District Plan (NDP) Port Noise Control Boundaries, evaluate western reclamation options and the recent Wharf 6 development.

The noise model was the primary tool used for the Port of Napier Noise Control Boundaries assessment report<sup>1</sup> to review the port noise provisions in the NDP (now the proposed plan provisions). Section 4.5 of our assessment report was titled 'calibration'. It describes how MDA has undertaken attended noise monitoring to verify the shape of the modelled noise contours and annually reviews noise monitoring data to calibrate the Current Port Noise Maps. The most recent annual monitoring review report was prepared in 2024<sup>2</sup>. The Current Port Noise Maps are included in Appendix D of the Port Noise Management Plan (NMP).

Calibration of the noise contours involves validation of both the magnitude and shape of the contours. The attended monitoring has always included a container ship on Wharf 5. Wharf 6 was built and became operational recently. This letter details attended monitoring for a busy period of operations with a container ship on Wharf 6. It supplements the calibration information in the assessment report.

In summary, the noise model continues to provide an accurate representation of both port noise level magnitude and contour shape received in the community.

### **The magnitude of port noise at the NMT has remained stable, pre and post Wharf 6**

The annual review is based on the measured ambient noise levels at the Bluff Hill Noise Monitoring Terminal (NMT), located near 3 Karaka Road. The Bluff Hill NMT is considered to provide a good point of reference for port noise levels received in the community. The NMT captures audio recordings of loud noise events to enable identification of the source and ensure validity of the measured data. It also enables identification of high noise sources for management purposes.

The peak 5-day period of port noise is consistently between February and April each year. The level during the peak period has remained relatively constant for the last decade, with fluctuations of +/-1 decibel that can be expected from year to year and are within monitoring and reporting tolerances. In short, activity intensity has increased, but noise levels have remained static due to investment in quieter equipment, changes to port layout and operations management.

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<sup>1</sup> MDA report Rp 002 r01 20190436, dated 27 Feb 2020

<sup>2</sup> MDA report Rp 007 r02 20190436, dated 11 Oct 2024

Port noise continues to comply with the 65 dB  $L_{dn(5\text{ day})}$  and 68 dB  $L_{dn(1\text{ day})}$  noise limits in NDP rule 28.15.1 (a). The highest port-controlled period in recent years was measured at 62.4 dB  $L_{dn(5\text{ day})}$  at the NMT for the period 15 to 20 March 2016. Note noise levels are normally reported to the nearest whole number, however, to aid transparency, the level is presented to one decimal place. The Current Noise Maps predict 62.4 dB  $L_{dn(5\text{ day})}$  at the NMT, so no model calibration is required. While convenient, exact correlation is not necessary or reasonably expected. Normally,  $\pm 2$  dBA accuracy would be expected and is considered acceptable for environmental noise predictions.

### **The shape of the future port noise contours with Wharf 6 operations required verification**

Attended noise surveys have been used to verify the shape of the modelled noise contours for Wharf 5 at multiple locations. The agreement between predicted and measured contours has generally been excellent ( $\pm 1$  dBA) at receiver positions with line of sight of operations for the last decade.

For the assessment report, the future noise model (2035) leveraged the current noise model (2020) with the same noise sources, operational assumptions (adjusted for forecast growth) and modelling parameters and calibration adjustment. A key difference was that the future noise model included representative container handling activities on Wharf 6 (that had not yet commenced at the time).

The latest annual noise monitoring review report<sup>3</sup> recommended revalidation of the port noise model now that Wharf 6 is operational. We recommended this revalidation include attended monitoring during the traditional busy operating period (e.g. February – May 2024). This letter addresses attended measurements of Wharf 6 operations to validate that element of the future noise model. The results will inform the review of the Current Port Noise Maps during the next annual monitoring review.

### **Wharf 6 operations noise monitoring was undertaken in ideal conditions**

Measurements were undertaken between 8.30pm and 11.30pm on the evening of Friday 28 February 2025. The measurements were undertaken with two Brüel & Kjær 2250 Light sound level meters generally in accordance with the relevant standards. A calibration check was carried out prior to and post the survey period with no notable change in level for both units.

The monitoring period was targeted a short notice due to a combination of factors that made it ideal:

- The port was busy: The port was operating at or near capacity during its traditional busy period with many reefers in the yard, a container ship changeover at Wharf 6, and multiple log ships on the outer berths.
- The weather conditions were ideal: The weather was fine with no cloud cover and a slight 0-2m/s northeasterly wind, resulting in slightly downwind propagation from the port to the community monitoring positions, aligned with the relevant settings in the noise model.
- The port operations matched the future noise model assumptions for Wharf 6: The [ANL Waikato](#) was berthed at Wharf 6 bow east in the same location and orientation assumed in the future noise model. We had previously measured the sound power level (114 dB  $L_{WA}$ ) of the ANL Waikato, so were aware it had the same level and character components as the unit assumed in the model. The reference ship noise level at Wharf 6 in the future noise model was chosen because it was considered representative of the upper end of the typical range for a container ship (100 to 115 dB  $L_{WA}$ <sup>4</sup>).
- Minimal community noise: The evening period is always targeted to minimise the influence of community road traffic movements or industrial activity in Ahuriri. Sporadic residual traffic movements were paused out to minimise influence on the measured levels where practicable.

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<sup>3</sup> MDA report Rp 007 r02 20190436, dated 11 Oct 2024

<sup>4</sup> NEPTUNES Best Practice Guide, Annex III, pg. 129

Eight measurement positions were chosen to provide geographical spread and include both high and low elevation positions with varying degrees of line of sight to port activity. The first six (MP1 – MP6) are positions consistently used since 2012. The seventh (MP7) at the top of the Thompson Road steps is a supplementary position used in recent years. An eighth (MP8) at the top of Bay View Rd steps was specifically added to correlate queries about Wharf 6 ship noise received by residents nearby.

Attended 15-minute measurement intervals were timed to align with the intervals measured by the NMT. The simultaneous level difference between the NMT and measurement position should be similar to the difference between the modelled future noise contours. If so, it verifies the shape of the future noise contours. The same approach has been successfully used for Wharf 5 operations and to confirm the shape of the current noise contours.

The Appendices detail the measurement results:

- Appendix A includes a glossary of technical terms
- Appendix B presents the measurement results and comparison with the current and future noise models
- Appendix C shows the view of port operations for the measurement positions

### **The Wharf 6 monitoring verified the shape of the future port noise contours**

Table 1 in Appendix C shows:

- The measurements correlated well ( $\pm 2$  dBA) with the shape of the future noise contours at elevated positions with unobstructed line-of-sight to port activities (i.e. MP1 – 4 and MP7).
- The measurements still correlated well ( $\pm 3$  dBA) at positions of low elevation at the bottom of Hornsey Road (MP5 – MP6) and further afield at Bay View Rd (MP8). The wider variance in Hornsey Rd is due to variations in local screening. The wider variance in Bay View Rd is artificial, due to elevated contributions from residual community activities and distant road traffic in a quieter environment.

In summary:

- The current noise model in the noise assessment continues to provide an accurate representation of Wharf 5 operations, both in terms of magnitude of noise level and noise contour shape.
- The future noise model in the noise assessment provides an accurate representation of Wharf 6 operations in terms of noise contour shape. However, remains conservative with magnitude, providing reasonable allowance for growth of operations over the life of the Proposed District Plan (10 years +).

Therefore, the noise model continues to provide an accurate representation of both port noise level and contour shape received in the community, now and in the future. Furthermore, the modelling information used to inform the District Plan review remains suitable.

We trust this information is satisfactory. If you have any further questions, please do not hesitate to contact us.

Yours faithfully

**MARSHALL DAY ACOUSTICS LIMITED**

**Craig Fitzgerald**

**Acoustician**

## APPENDIX A GLOSSARY OF TECHNICAL TERMINOLOGY

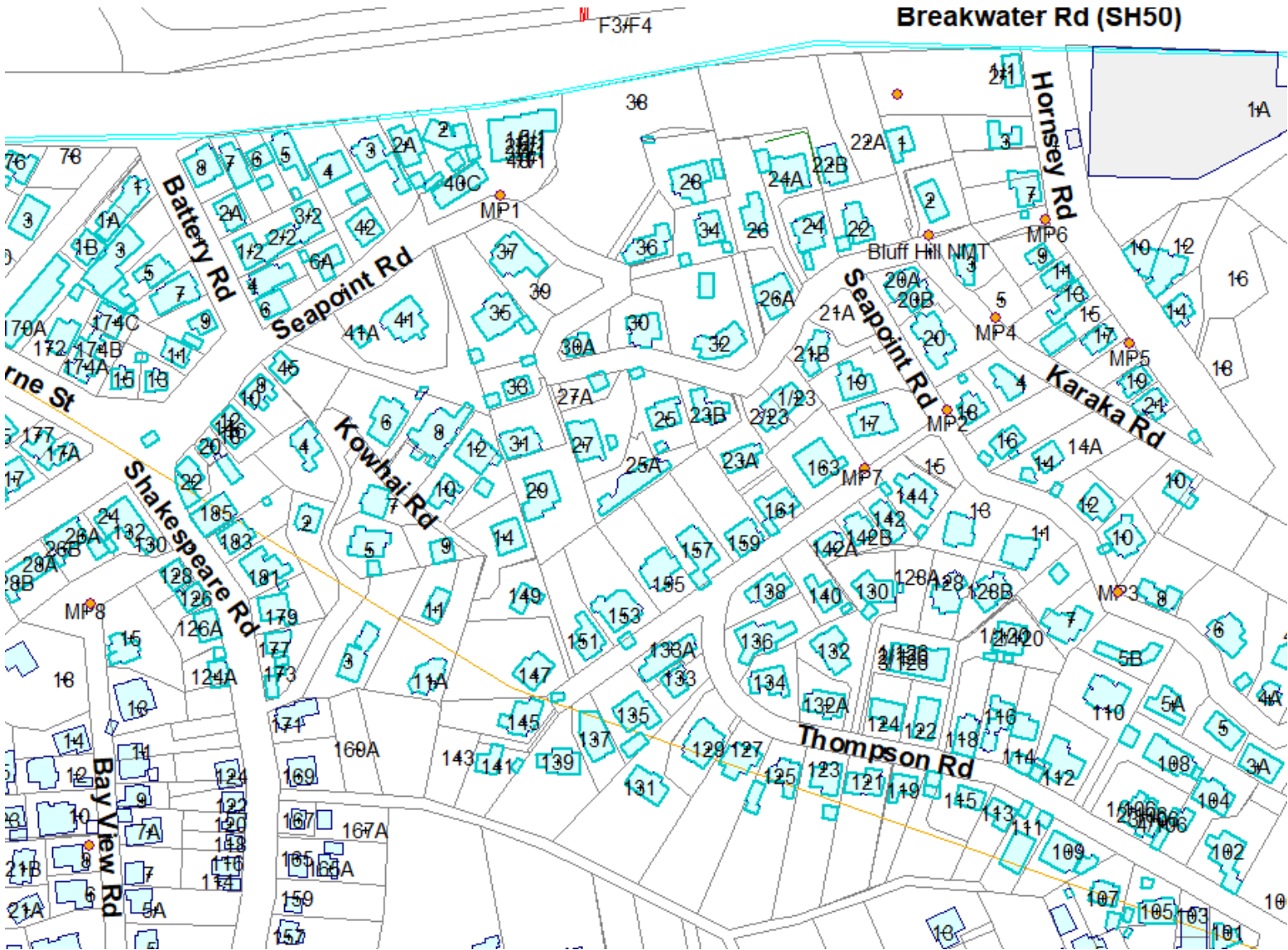
<b>NZS 6801:2008</b>	New Zealand Standard NZS 6801:2008 “Acoustics – Measurement of environmental sound”
<b>NZS 6809:1999</b>	New Zealand Standard NZS 6809:1999 “Acoustics – Port Noise Management and Land Use Planning”
<b>dB</b>	Decibel. The unit of sound level. Expressed as a logarithmic ratio of sound pressure P relative to a reference pressure of $P_r=20 \mu\text{Pa}$ i.e. $\text{dB} = 20 \times \log(P/P_r)$
<b>dB(A)</b>	The unit of sound level which has its frequency characteristics modified by a filter (A-weighted) so as to more closely approximate the frequency bias of the human ear.
<b>A-weighting</b>	The process by which noise levels are corrected to account for the non-linear frequency response of the human ear.
<b><math>L_{Aeq}(t)</math></b>	The equivalent continuous (time-averaged) A-weighted sound level. This is commonly referred to as the average noise level.  The suffix "t" represents the time period to which the noise level relates, e.g. (8 h) would represent a period of 8 hours, (15 min) would represent a period of 15 minutes and (2200-0700) would represent a measurement time between 10 pm and 7 am.
<b><math>L_{Amax}</math></b>	The A-weighted maximum noise level. The highest noise level which occurs during the measurement period.
<b><math>L_{dn}</math></b>	The day night noise level which is calculated from the 24 hour $L_{Aeq}$ with a 10 dB penalty applied to the night-time (2200-0700 hours) $L_{Aeq}$ .
<b><math>L_p</math> or SPL</b>	Sound Pressure Level. A logarithmic ratio of a sound pressure measured at distance, relative to the threshold of hearing ( $20 \mu\text{Pa}$ RMS) and expressed in decibels.
<b><math>L_w</math> or SWL</b>	Sound Power Level. A logarithmic ratio of the acoustic power output of a source relative to $10^{-12}$ watts and expressed in decibels. Sound power level is calculated from measured sound pressure levels and represents the level of total sound power radiated by a sound source.
<b>Frequency</b>	The number of pressure fluctuation cycles per second of a sound wave. Measured in units of Hertz (Hz).
<b>Hertz (Hz)</b>	Hertz is the unit of frequency. One hertz is one cycle per second. One thousand hertz is a kilohertz (kHz).
<b>Noise</b>	A sound that is unwanted by, or distracting to, the receiver.
<b>Ambient</b>	The ambient noise level is the noise level measured in the absence of the intrusive noise or the noise requiring control. Ambient noise levels are frequently measured to determine the situation prior to the addition of a new noise source.
<b>Special Audible Characteristics</b>	Distinctive characteristics of a sound which are likely to subjectively cause adverse community response at lower levels than a sound without such characteristics. Examples are tonality (e.g. a hum or a whine) and impulsiveness (e.g. bangs or thumps). In this case, port noise limits are set specifically for port noise character. Therefore, port noise character would be reasonably expected and not ‘special’ (e.g. would not apply to log or container handling activities).

## APPENDIX B MEASUREMENT RESULTS

Table 1: Measurement results vs shape of noise contours in future noise model 2035

Position	Period	Measured L <sub>Aeq</sub> (15min)			2035 Modelled L <sub>dn</sub> (5-day)		Shape variance L <sub>dn</sub>	Comment
		NMT	MP	Diff	MP	Diff		
MP1	9:30pm	56.7	50.6	-6.1	58.6	-5.5	-0.6	View of western end of port only, controlled by ship at Wharf 6
	10:15pm	57.7	50.7	-7.0				
MP2	10:30pm	58.2	56.6	-1.6	61.4	-2.7	1.1	Port controlled (excellent reference point)
	10:00pm	57.4	54.6	-2.8				
MP3	10:45pm	56.9	53.4	-3.5	58.8	-5.3	1.8	Same as MP2
	9:45pm	57.2	53.6	-3.6				
MP4	9:45pm	57.2	55.8	-1.4	62.1	-2.0	0.6	Same as MP2
	10:30pm	58.2	56.3	-1.9				
MP5	10:00pm	57.4	51.9	-5.5	57.8	-6.3	0.8	Port controlled, only partially screened by buildings and containers on port now that container wall removed
	10:45pm	56.9	52.8	-4.1				
MP6	10:15pm	57.7	56.0	-1.7	59.8	-4.3	2.6	Same as MP5
	11:00pm	56.0	54.3	-1.7				
MP7	11:00pm	56.0	52.2	-3.8	58.5	-5.6	1.8	Port controlled, but 11pm measurement elevated by wind in trees by ~1 decibel at HF
	9:30pm	56.7	50.5	-6.2				
MP8	8.45pm	56.5	47.2	-9.4	52.2	-11.9	2.5	Controlled by ship at Wharf 6, but includes residual community noise influence
	11:30pm	56.2	46.6	-9.6				

Figure 1: Measurement positions



APPENDIX C MEASUREMENT LOCATION PICTURES

84 Symonds Street

PO Box 5811

Victoria Street West

MP1



MP2



MP3



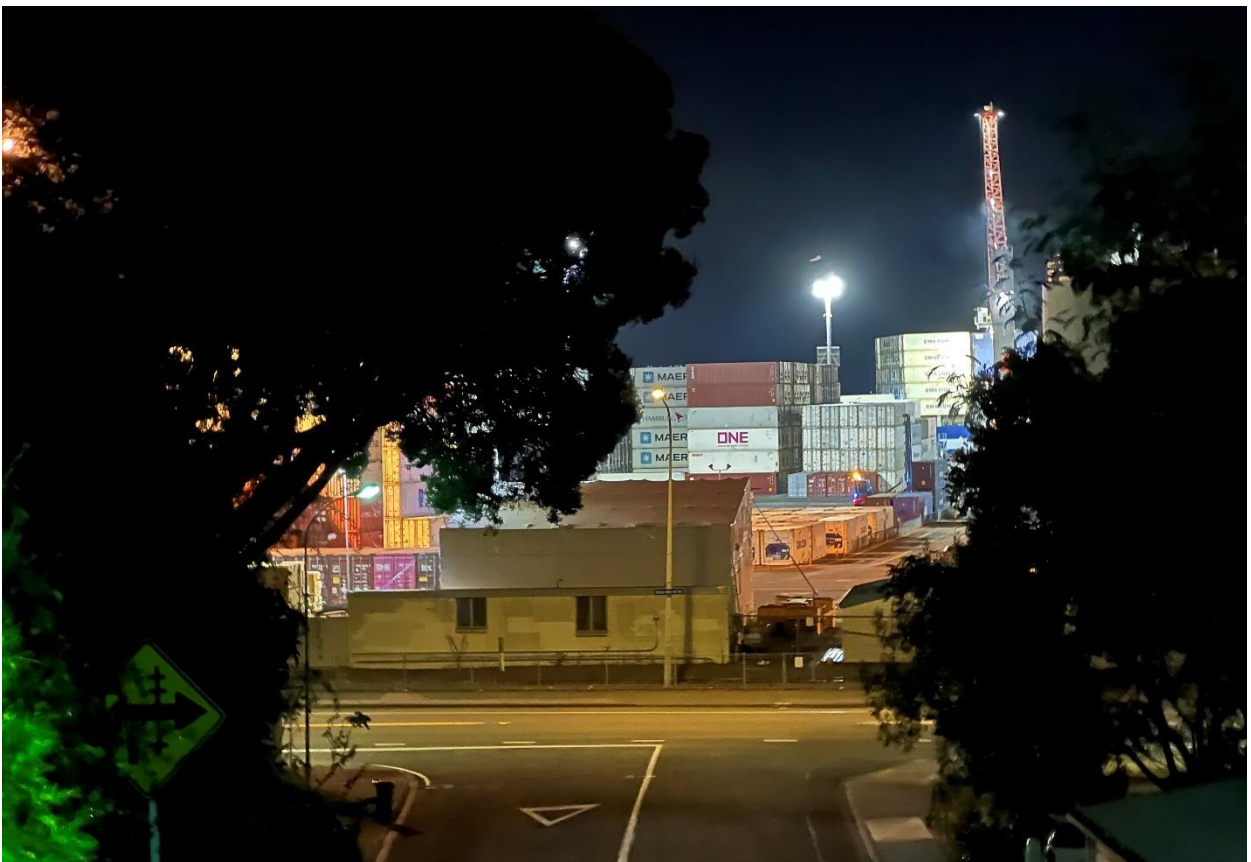
MP4



MP5



MP6



MP7



MP8



NMT (standing beneath)

