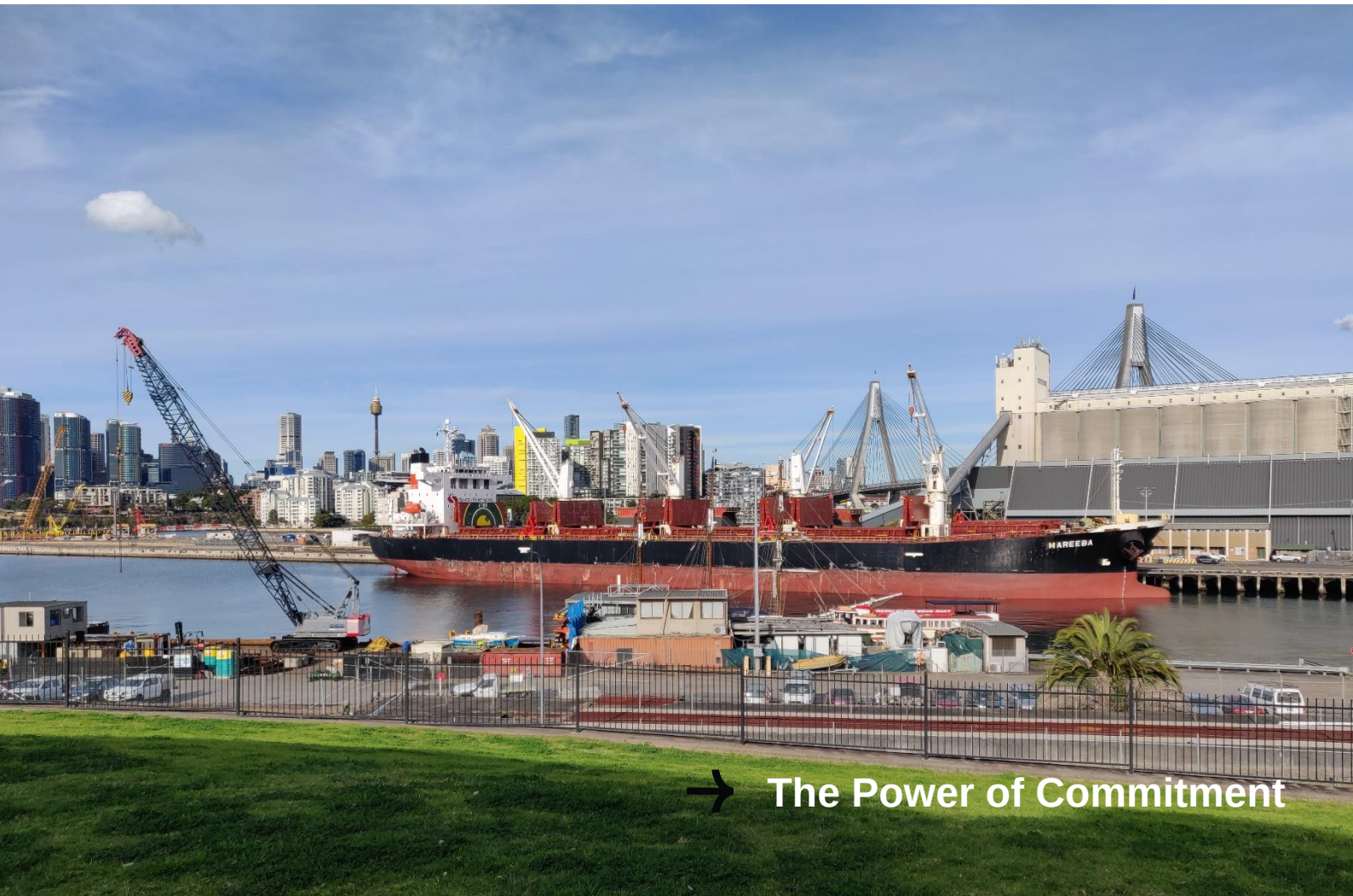
Monthly compliance noise monitoring report

Glebe Island / White Bay

Port Authority of New South Wales

March 2025



The Power of Commitment

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			Name	Signature	Name	Signature	Date
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S4	1	C Gordon	C Doyle		E Milton		16/04/2025

1. Introduction

GHD Pty Ltd (GHD) has been engaged by Port Authority of New South Wales (Port Authority) to undertake compliance noise monitoring, as required by the *Port Noise Policy (Port Authority, 2020).*

This report provides the details of the compliance noise monitoring for all vessels at berth during March 2025, as determined using the noise monitoring system. A detailed description of the permanent noise monitoring system including a map of monitoring locations is provided in the Noise Monitoring Plan, available on Port Authority's website.

2. Noise monitoring details and vessel schedule

Client	Company details	Noise monitor name	Noise monitor location	Noise monitor details / settings	Noise monitor serial numbers	Monthly calibration variance
Port Authority of New South Wales	GHD Pty Ltd Member of the Association of Australasian Acoustical Consultants (AAAC) Lead staff are Members of the Australian Acoustical Society (AAS)	L01	Grafton Street, Balmain	**Meter details** Norsonic Nor145 Sound Level Meter with Nor1297 Noise Compass **Meter settings** A-weighted Fast time response 15 minute intervals	14529646	**Initial calibration level 90.7 dBA** Min. deviation = 0.1 dB Max. deviation = 0.2 dB
		L02	Maintenance Building on White Bay		14529643	**Initial calibration level 91.9 dBA** Min. deviation = 0.3 dB Max. deviation = 0.3 dB
		L03	Adjacent to White Bay 2		14529645	**Initial calibration level 92.5 dBA** Min. deviation = 0.3 dB Max. deviation = 0.4 dB
		L04	Onsite at Glebe Island		14529640	**Initial calibration level 93.9 dBA** Min. deviation = -0.1 dB Max. deviation = 0.0 dB

Vessel name	Arrival date and time	Departure date and time	Berth location	Applicable noise monitoring location/s
Bulk vessels				
Luga	March 4, 2025 / 09:55	March 6, 2025 / 22:05	GLB8	L03
Akuna	March 7, 2025 / 02:43	March 9, 2025 / 9:00	GLB8	L03

Vessel name	Arrival date and time	Departure date and time	Berth location	Applicable noise monitoring location/s
Pioneer	March 10, 2025 / 01:40	March 13, 2025 / 16:02	GLB7	L03
Elanora	March 17, 2025 / 17:40	March 22, 2025 / 11:58	GLB7	L03
Pioneer[1]	March 24, 2025 / 10:10	March 29, 2025 / 13:05	GLB7	L03
Akuna	March 26, 2025 / 11:01	March 28, 2025 / 08:03	GLB8	L03
Cruise vessel				
Westerdam	March 2, 2025 / 06:42	March 2, 2025 / 18:35	WCBT	L01
Bolette	March 3, 2025 / 08:05	March 4, 2025 / 18:07	WCBT	L01
Pacific Adventure	March 6, 2025 / 06:18	March 6, 2025 / 16:39	WBCT	L01
Regatta	March 10, 2025 / 05:36	March 10, 2025 / 17:57	WBCT	L01
Carnival Adventure[2]	March 14, 2025 / 04:58	March 14, 2025 / 20:04	WBCT	L01
Artania	March 23, 2025 / 09:00	March 25, 2025 / 18:24	WBCT	L01
Carnival Adventure	March 29, 2025 / 05:03	March 29, 2025 / 16:31	WBCT	L01
Seven Seas Voyager	March 29, 2025 / 13:11	March 29, 2025 / 21:11	WHT4	L02

Note: 1) On 26/03/2025 at 08:42, Pioneer moved from GLB7 to WHT4. Then, it went back to GLB7 on 26/03/2025 at 11:24. On 28/03/2025 at 07:39, Pioneer moved from GLB7 to WHT4. Then, it went back to GLB7 on 28/03/2025 at 10:48

Note: 2) The Pacific Adventure was renamed to the Carnival Adventure.

2.1 Compliance summary

2.2 Bulk vessels

Vessel	Dates at berth	Monitor location	Vessel Noise Level, dBA (inclusive of any modifying factor penalties)			Vessel Noise Trigger Levels, dBA			Compliance[1]		
			Day[2] $L_{Aeq(15\ hr)}$	Night[3] $L_{Aeq(1\ hr)}$	Night L_{Amax}	Day[2] $L_{Aeq(15\ hr)}$	Night[3] $L_{Aeq(1\ hr)}$	Night L_{Amax}	Day[2] $L_{Aeq(15\ hr)}$	Night[3] $L_{Aeq(1\ hr)}$	Night L_{Amax}
Luga	Mar 4 – Mar 6	L03	56	54	75[4]	60	55	65	Yes	Yes	No[4]
Akuna	Mar 7 – Mar 9	L03	53	52	68[5]	60	55	65	Yes	Yes	No[5]
Pioneer	Mar 10 – Mar 13	L03	50	49	70[6]	60	55	65	Yes	Yes	No[6]
Elanora	Mar 17 – Mar 22	L03	54	53	66[7]	60	55	65	Yes	Yes	No[7]
Pioneer	Mar 24 – Mar 29	L03	51	50	63	60	55	65	Yes	Yes	Yes
Akuna	Mar 26 – Mar 28	L03	52	52	63	60	55	65	Yes	Yes	Yes

Note: 1) If non-compliance is detected, a detailed investigation of the results will be undertaken and reported separately if required

Note: 2) Daytime period (7 am to 10 pm) – 15 hour logarithmic average

Note: 3) Night-time (10 pm to 7 am) – loudest 1 hour period

Note: 4) This maximum noise level was due to bird noise in the early hours of the morning of March 5, 2025. However there were some maximum noise level events which appeared to be associated with the Luga at lower levels, mainly occurring around 2:15 am. There were 2 maximum level measured was 72 dBA, with a small number of others between 65 and 70 dBA.

Note: 5) This maximum level event only occurred once during the entire night time period of March 8. It couldn't be determined the source of the noise, however given it only occurred once, this is not considered an adverse impact. The Akuna was compliant with the night time vessel noise trigger level at all other times during the visit

Note: 6) This maximum level event only occurred once during the entire night time period of March 11. It is also noted that a single maximum level of event of 69 dBA occurred on March 10. It couldn't be determined the source of these noises, however given it only occurred once during each of these night time periods (2 in total), this is not considered an adverse impact. The Pioneer was compliant with the night time vessel noise trigger level at all other times during the visit.

Note: 7) This maximum level event only occurred once during the entire night time period of March 21. It couldn't be determined the source of the noise, however given it only occurred once, this is not considered an adverse impact. The Elanora was compliant with the night time vessel noise trigger level at all other times during the visit.

2.3 Cruise vessels

Vessel	Dates at berth	Monitor location	Vessel Noise Level, dBA (inclusive of any modifying factor penalties)		Vessel Noise Trigger Levels, dBA		Compliance[1]	
			Day[2] $L_{Aeq(15\ hr)}$	Night[3] $L_{Aeq(9\ hr)}$	Day[2] $L_{Aeq(15\ hr)}$	Night[3] $L_{Aeq(9\ hr)}$	Day[4]	Night
Westerdam	Mar 2	L01	58	-	N/A	58	N/A	-
Bolette	Mar 3	L01	55	52	N/A	58	N/A	Yes
	Mar 4	L01	55	-	N/A	58	N/A	-
Pacific Adventure	Mar 6	L01	58	51	N/A	58	N/A	Yes
Regatta	Mar 10	L01	52	50	N/A	58	N/A	Yes
Carnival Adventure	Mar 14	L01	58	57	N/A	58	N/A	Yes
Artania	Mar 23	L01	54	50	N/A	58	N/A	Yes
	Mar 24	L01	55	53	N/A	58	N/A	Yes
	Mar 25	L01	53	-	N/A	58	N/A	Yes
Carnival Adventure	Mar 29	L01	56	55	N/A	58	N/A	Yes
Seven Seas Voyager	Mar 29	L02	55	-	N/A	58	N/A	Yes

Note: 1) If non-compliance is detected, a detailed investigation of the results will be undertaken and reported separately if required

Note: 2) Daytime period (7 am to 10 pm) – 15 hour logarithmic average

Note: 3) Night-time (10 pm to 7 am) – 9 hour logarithmic average

Note: 4) Port Authority provides attenuation to a defined area of residences where noise modelling indicates that current noise levels reach or exceed 55 dBA **at night** ('attenuation eligibility trigger'). Under the White Bay Cruise Terminal Noise Restriction Policy, cruise ship noise which causes further residences than those currently identified to exceed the attenuation eligibility trigger is considered to be Excessive Noise. Hence under the Noise Restriction Policy a day time trigger level does not apply. The area of residences currently offered attenuation (ie meeting the 'attenuation eligibility trigger') is based on a reference cruise vessel intrusive noise level of 58 dBA at the nearest residence, which sets the Vessel Noise Trigger Level for assessing compliance at night.

Excessive noise is defined as "any noise including but not limited to engine, generator or ventilation noise which causes further residences than those currently identified to exceed the attenuation eligibility trigger."

3. Detailed results – bulk vessels

3.1 Luga (GLB8) – March 4 – March 6, 2025

3.1.1 Daily noise monitoring results

Date	Time period[1]	Monitor location	Noise descriptor	Vessel noise level dBA[2]	Tonal	LFN[3]	Vessel Noise Trigger Levels, dBA	Compliance
March 4, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	56	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	54[4]	No	Yes	55	Yes
			L_{Amax}	75[5]	-	-	65	No
March 5, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	55	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	54[4]	No	Yes	55	Yes
			L_{Amax}	60	-	-	65	Yes
March 6, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	56	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	-	-	-	-	-
			L_{Amax}	-	-	-	-	-

Notes

1) Daytime period (7 am to 10 pm) – 15 hours
Night-time period (10 pm to 7 am) – worst case 1 hour

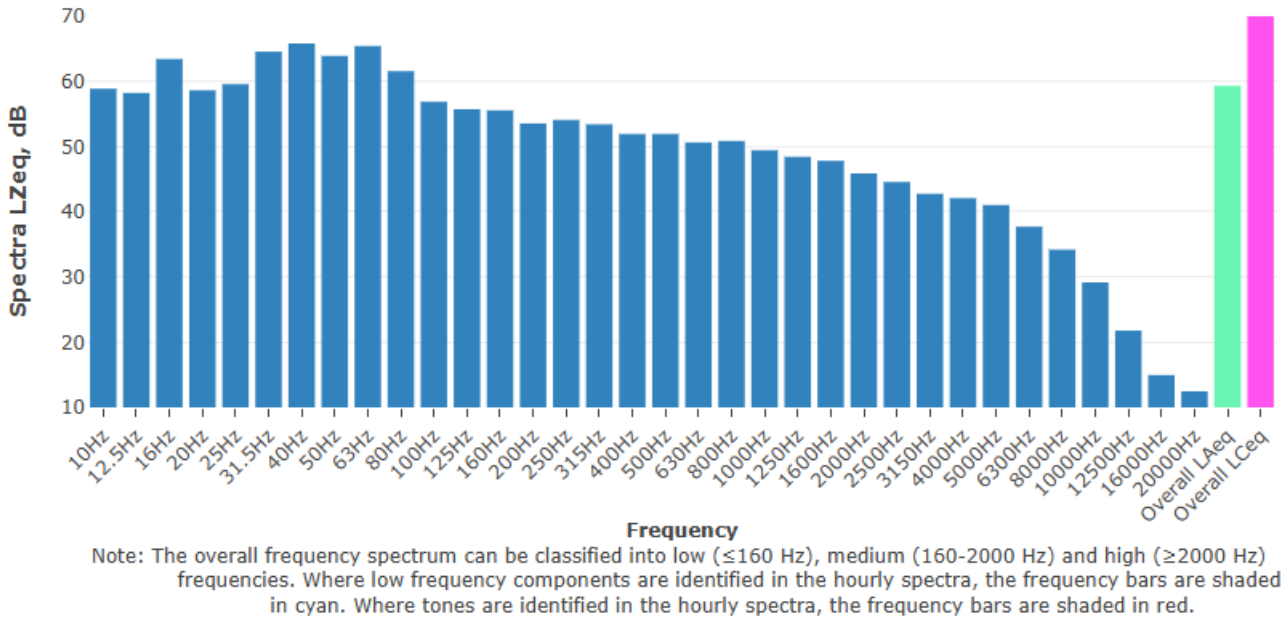
2) Inclusive of any penalties for modifying factors

3) LFN = Low Frequency Noise

4) Measurements determined that noise was tonal at 6,300 Hz for periods during this night time period. A further review into the data determined that this was likely associated with extraneous noise in the area rather than the vessel. As such, no tonal correction has been applied.

5)This maximum noise level was due to bird noise in the early hours of the morning of March 5, 2025. However there were some maximum noise level events which appeared to be associated with the vessel at lower levels, mainly occurring around 2:15 am. There were 2 maximum level measured was 72 dBA, with a small number of others between 65 and 70 dBA.

3.1.2 Additional information



Note: The overall frequency spectrum can be classified into low (≤160 Hz), medium (160-2000 Hz) and high (≥2000 Hz) frequencies. Where low frequency components are identified in the hourly spectra, the frequency bars are shaded in cyan. Where tones are identified in the hourly spectra, the frequency bars are shaded in red.

v

Figure 3.1 Typical vessel spectrum – noise level at L03

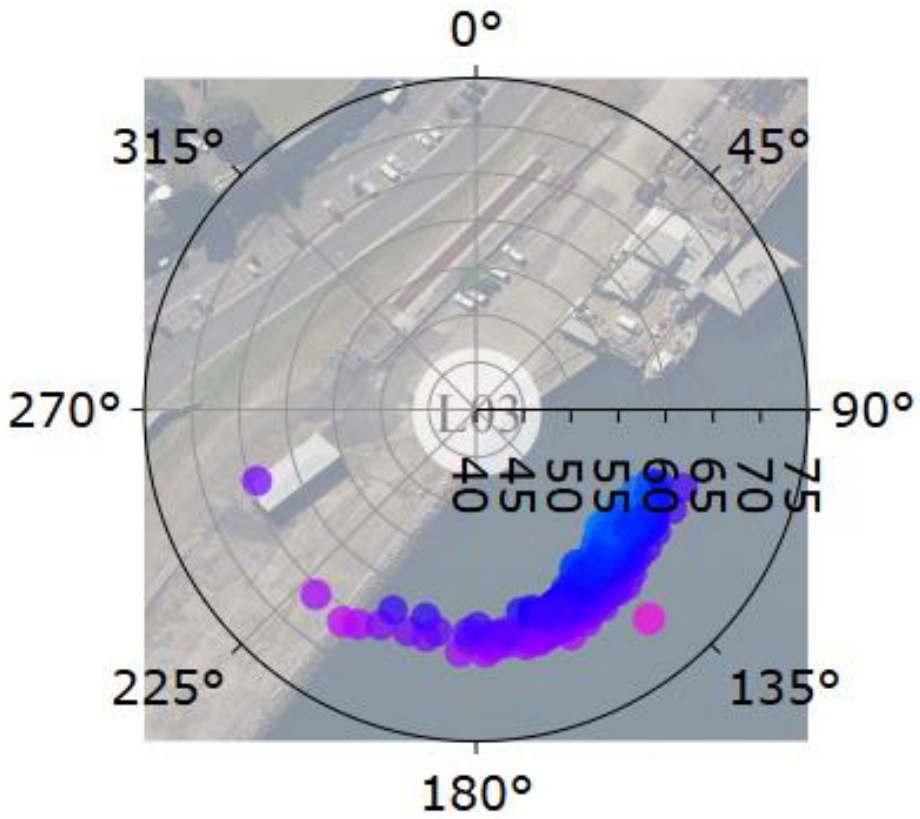


Figure 3.2 Typical vessel polar (directional) plot

3.2 Akuna (GLB8) – March 7 – March 9, 2025

3.2.1 Daily noise monitoring results

Date	Time period[1]	Monitor location	Noise descriptor	Vessel noise level dBA[2]	Tonal	LFN[3]	Vessel Noise Trigger Levels, dBA	Compliance
March 6[4], 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	-	-	-	-	-
	Night		$L_{Aeq,\ 1\ hour}$[1]	49	No	Yes	55	Yes
			L_{Amax}	61	-	-	65	Yes
March 7, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	53	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	52[5]	No	Yes	55	Yes
			L_{Amax}	64	-	-	65	Yes
March 8, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	49	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	49[5]	No	Yes	55	Yes
			L_{Amax}	68[6]	-	-	65	No[6]
March 9, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	45	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	-	-	-	-	-
			L_{Amax}	-	-	-	-	-

Notes

1) Daytime period (7 am to 10 pm) – 15 hours

Night-time period (10 pm to 7 am) – worst case 1 hour

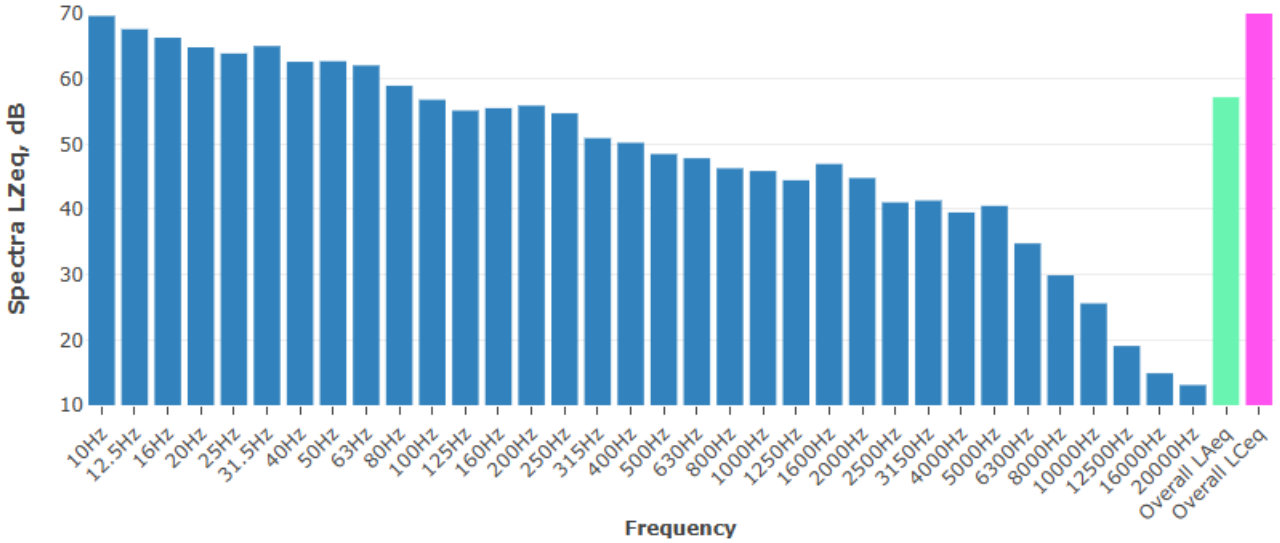
2) Inclusive of any penalties for modifying factors

3) LFN = Low Frequency Noise

4) Note that the system classifies March 6 as the period from 7 am on March 6 to 7 am on March 7. The Akuna arrived at 2:43 am on March 7, and has been incorporated in the data for March 6

5) Measurements determined that noise was tonal at 6,300 Hz for periods during this night time period. A further review into the data determined that this was likely associated with extraneous noise in the area rather than the vessel. As such, no tonal correction has been applied.

6) This maximum level event only occurred once during the entire night time period of March 8. It couldn't be determined the source of the noise, however given it only occurred once, this is not considered an adverse impact. The vessel was compliant with the night time vessel noise trigger level at all other times during the visit.



Note: The overall frequency spectrum can be classified into low (≤160 Hz), medium (160-2000 Hz) and high (≥2000 Hz) frequencies. Where low frequency components are identified in the hourly spectra, the frequency bars are shaded in cyan. Where tones are identified in the hourly spectra, the frequency bars are shaded in red.

v

Figure 3.3 ***Typical vessel spectrum – noise level at L03***

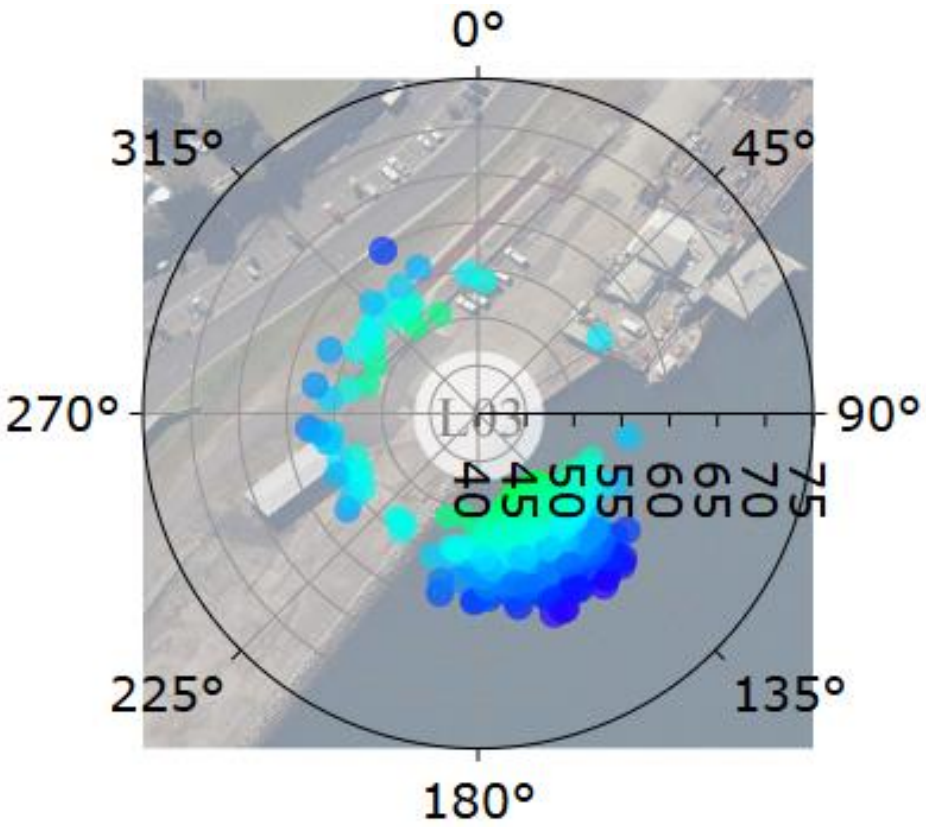


Figure 3.4 ***Typical vessel polar (directional) plot***

3.3 Pioneer (GLB7) – March 10 – March 13, 2025

3.3.1 Daily noise monitoring results

Date	Time period[1]	Monitor location	Noise descriptor	Vessel noise level dBA[2]	Tonal	LFN[3]	Vessel Noise Trigger Levels, dBA	Compliance
March 9, 2025	Day	L03	$L_{Aeq, 15\ hour}$[1]	-	-	-	60	-
	Night		$L_{Aeq, 1\ hour}$[1]	45[4]	No	Yes	55	Yes
			L_{Amax}	63	-	-	65	Yes
March 10, 2025	Day	L03	$L_{Aeq, 15\ hour}$[1]	49[4]	No	Yes	60	Yes
	Night		$L_{Aeq, 1\ hour}$[1]	47[4]	No	Yes	55	Yes
			L_{Amax}	69[5]	-	-	65	No[5]
March 11, 2025	Day	L03	$L_{Aeq, 15\ hour}$[1]	50[4]	No	Yes	60	Yes
	Night		$L_{Aeq, 1\ hour}$[1]	49[4]	No	Yes	55	Yes
			L_{Amax}	70[6]	-	-	65	No[5]
March 12, 2025	Day	L03	$L_{Aeq, 15\ hour}$[1]	50[4]	No	Yes	60	Yes
	Night		$L_{Aeq, 1\ hour}$[1]	47[4]	No	Yes	55	Yes
			L_{Amax}	63	-	-	65	Yes
March 13, 2025	Day	L03	$L_{Aeq, 15\ hour}$[1]	50	No	Yes	60	Yes
	Night		$L_{Aeq, 1\ hour}$[1]	-	-	-	55	-
			L_{Amax}	-	-	-	65	-

Notes

1) Daytime period (7 am to 10 pm) – 15 hours

Night-time period (10 pm to 7 am) – worst case 1 hour

2) Inclusive of any penalties for modifying factors

3) LFN = Low Frequency Noise

4) Measurements determined that noise was tonal at 6,300 Hz for periods during this night time period. A further review into the data determined that this was likely associated with extraneous noise in the area rather than the vessel. As such, no tonal correction has been applied.

5) This maximum level event only occurred once during the entire night time period of March 10. It couldn't be determined the source of the noise, however given it only occurred once during this night period, this is not considered an adverse impact. The vessel was compliant with the night time vessel noise trigger level at all other times during the visit.

6) This maximum level event only occurred once during the entire night time period of March 11. It couldn't be determined the source of the noise, however given it only occurred once during this night period, this is not considered an adverse impact. The vessel was compliant with the night time vessel noise trigger level at all other times during the visit.

3.3.2 Additional information

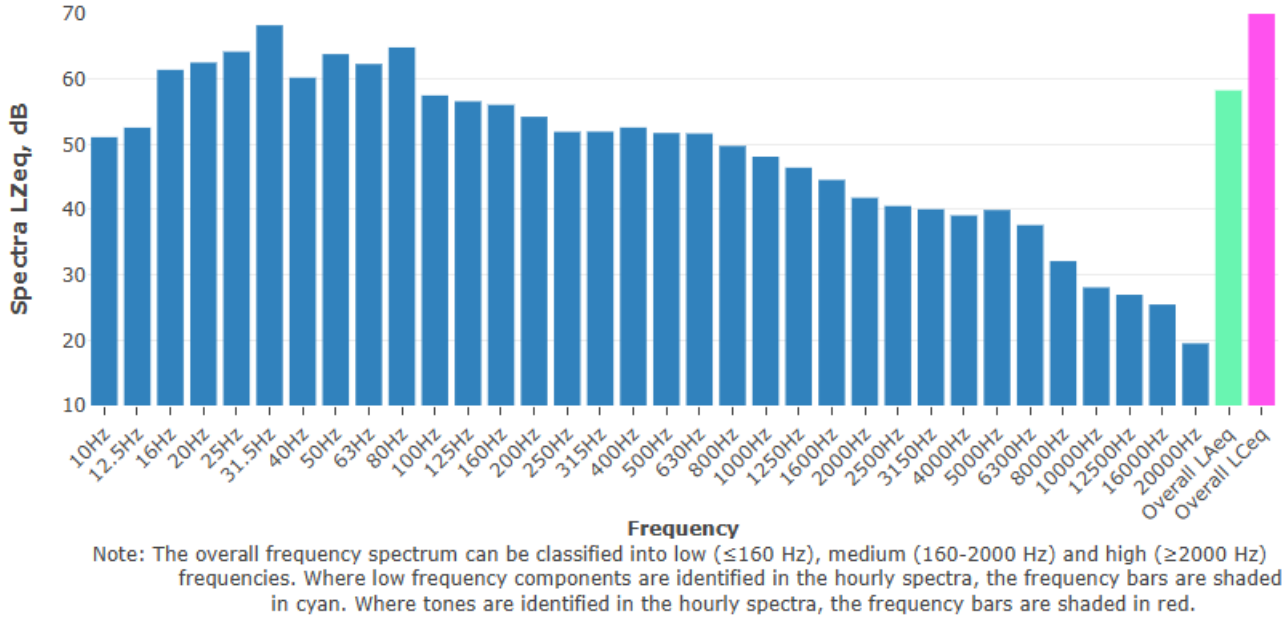


Figure 3.5 Typical vessel spectrum – noise level at L03

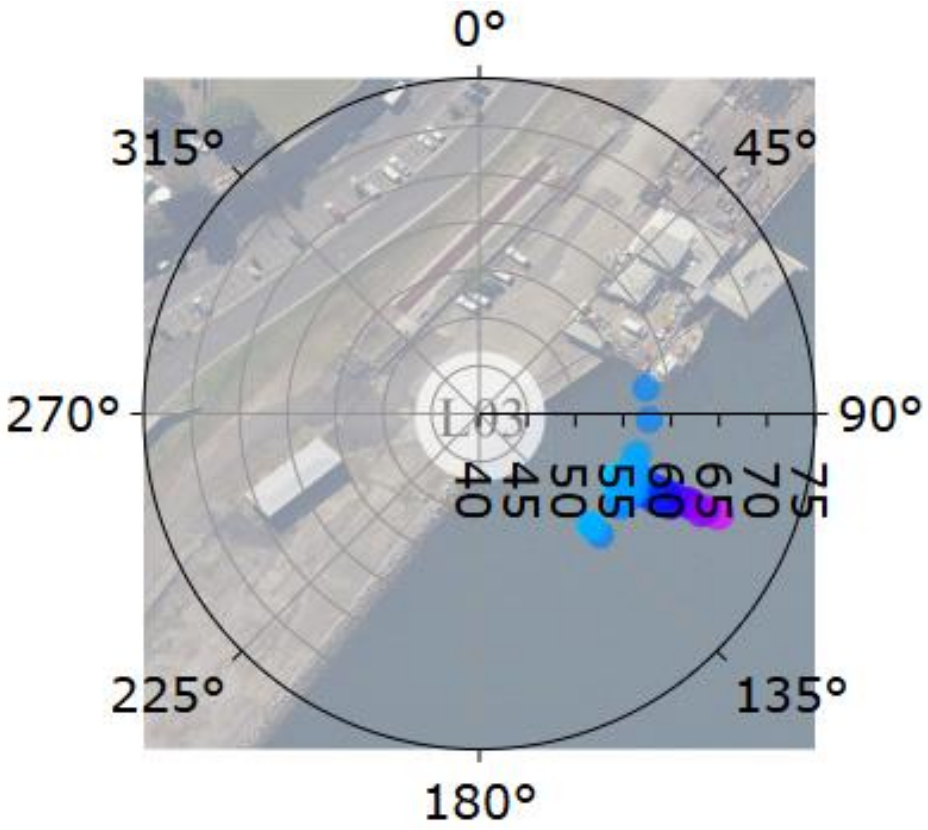


Figure 3.6 Typical vessel polar (directional) plot

3.4 Elanora (GLB7) – March 17 – March 22, 2025

3.4.1 Daily noise monitoring results

Date	Time period[1]	Monitor location	Noise descriptor	Vessel noise level dBA[2]	Tonal	LFN[3]	Vessel Noise Trigger Levels, dBA	Compliance
March 17, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	54[4]	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	51[4]	No	Yes	55	Yes
			L_{Amax}	57	-	-	65	Yes
March 18, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	53[4]	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	53[4]	No	Yes	55	Yes
			L_{Amax}	58	-	-	65	Yes
March 19, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	53	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	51[4]	No	Yes	55	Yes
			L_{Amax}	56	-	-	65	Yes
March 20, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	51[4]	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	49[4]	No	Yes	55	Yes
			L_{Amax}	61	-	-	65	Yes
March 21, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	51[4]	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	49[4]	No	Yes	55	Yes
			L_{Amax}	66[5]	-	-	65	No[5]
March 22, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	51	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	-	-	-	55	-
			L_{Amax}	-	-	-	65	-

Notes

1) Daytime period (7 am to 10 pm) – 15 hours

Night-time period (10 pm to 7 am) – worst case 1 hour

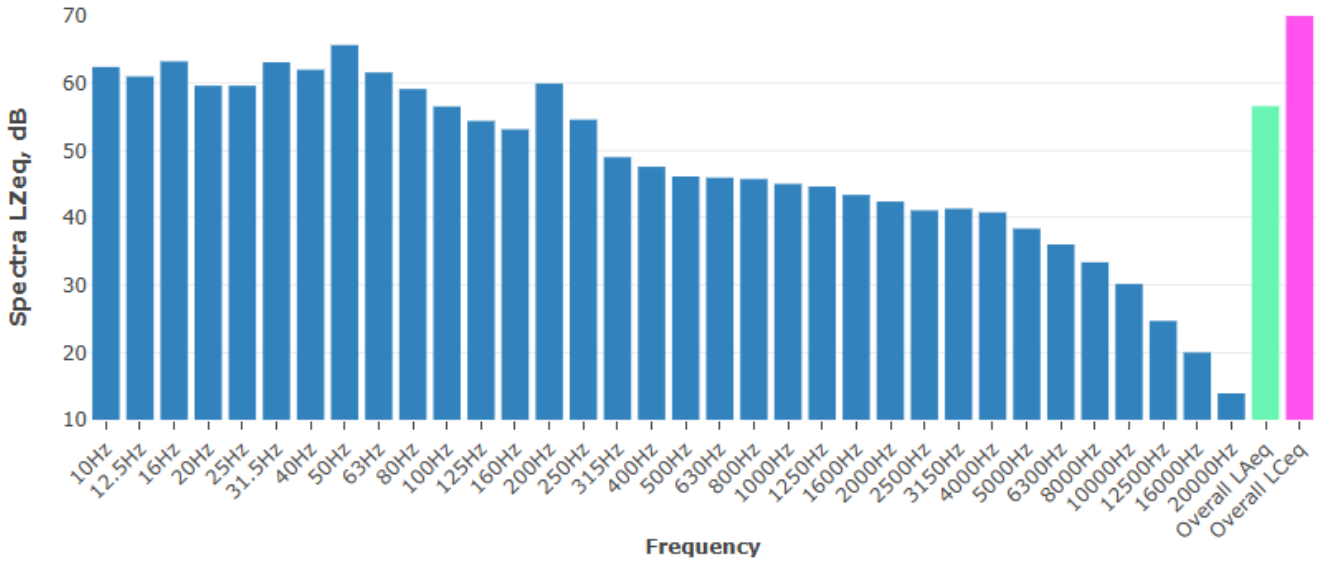
2) Inclusive of any penalties for modifying factors

3) LFN = Low Frequency Noise

4) Measurements determined that noise was tonal at 6,300 Hz for periods during this night time period. A further review into the data determined that this was likely associated with extraneous noise in the area rather than the vessel. As such, no tonal correction has been applied.

5) This maximum level event only occurred once during the entire night time period of March 21. It couldn't be determined the source of the noise, however given it only occurred once, this is not considered an adverse impact. The vessel was compliant with the night time vessel noise trigger level at all other times during the visit.

3.4.2 Additional information



Note: The overall frequency spectrum can be classified into low (≤160 Hz), medium (160-2000 Hz) and high (≥2000 Hz) frequencies. Where low frequency components are identified in the hourly spectra, the frequency bars are shaded in cyan. Where tones are identified in the hourly spectra, the frequency bars are shaded in red.

Figure 3.7 Typical vessel spectrum – noise level at L03

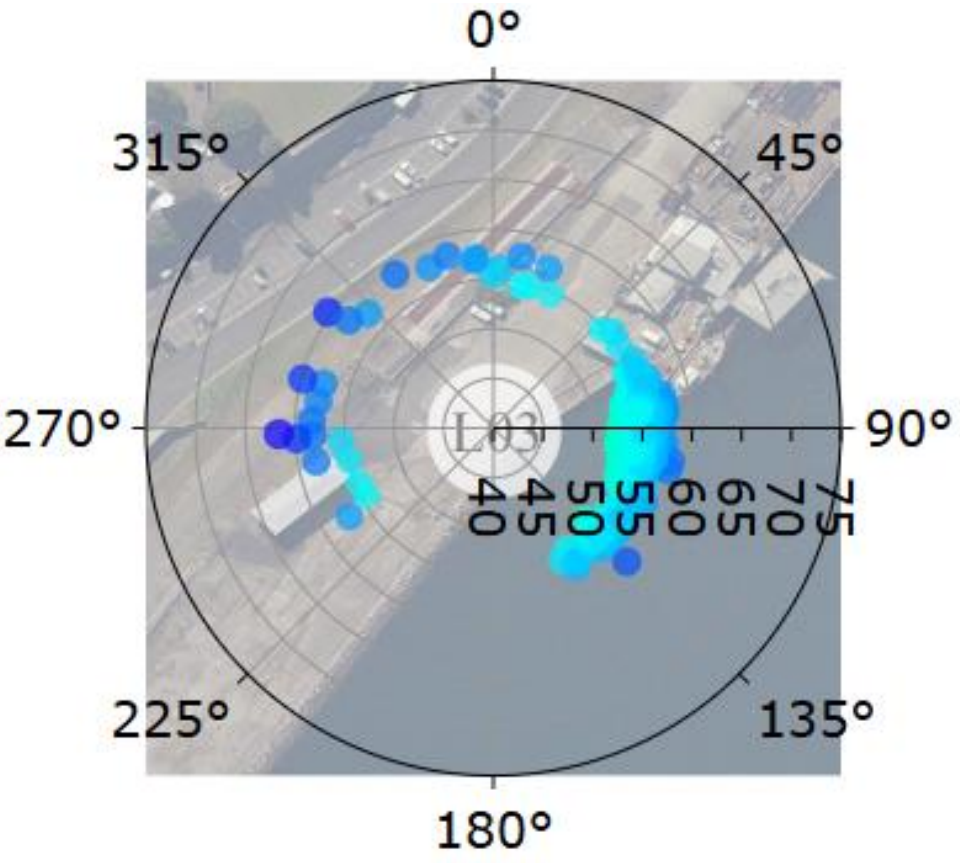


Figure 3.8 Typical vessel polar (directional) plot

3.5 Pioneer (GLB7) – March 24 – March 29, 2025

3.5.1 Daily noise monitoring results

Date	Time period[1]	Monitor location	Noise descriptor	Vessel noise level dBA[2]	Tonal	LFN[3]	Vessel Noise Trigger Levels, dBA	Compliance
March 24, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	50	No[4]	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	50	No[4]	Yes	55	Yes
			L_{Amax}	63	-	-	65	Yes
March 25, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	51	No[4]	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	46	No[4]	Yes	55	Yes
			L_{Amax}	56	-	-	65	Yes
March 26, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	51	No	Yes	60	Yes
	Night		Pioneer and Akuna were berthed simultaneously at Glebe Island 7 and 8. Noise levels determined by the online noise system were assigned to the Akuna during this period, as this was the dominant noise source at the time. Note that noise from both vessels was compliant with the daytime $L_{Aeq\ (15\ hour)}$ and the $L_{Aeq\ (1hour)}$ criteria, therefore no detailed analysis has been undertaken.					
March 27, 2025	Day	L03						
	Night							
March 28, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	50	No[4]	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	49	No[4]	Yes	55	Yes
			L_{Amax}	-[5]	-	-	65	NA[5]
March 29, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	52	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	-	-	-	55	-
			L_{Amax}	-	-	-	65	-

Notes

1) Daytime period (7 am to 10 pm) – 15 hours

Night-time period (10 pm to 7 am) – worst case 1 hour

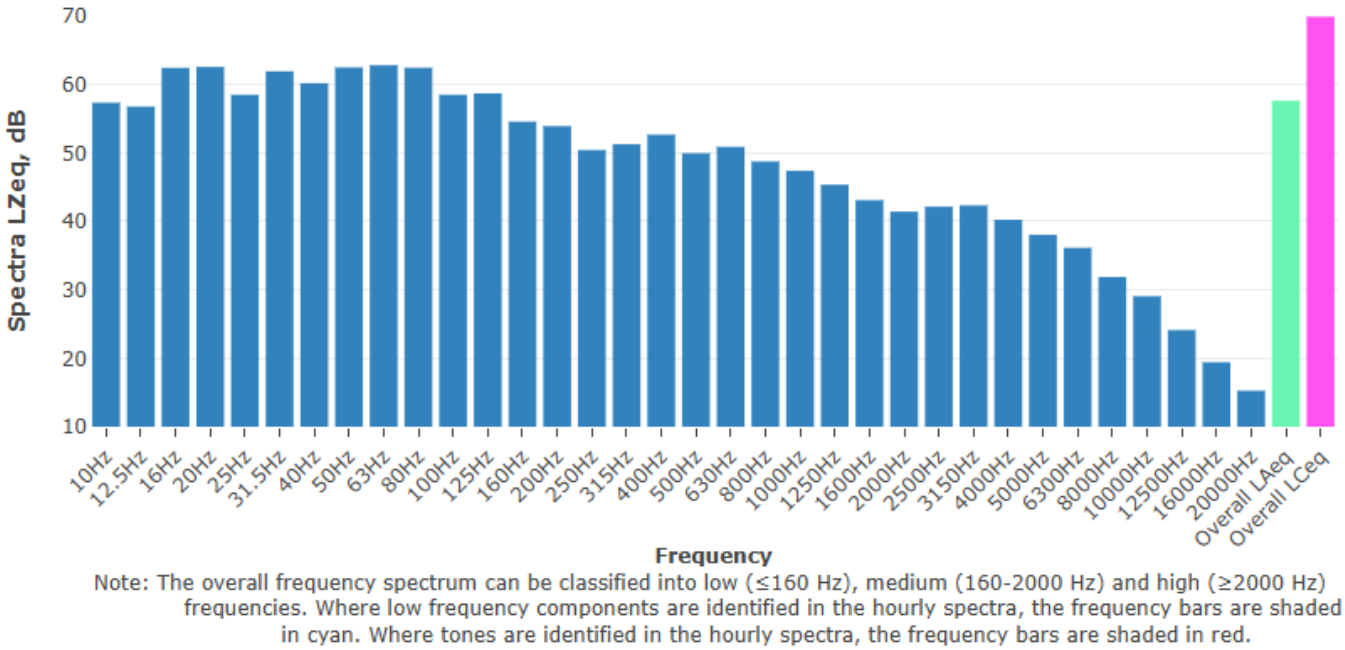
2) Inclusive of any penalties for modifying factors

3) LFN = Low Frequency Noise

4) Measurements determined that noise was tonal at 6,300 Hz for periods during this night time period. A further review into the data determined that this was likely associated with extraneous noise in the area rather than the vessel. As such, no tonal correction has been applied.

5) Maximum noise levels during this period were significantly impacted by rain. These events are not associated with the vessel and therefore maximum noise levels were not able to be determined, during this period

3.5.2 Additional information



Note: The overall frequency spectrum can be classified into low (≤160 Hz), medium (160-2000 Hz) and high (≥2000 Hz) frequencies. Where low frequency components are identified in the hourly spectra, the frequency bars are shaded in cyan. Where tones are identified in the hourly spectra, the frequency bars are shaded in red.

Figure 3.9 Typical vessel spectrum – noise level at L03

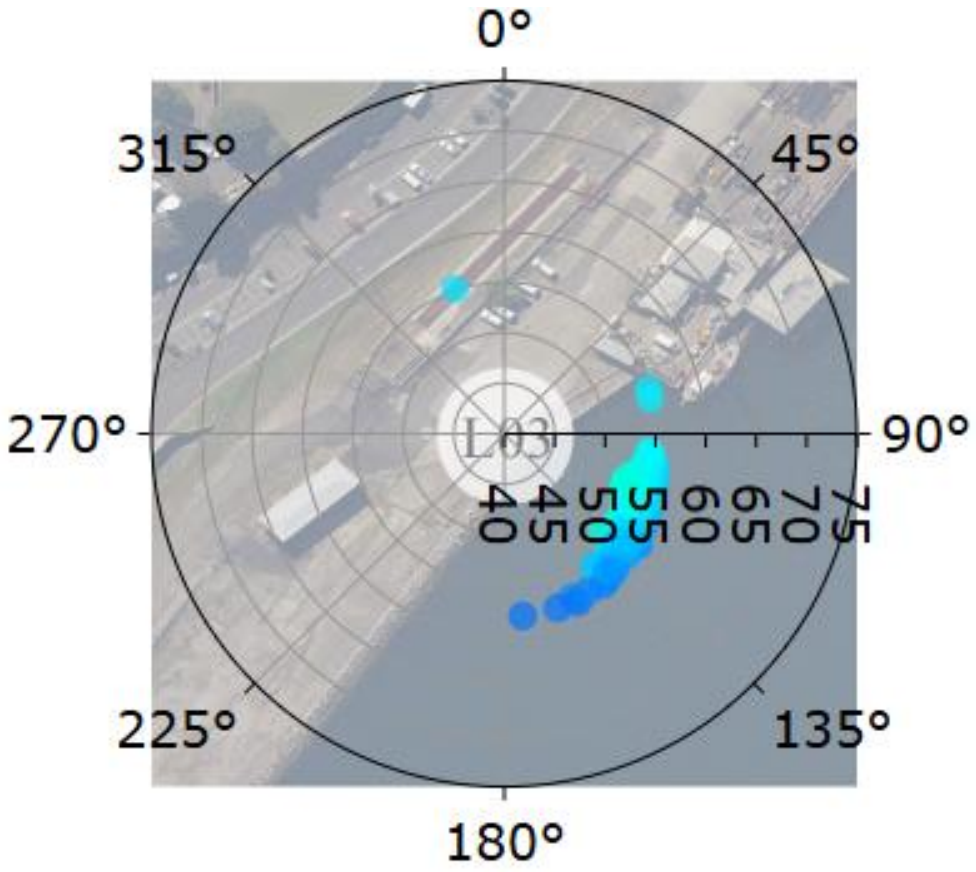


Figure 3.10 Typical vessel polar (directional) plot

3.6 Akuna (GLB8) – March 26 – March 28, 2025

3.6.1 Daily noise monitoring results

Date	Time period[1]	Monitor location	Noise descriptor	Vessel noise level dBA[2]	Tonal	LFN[3]	Vessel Noise Trigger Levels, dBA	Compliance
March 26, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	52	No[4]	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	51	No[4]	Yes	55	Yes
			L_{Amax}	59	-	-	65	Yes
March 27, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	52	No[4]	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	52	No[4]	Yes	55	Yes
			L_{Amax}	63	-	-	65	Yes
March 28, 2025	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	50	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	-	-	-	55	-
			L_{Amax}	-	-	-	65	-

Notes

1) Daytime period (7 am to 10 pm) – 15 hours

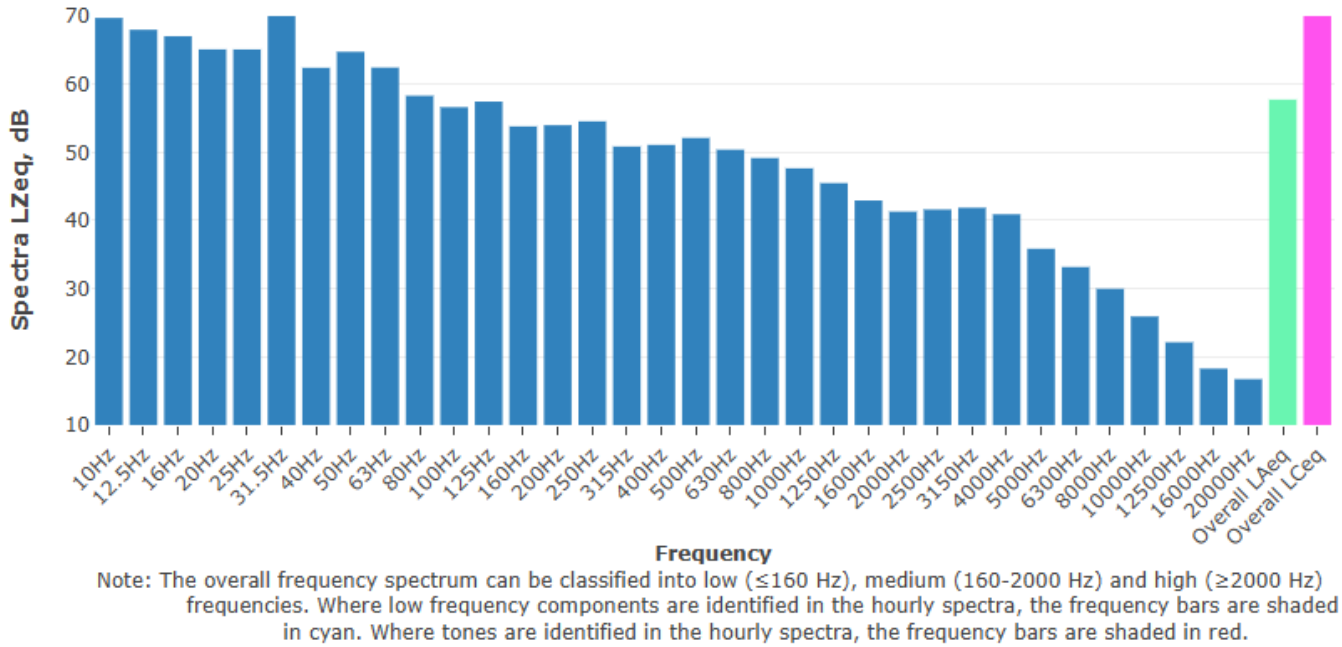
Night-time period (10 pm to 7 am) – worst case 1 hour

2) Inclusive of any penalties for modifying factors

3) LFN = Low Frequency Noise

4) Measurements determined that noise was tonal at 6,300 Hz for periods during this night time period. A further review into the data determined that this was likely associated with extraneous noise in the area rather than the vessel. As such, no tonal correction has been applied.

3.6.2 Additional information



Note: The overall frequency spectrum can be classified into low (≤160 Hz), medium (160-2000 Hz) and high (≥2000 Hz) frequencies. Where low frequency components are identified in the hourly spectra, the frequency bars are shaded in cyan. Where tones are identified in the hourly spectra, the frequency bars are shaded in red.

Figure 3.11 Typical vessel spectrum – noise level at L03

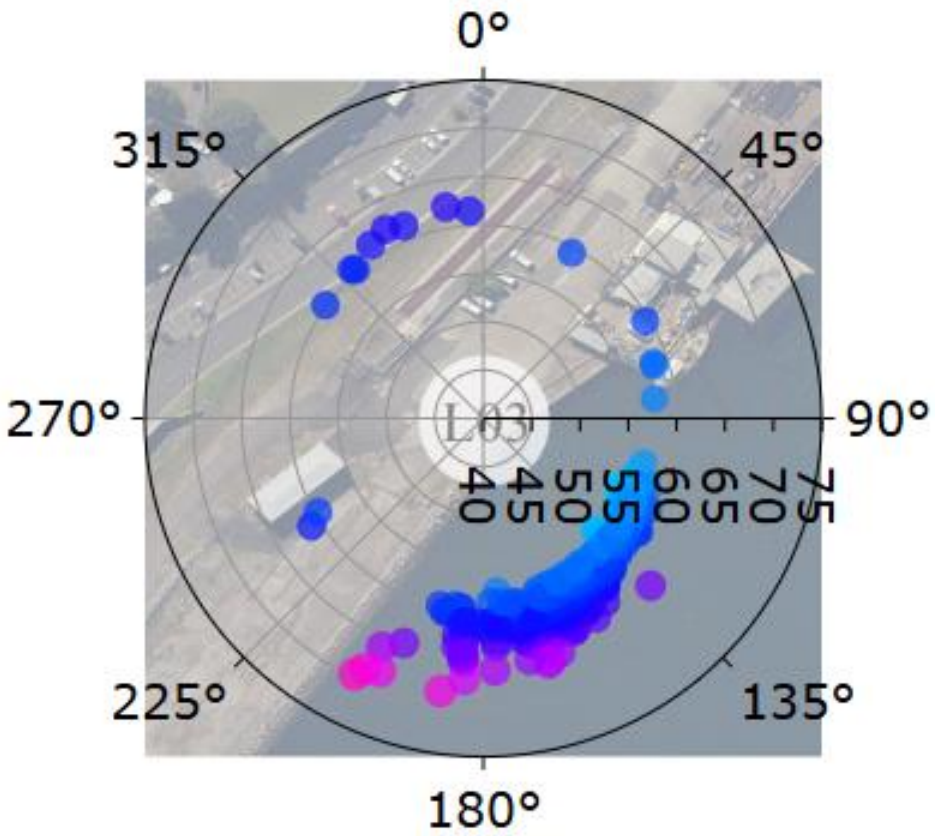


Figure 3.12 Typical vessel polar (directional) plot

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