



Monthly compliance noise monitoring report

Glebe Island / White Bay

Port Authority of New South Wales

March 2023



→ The Power of Commitment

GHD Pty Ltd | ABN 39 008 488 373



133 Castlereagh Street, Level 15

Sydney, New South Wales 2000, Australia

T +61 2 9239 7100 | **F** +61 2 9239 7199 | **E** sydmil@ghd.com | **ghd.com**

Author	Chris Gordon
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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 2023, 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	14529640	Initial calibration level 92.6 dBA Min. deviation = 0.0 dB Max. deviation = 0.3 dB
		L02	Maintenance Building on White Bay		14529642	Initial calibration level 91.5 dBA Min. deviation = 0.2 dB Max. deviation = 0.3 dB
		L03	Adjacent to White Bay 2		14529643	Initial calibration level 91.7 dBA Min. deviation = 0.1 dB Max. deviation = 0.3 dB
		L04	Onsite at Glebe Island		14529644	Initial calibration level 92.3 dBA Min. deviation = -0.1 dB Max. deviation = -0.1 dB
Vessel name	Arrival date and time	Departure date and time	Berth location	Applicable noise monitoring location/s		
Bulk vessels						
Wyuna	March 12, 2023 / 18:10	March 14, 2023 / 16:59	GLB8	L03		
Powan	March 22, 2023 / 15:33	March 26, 2023 / 00:02	GLB7	L03		
Kondili	March 26, 2023 / 22:39	March 29, 2023 / 11:48	GLB8	L03		

Vessel name	Arrival date and time	Departure date and time	Berth location	Applicable noise monitoring location/s
Pioneer	March 29, 2023 / 02:36	April 1, 2023 / 22:06	GLB7	L03
Cruise vessels				
Viking Orion	March 1, 2023 / 11:19	March 2, 2023 / 22:20	WBCT	L01
Pacific Adventure	March 3, 2023 / 09:58	March 3, 2023 / 19:07	WBCT	L01
Norwegian Spirit	March 4, 2023 / 05:57	March 4, 2023 / 17:59	WBCT	L01
Pacific Adventure	March 6, 2023 / 06:07	March 6, 2023 / 16:32	WBCT	L01
Seabourn Sojourn	March 6, 2023 / 08:12	March 6, 2023 / 20:38	WHT4	L02
Seabourn Sojourn	March 6, 2023 / 20:38	March 7, 2023 / 21:03	WBCT	L01
Seabourn Odyssey	March 8, 2023 / 11:36	March 9, 2023 / 18:44	WBCT	L01
Noordam	March 11, 2023 / 06:33	March 11, 2023 / 18:26	WBCT	L01
Pacific Adventure	March 17, 2023 / 08:48	March 17, 2023 / 17:59	WBCT	L01
Europa	March 17, 2023 / 09:03	March 17, 2023 / 18:58	WHT4	L02
Europa	March 17, 2023 / 18:58	March 19, 2023 / 18:52	WBCT	L01
Viking Mars	March 20, 2023 / 12:50	March 21, 2023 / 22:48	WBCT	L01
Norwegian Spirit	March 28, 2023 / 05:52	March 28, 2023 / 16:33	WBCT	L01

3. Compliance summary

3.1 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 ³ L _{Amax}	Day ² L _{Aeq} (15 hr)	Night ³ L _{Aeq} (1 hr)	Night ³ L _{Amax}	Day	Night
Wyuna	Mar 12 – Mar 14	L03	54	53	63	60	55	65	Yes	Yes
Powan	Mar 22 – Mar 26	L03	54	52	61	60	55	65	Yes	Yes
Kondili	Mar 26 – Mar 29	L03	56	53	61	60	55	65	Yes	Yes
Pioneer	Mar 29 – Apr 1	L03	53	57	58	60	55	65	Yes	No ⁴

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) – worst case 1 hour period

Note: 4) The exceedance is due to a 5 dB correction for tonal noise. See Section 4.4 regarding the Pioneer

3.2 Cruise vessels

Vessel	Dates at berth	Monitor location	Vessel Noise Level, dBA (inclusive of any modifying factor penalties)		Vessel Noise Trigger Levels, dBA		Compliance	
			Day ¹ L _{Aeq} (15 hr)	Night ² L _{Aeq} (9 hr)	Day ⁴ L _{Aeq} (15 hr)	Night ² L _{Aeq} (9 hr)	Day ⁴	Night
Viking Orion	Mar 1	L01	56	55	N/A	58	N/A	Yes
	Mar 2	L01	54	55	N/A	58	N/A	Yes
Pacific Adventure	Mar 3	L01	59	-	N/A	58	N/A	Yes
Norwegian Spirit	Mar 4	L01	58	55	N/A	58	N/A	Yes
Pacific Adventure	Mar 6	L01	58	56	N/A	58	N/A	Yes
Seabourn Sojourn	Mar 6	L02	50 ⁶	-	N/A	58	N/A	Yes
	Mar 6	L01	49	52	N/A	58	N/A	Yes
	Mar 7	L01	53	-	N/A	58	N/A	Yes
Seabourn Odyssey	Mar 8	L01	51	50	N/A	58	N/A	Yes
	Mar 9	L01	53	-	N/A	58	N/A	Yes
Noordam	Mar 11	L01	55	-	N/A	58	N/A	Yes
Pacific Adventure	Mar 17	L01	59	-	N/A	58	N/A	Yes
Europa	Mar 17	L02	51 ⁶	-	N/A	58	N/A	Yes
	Mar 17	L01	52	52	N/A	58	N/A	Yes
	Mar 18	L01	54	52	N/A	58	N/A	Yes
	Mar 19	L01	51	-	N/A	58	N/A	Yes
Viking Mars	Mar 20	L01	55	-	N/A	58	N/A	Yes
	Mar 21	L01	n/a ⁵	n/a ⁵	N/A	58	N/A	-
Norwegian Spirit	Mar 28	L01	56	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."

Note: 5) The IMS system was down between March 20, 19:16 to March 22, 14:18. No data was captured during this period.

Note: 6) The data was adjusted from the summary values in IMS based on a review of the measured background L90 noise levels.

4. Detailed results – bulk vessels

4.1 Wyuna – March 12, 2023 – February 16, 2023 (GLB8)

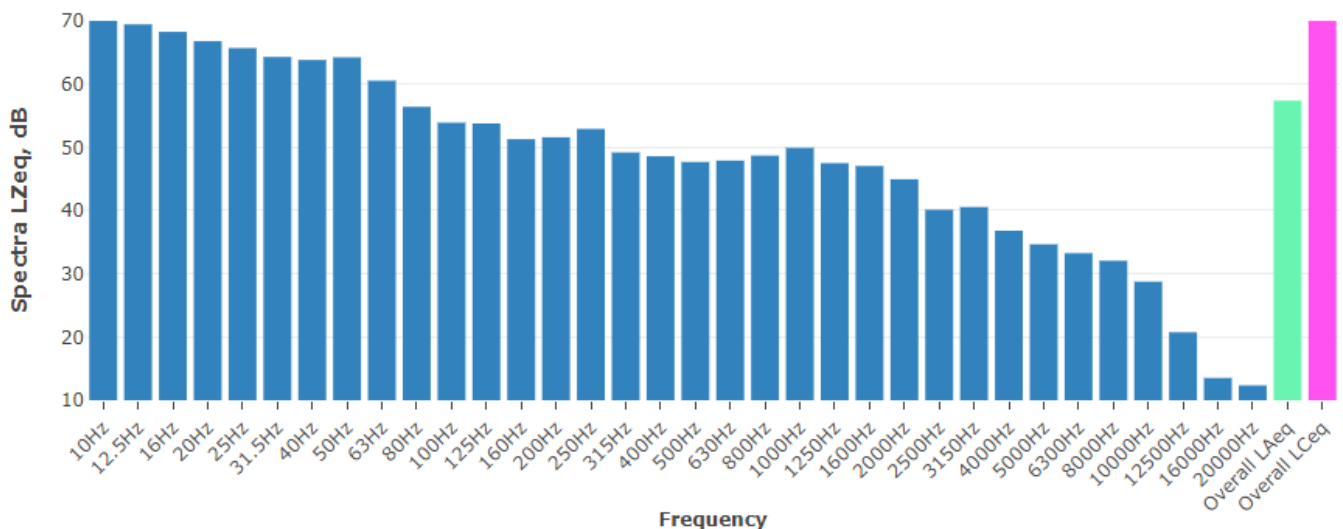
4.1.1 Daily noise monitoring results

Date	Time period ¹	Monitor location	Noise descriptor	Vessel noise level dBA ²	Tonal	LFN ³	Vessel Noise Trigger Levels, dBA	Compliance
March 12, 2023	Day	L03	L _{Aeq} , 15 hour ¹	50	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	48	No	Yes	55	Yes
			L _{Amax}	63	-	-	65	Yes
March 13, 2023	Day	L03	L _{Aeq} , 15 hour ¹	54	No	No	60	Yes
	Night		L _{Aeq} , 1 hour ¹	53	Yes	No	55	Yes
			L _{Amax}	57	-	-	65	Yes
March 14, 2023	Day	L03	L _{Aeq} , 15 hour ¹	54	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	-	-	-	55	Yes
			L _{Amax}	-	-	-	65	Yes

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

4.1.2 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.

Figure 4.1 Typical vessel spectrum – noise level at L03

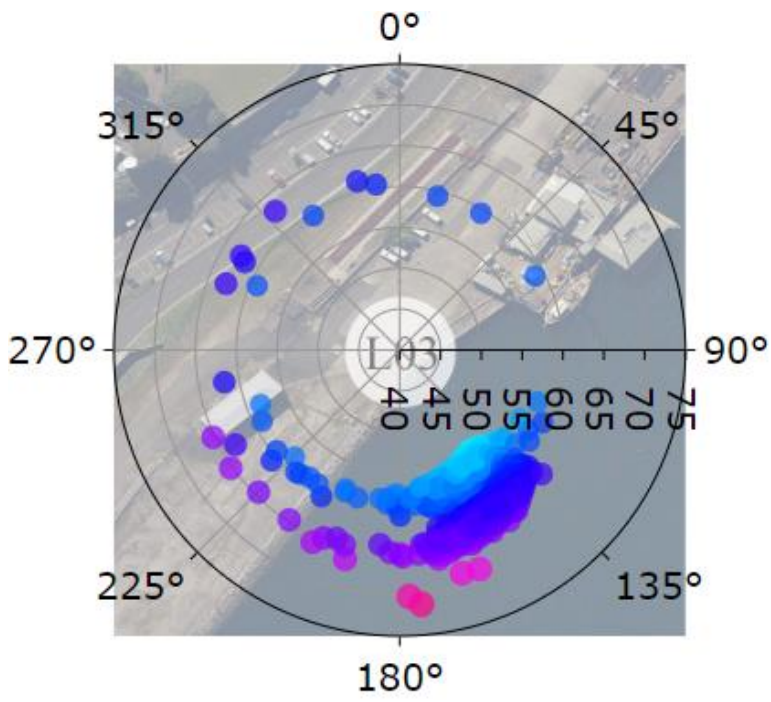


Figure 4.2 Typical vessel polar (directional) plot

4.2 Powan – March 22 – March 25, 2023 (GLB7)

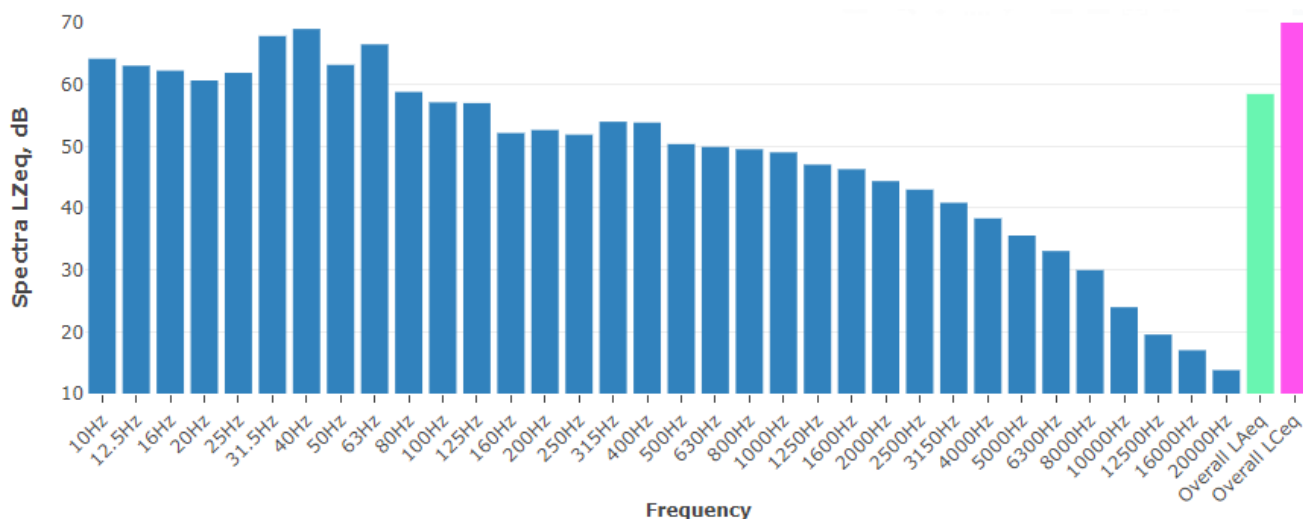
4.2.1 Daily noise monitoring results

Date	Time period ¹	Monitor location	Noise descriptor	Vessel noise level dBA ²	Tonal	LFN ³	Vessel Noise Trigger Levels, dBA	Compliance
March 22, 2023	Day	L03	L _{Aeq} , 15 hour ¹	52	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	52	No	No	55	Yes
			L _{Amax}	61	-	-	65	Yes
March 23, 2023	Day	L03	L _{Aeq} , 15 hour ¹	54	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	52	No	No	55	Yes
			L _{Amax}	55	-	-	65	Yes
March 24, 2023	Day	L03	L _{Aeq} , 15 hour ¹	54	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	51	No	Yes	55	Yes
			L _{Amax}	61	-	-	65	Yes
March 25 ⁴ , 2023	Day	L03	L _{Aeq} , 15 hour ¹	52	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	52	-	-	55	-
			L _{Amax}	56	-	-	65	-

Notes

- Daytime period (7 am to 10 pm) – 15 hours
Night-time period (10 pm to 7 am) – worst case 1 hour
- Inclusive of any penalties for modifying factors
- LFN = Low Frequency Noise
- The Powan departed on March 26 at 00:02. This data was captured as part of March 25.

4.2.2 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 4.3 Typical vessel spectrum – noise level at L03

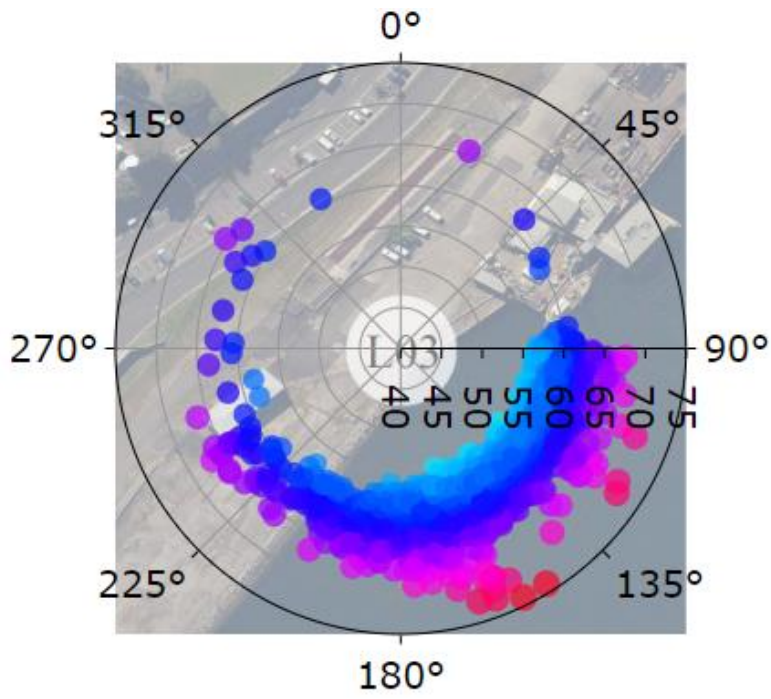


Figure 4.4 Typical vessel polar (directional) plot

4.3 Kondili – March 26 – March 29, 2023 (GLB7)

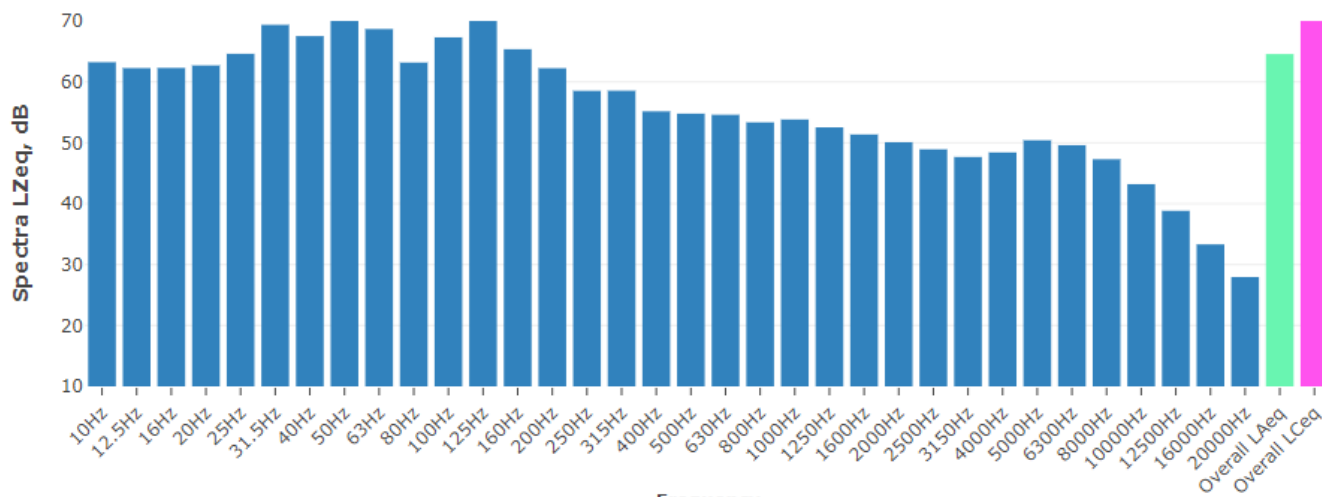
4.3.1 Daily noise monitoring results

Date	Time period ¹	Monitor location	Noise descriptor	Vessel noise level dBA ²	Tonal	LFN ³	Vessel Noise Trigger Levels, dBA	Compliance
March 26, 2023	Day	L03	L _{Aeq} , 15 hour ¹	-	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	52	No	No	55	Yes
			L _{Amax}	61	-	-	65	Yes
March 27, 2023	Day	L03	L _{Aeq} , 15 hour ¹	53	No	No	60	Yes
	Night		L _{Aeq} , 1 hour ¹	53	No	No	55	Yes
			L _{Amax}	60	-	-	65	Yes
March 28, 2023	Day	L03	L _{Aeq} , 15 hour ¹	53	No	No	60	Yes
	Night		L _{Aeq} , 1 hour ¹	53 ⁴	No	No	55	Yes
			L _{Amax}	61	-	-	65	Yes
March 29, 2023	Day	L03	L _{Aeq} , 15 hour ¹	56	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	-	-	-	55	Yes
			L _{Amax}	-	-	-	65	Yes

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) Based on the contributions from the Kondili prior to the arrival of the Pioneer.

4.3.2 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 4.5 Typical vessel spectrum – noise level at L03

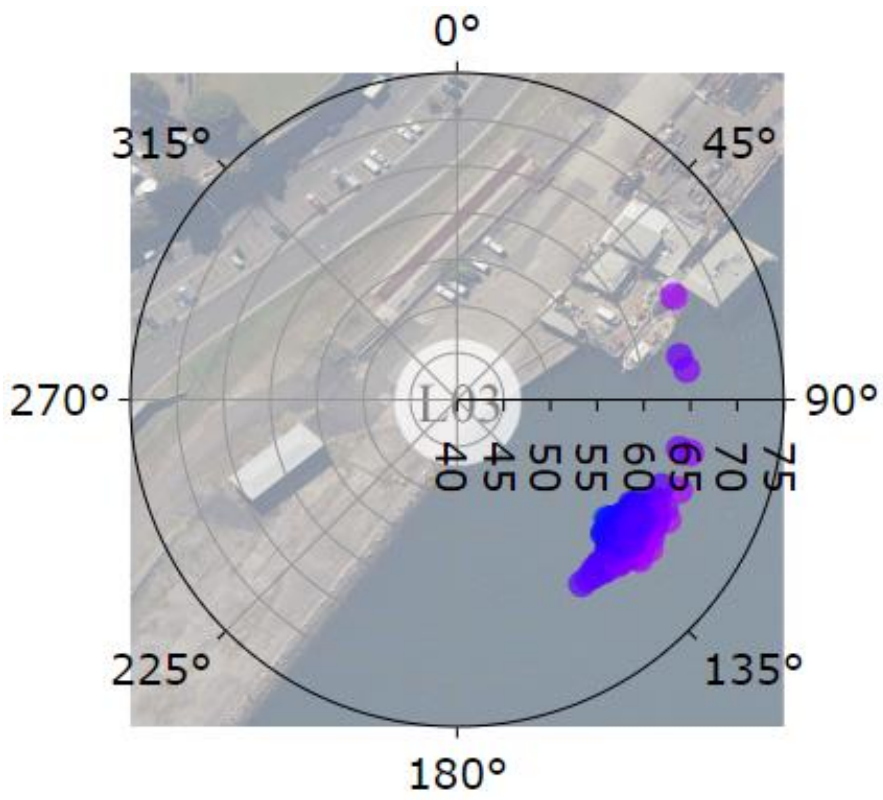


Figure 4.6 Typical vessel polar (directional) plot

4.4 Pioneer – March 29 – April 1, 2023 (GLB7)

4.4.1 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 29, 2023	Day	L03	L _{Aeq} , 15 hour ¹	53	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	53	No	No	55	Yes
			L _{Amax}	58	-	-	65	Yes
March 30, 2023	Day	L03	L _{Aeq} , 15 hour ¹	53	No	No	60	Yes
	Night		L _{Aeq} , 1 hour ¹	52	No	No	55	Yes
			L _{Amax}	57	-	-	65	Yes
March 31, 2023	Day	L03	L _{Aeq} , 15 hour ¹	53	No	No	60	Yes
	Night		L _{Aeq} , 1 hour ¹	57	Yes	No	55	No
			L _{Amax}	56	-	-	65	Yes
April 1, 2023	Day	L03	L _{Aeq} , 15 hour ¹	53	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	-	-	-	55	Yes
			L _{Amax}	-	-	-	65	Yes

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) See discussion below regarding tonal noise

4.4.2 Discussion regarding tonal noise

During the period between March 31 at 11:00 and April 1 at 3:00 am, the Pioneer was determined to be tonal at 200 Hz. A review of the data shows that there is regularly a tone present at 200 Hz, however the adjacent frequency bands generally have high enough noise levels to mask this tone. During this period, the adjacent frequencies were low enough for the tone to be determined as being tonal in accordance with the NSW EPA's Noise Policy for Industry. As such, a 5 dB penalty has been applied to the measured values during this period which leads to a non-compliance with the night-time trigger level.

A discussion with the shipping operator should be held to determine the source of this noise.

4.4.3 Additional information

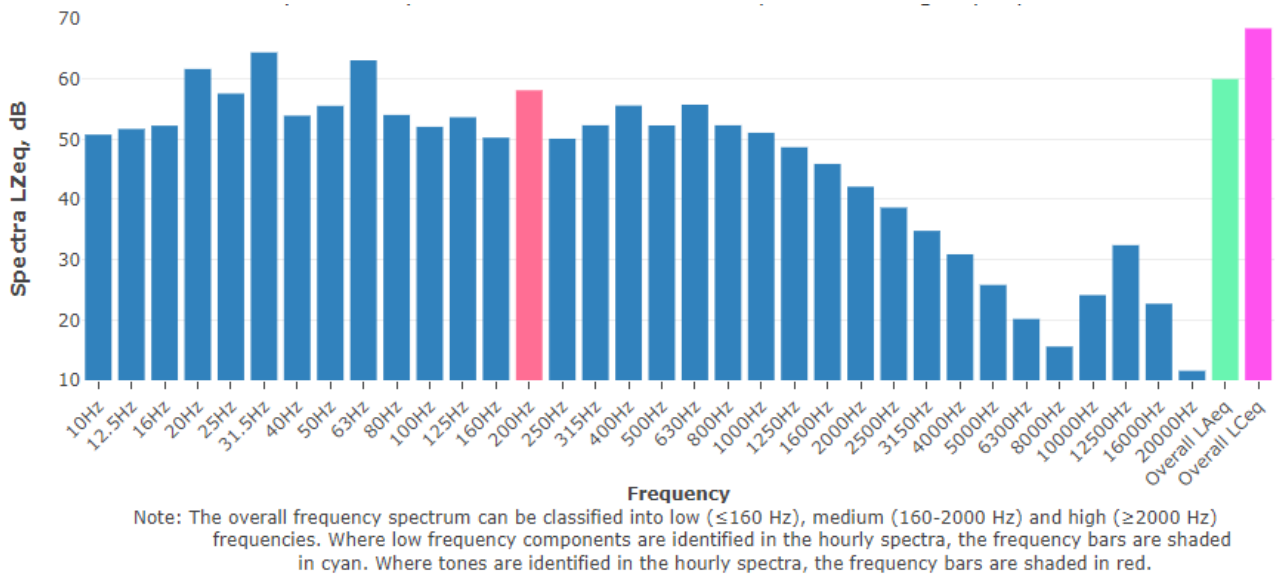


Figure 4.7 Typical vessel spectrum – noise level at L03 (during periods of tonal noise)

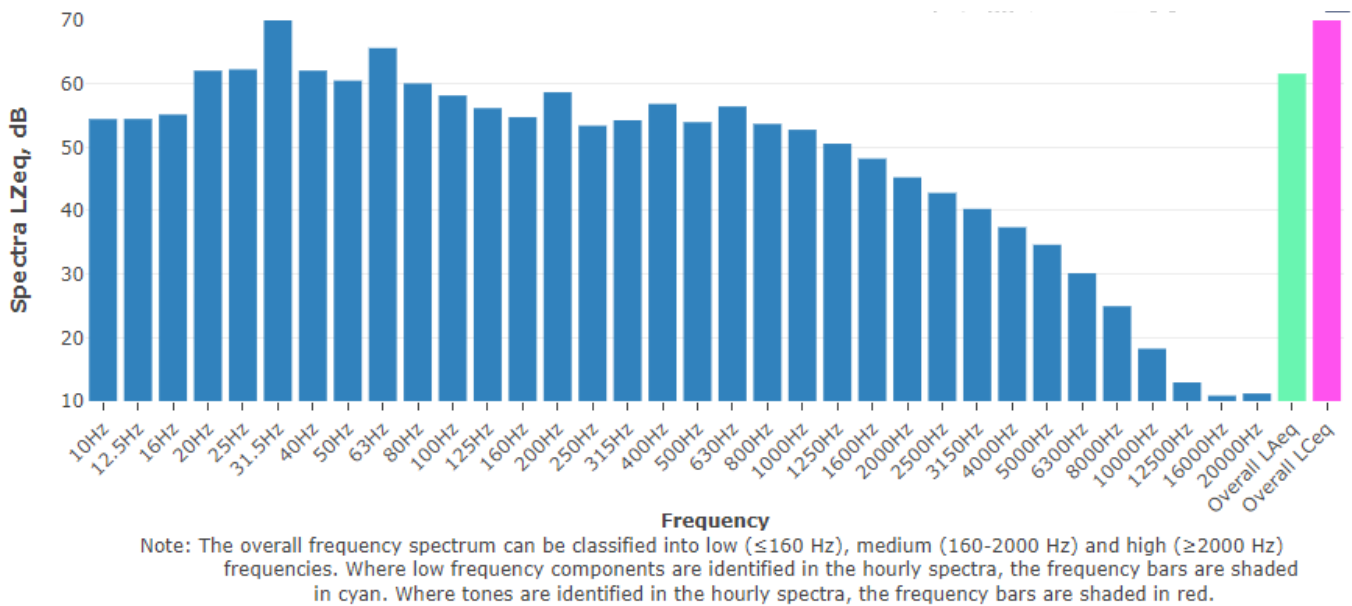


Figure 4.8 Typical vessel spectrum – noise level at L03 (during all other periods)

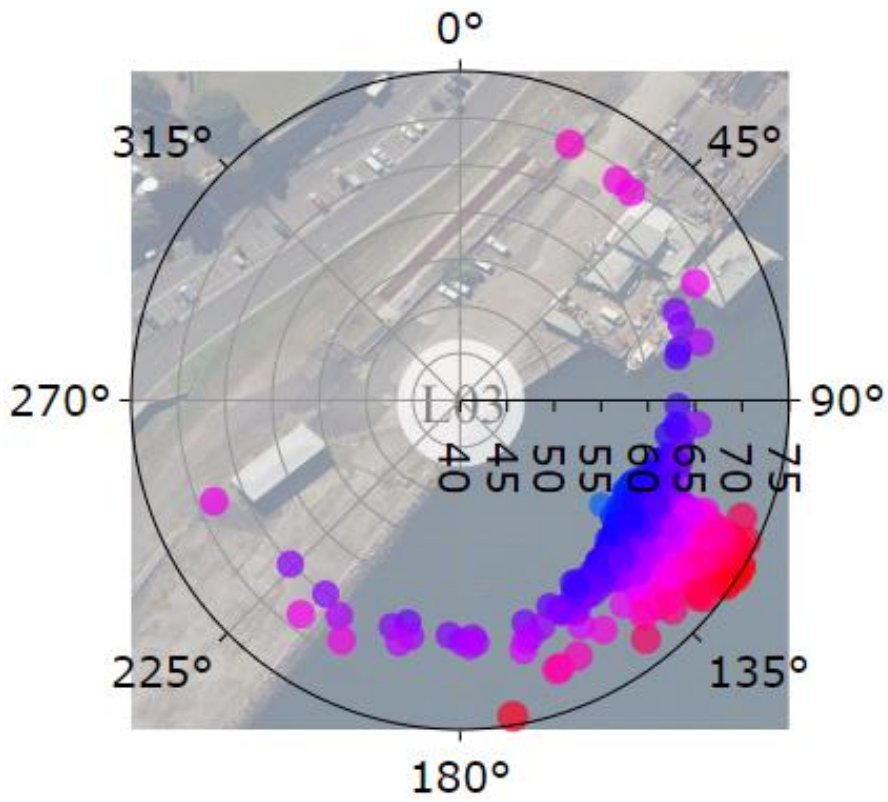


Figure 4.9 Typical vessel polar (directional) plot



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