



Monthly compliance noise monitoring report

Glebe Island / White Bay

Port Authority of New South Wales

September 2023



→ The Power of Commitment

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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 September 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	14529646	Initial calibration level 90.6 dBA Min. deviation = 0.3 dB Max. deviation = 0.4 dB
		L02	Maintenance Building on White Bay		14529643	Initial calibration level 91.5 dBA Min. deviation = 0.4 dB Max. deviation = 0.7 dB
		L03	Adjacent to White Bay 2	Meter settings A-weighted Fast time response 15 minute intervals	14529645	Initial calibration level 92.5 dBA Min. deviation = 0.0 dB Max. deviation = 0.1 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						
Akuna	September 4, 2023 / 09:36	September 5, 2023 / 19:57		GLB8	L03	
Pioneer	September 11, 2023 / 11:56	September 15, 2023 / 06:49		GLB7	L03	

Vessel name	Arrival date and time	Departure date and time	Berth location	Applicable noise monitoring location/s
CSL Reliance	September 16, 2023 / 02:04	September 17, 2023 / 13:02	GLB7	L03
Akuna	September 20, 2023 / 04:46	September 22, 2023 / 16:55	GLB8	L03
CSL Reliance	September 29, 2023 / 23:36	October 2, 2023 / 13:58	GLB7	L03
Cruise vessels				
Pacific Adventure	September 4, 2023 / 06:48	September 4, 2023 / 16:55	WBCT	L01
Pacific Adventure	September 14, 2023 / 06:36	September 14, 2023 / 15:56	WBCT	L01
Pacific Adventure	September 18, 2023 / 06:45	September 18, 2023 / 16:08	WBCT	L01
Pacific Adventure	September 22, 2023 / 06:37	September 22, 2023 / 16:29	WBCT	L01
Pacific Adventure	September 30, 2023 / 06:39	September 30, 2023 / 16:06	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
Akuna	Sept 4 – Sept 5	L03	54	48	64	60	55	65	Yes	Yes
Pioneer	Sept 11 – Sept 15	L03	51	48	63	60	55	65	Yes	Yes
CSL Reliance	Sept 16 – Sept 17	L03	52	53	62 ⁴	60	55	65	Yes	Yes ⁴
Akuna	Sept 20 – Sept 22	L03	55	52	64	60	55	65	Yes	Yes
CSL Reliance	Sept 29 – Oct 2	L03	52	51	63	60	55	65	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) The maximum noise level shown in IMS was 79 dBA. This occurred during arrival while the tugs and pilot vehicle were still present and unlikely to be from the CSL Reliance. The vessel was compliant with the L_{Amax} Criteria at all other times.

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 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
Pacific Adventure	Sept 4	L01	57	-	N/A	58	N/A	-
Pacific Adventure	Sept 14	L01	58	-	N/A	58	N/A	-
Pacific Adventure	Sept 18	L01	57	-	N/A	58	N/A	-
Pacific Adventure	Sept 22	L01	59	-	N/A	58	N/A	-
Pacific Adventure	Sept 30	L01	58	74 ⁵	N/A	58	N/A	No ⁵

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) See discussion in Section 4.6

4. Detailed results – bulk vessels

4.1 Akuna – September 4 – September 5, 2023 (GLB8)

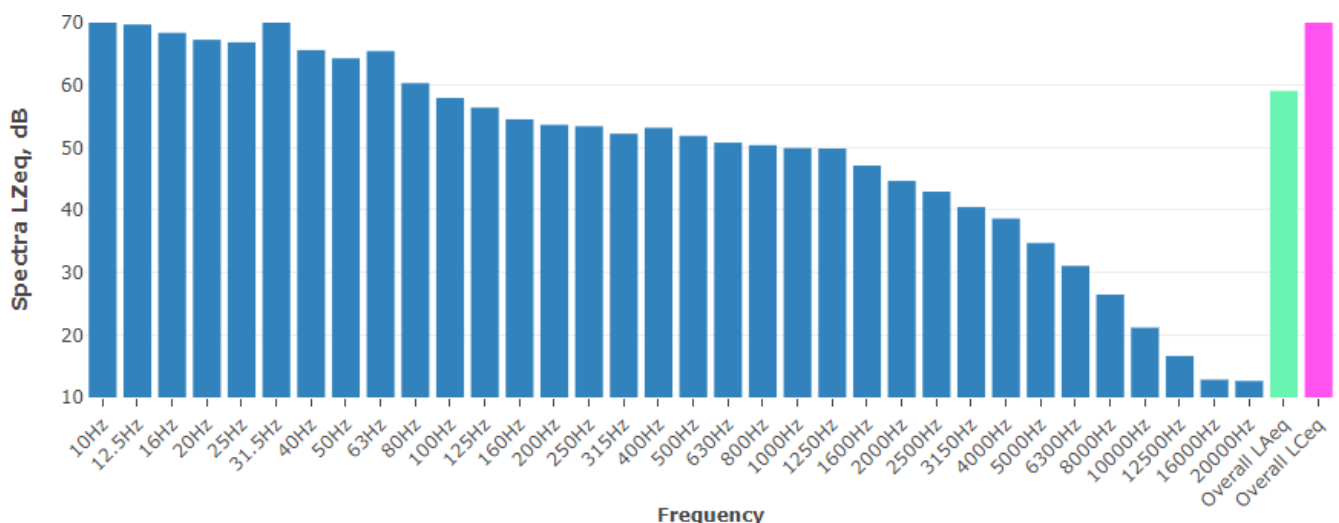
4.1.1 Daily noise monitoring results

Date	Time period ¹	Monitor location	Noise descriptor	Vessel noise level dBA ²	Tonal	LFN ³	Vessel Noise Trigger Levels, dBA	Compliance
September 4, 2023	Day	L03	L _{Aeq, 15 hour} ¹	54	No	Yes	60	Yes
	Night		L _{Aeq, 1 hour} ¹	48	No	Yes	55	Yes
			L _{Amax}	64	-	-	65	Yes
September 5, 2023	Day	L03	L _{Aeq, 15 hour} ¹	53	No	Yes	60	Yes
	Night		L _{Aeq, 1 hour} ¹	-	-	-	55	-
			L _{Amax}	-	-	-	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

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

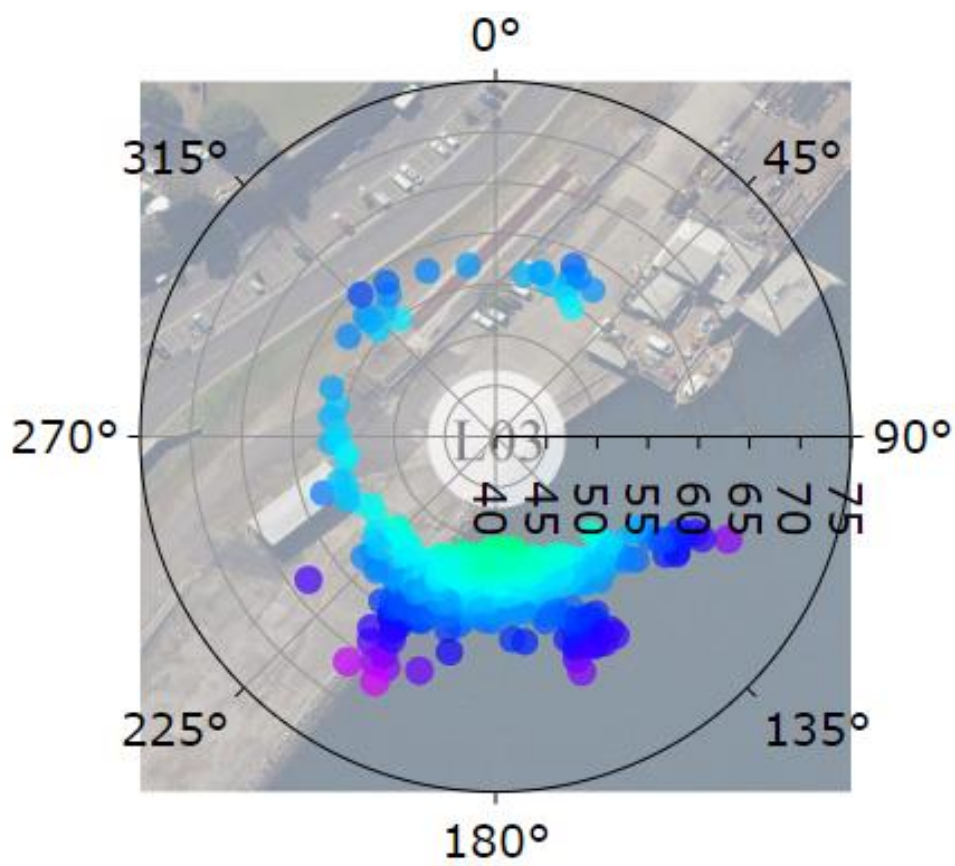


Figure 4.2 Typical vessel polar (directional) plot

4.2 Pioneer – September 11 – September 15, 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
September 11, 2023	Day	L03	L _{Aeq, 15 hour} ¹	51	No	Yes	60	Yes
	Night		L _{Aeq, 1 hour} ¹	47	No	Yes	55	Yes
			L _{Amax}	59	-	-	65	Yes
September 12, 2023	Day	L03	L _{Aeq, 15 hour} ¹	48	No	Yes	60	Yes
	Night		L _{Aeq, 1 hour} ¹	48	No	Yes	55	Yes
			L _{Amax}	58	-	-	65	Yes
September 13, 2023	Day	L03	L _{Aeq, 15 hour} ¹	49	No	Yes	60	Yes
	Night		L _{Aeq, 1 hour} ¹	48	No	Yes	55	Yes
			L _{Amax}	60	-	-	65	Yes
September 14/15, 2023	Day	L03	L _{Aeq, 15 hour} ¹	48	No	Yes	60	Yes
	Night		L _{Aeq, 1 hour} ¹	48	No	Yes	55	Yes
			L _{Amax}	63	-	-	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

4.2.2 Additional information

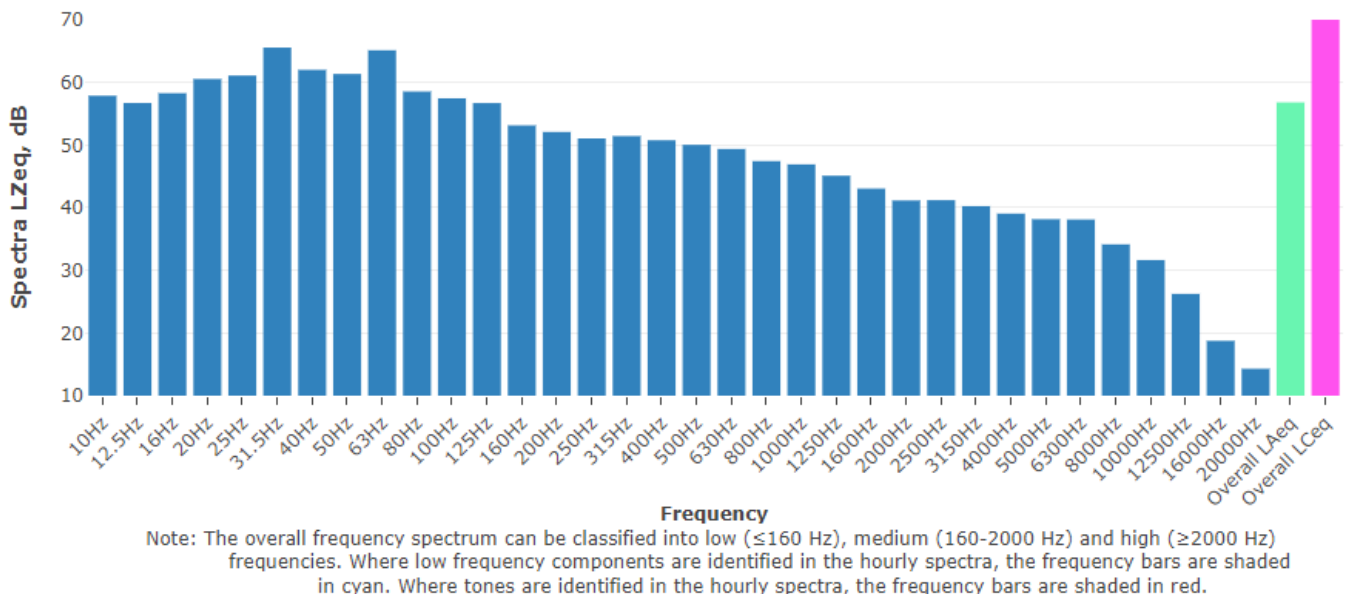


Figure 4.3 Typical vessel spectrum – noise level at L03

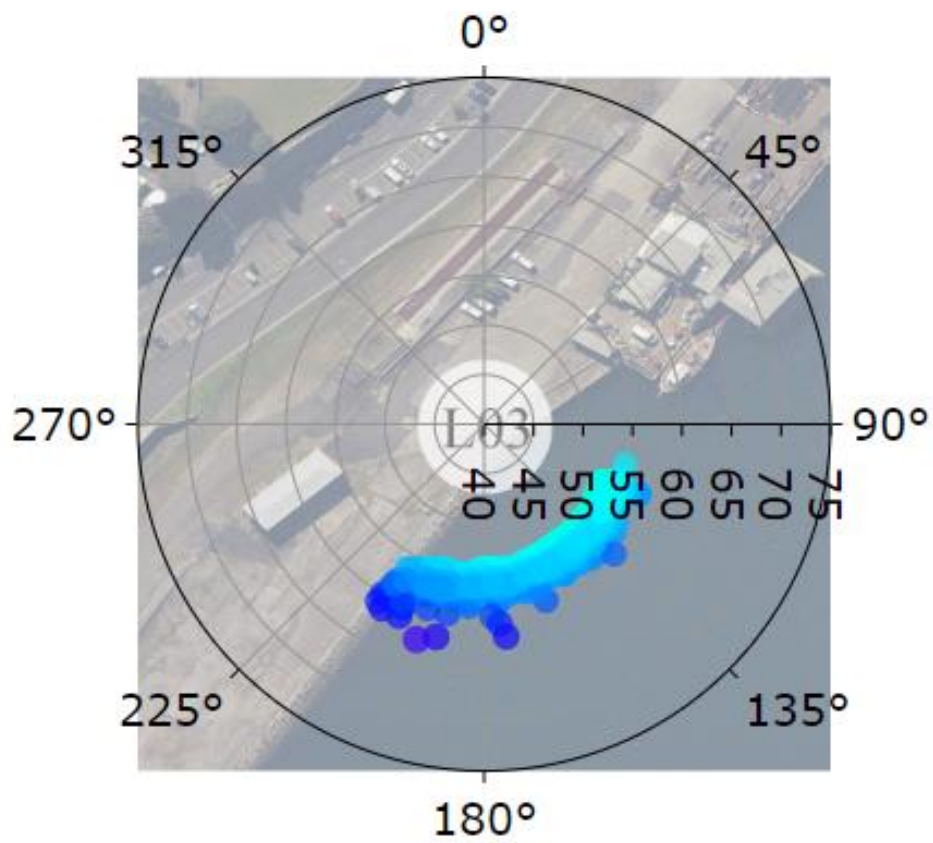


Figure 4.4 Typical vessel polar (directional) plot

4.3 CSL Reliance – September 16 – September 17, 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
September 15, 2023	Night	L03	L _{Aeq} , 1 hour ¹	51	No	Yes	55	Yes
			L _{Amax}	79 ⁴	-	-	65	Yes ⁴
September 16, 2023	Day	L03	L _{Aeq} , 15 hour ¹	52	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	53	No	Yes	55	Yes
			L _{Amax}	62	-	-	65	Yes ⁴
September 17, 2023	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

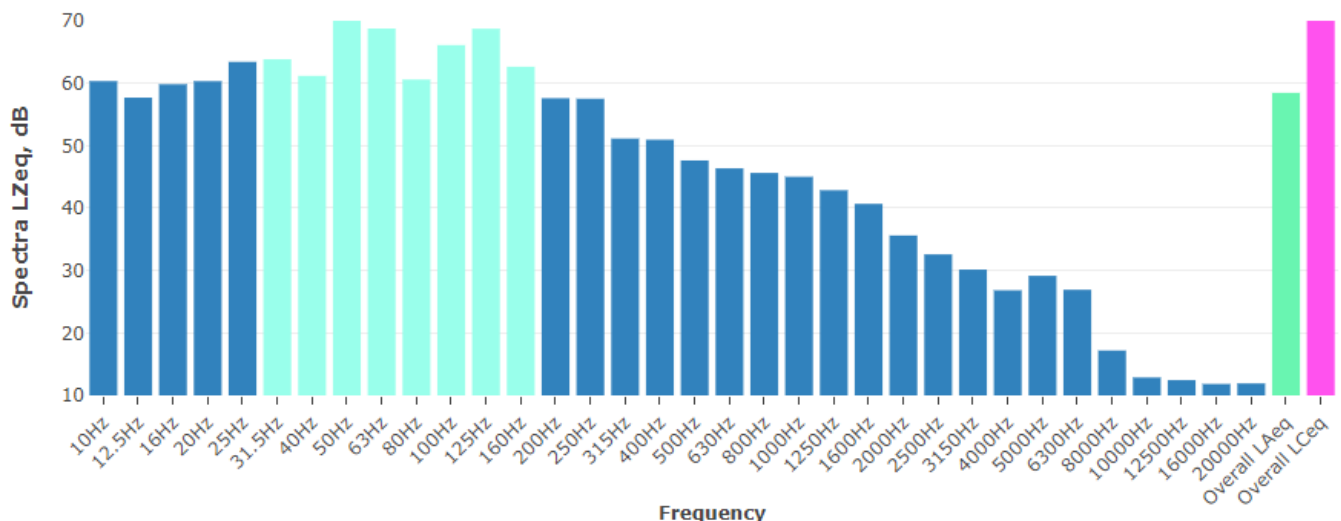
Night-time period (10 pm to 7 am) – worst case 1 hour

2) Inclusive of any penalties for modifying factors

3) LFN = Low Frequency Noise

4) The maximum noise level shown in IMS was 79 dBA. This occurred during arrival while the tugs were still present. The vessel was compliant with the L_{Amax} criteria at all other times

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

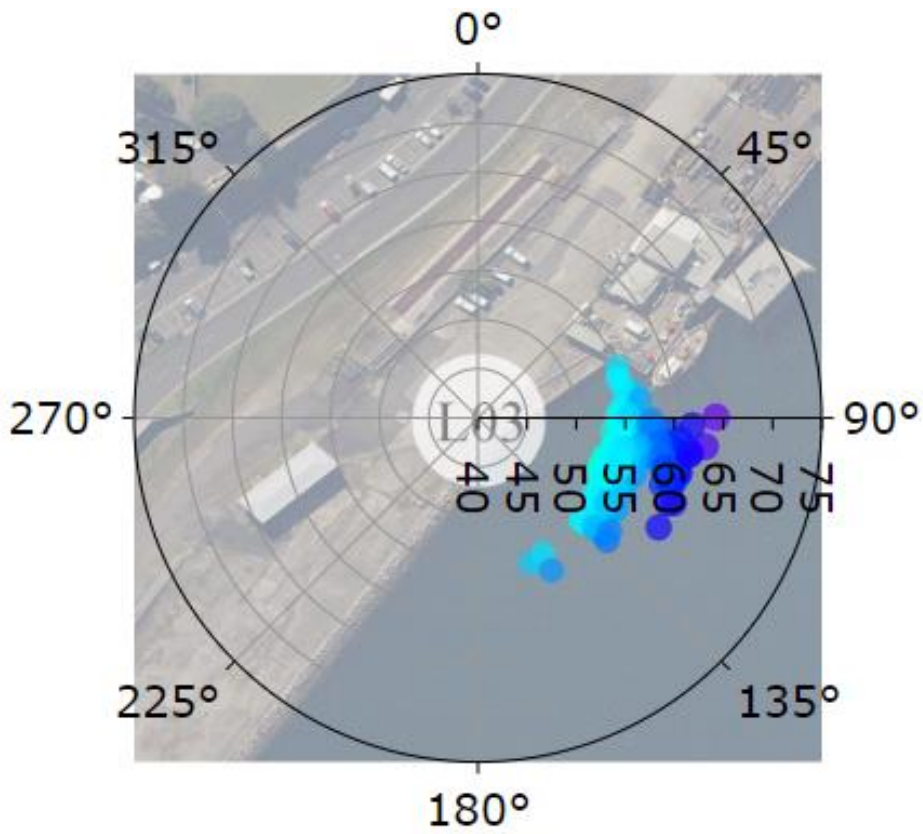


Figure 4.6 Typical vessel polar (directional) plot

4.4 Akuna – September 20 – September 22, 2023 (GLB8)

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
September 20, 2023	Day	L03	L _{Aeq} , 15 hour ¹	53	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	52	No	Yes	55	Yes
			L _{Amax}	64	-	-	65	Yes
September 21, 2023	Day	L03	L _{Aeq} , 15 hour ¹	54	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	50	No	No	55	Yes
			L _{Amax}	63	-	-	65	Yes
September 22, 2023	Day	L03	L _{Aeq} , 15 hour ¹	55	No	No	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

4.4.2 Additional information

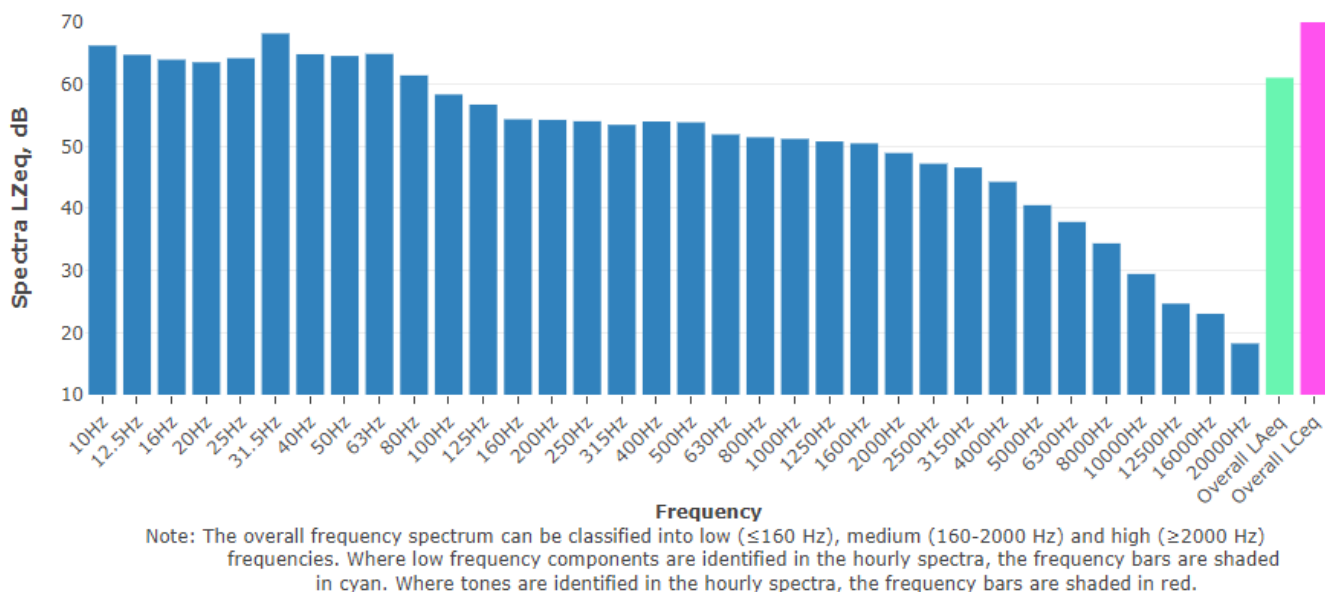


Figure 4.7 Typical vessel spectrum – noise level at L03

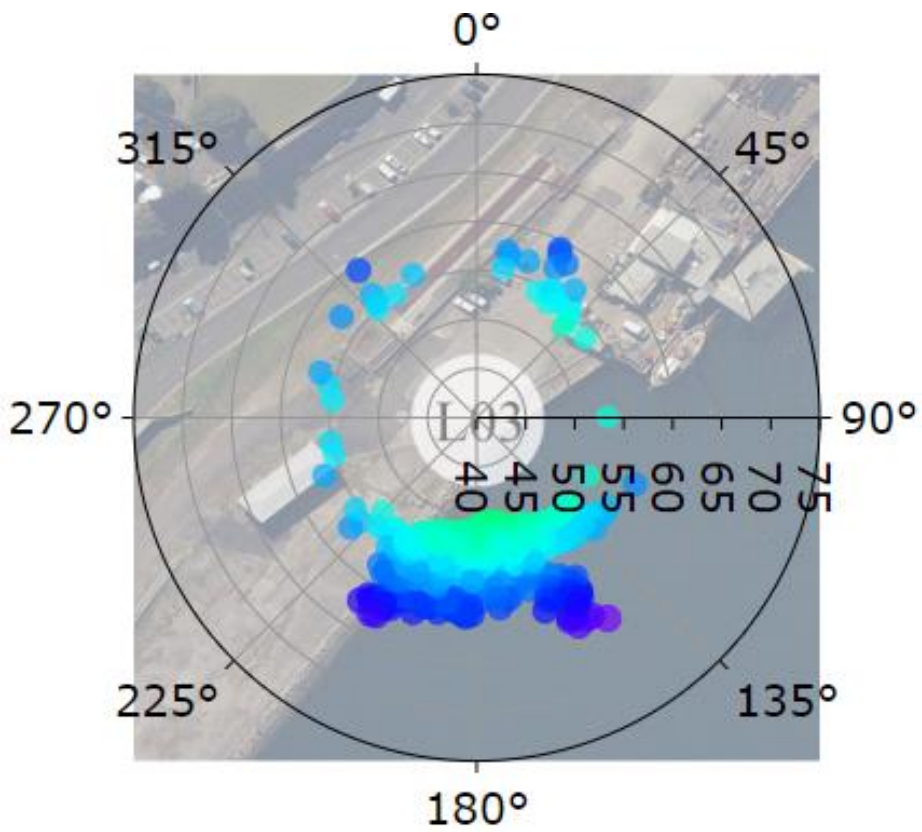


Figure 4.8 Typical vessel polar (directional) plot

4.5 CSL Reliance – September 29 – October 2, 2023 (GLB7)

4.5.1 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
September 29, 2023	Day	L03	L _{Aeq} , 15 hour ¹	-	-	-	60	-
	Night		L _{Aeq} , 1 hour ¹	50	No	Yes	55	Yes
			L _{Amax}	63	-	-	65	Yes
September 30, 2023	Day	L03	L _{Aeq} , 15 hour ¹	52	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	51	No	Yes	55	Yes
			L _{Amax}	60	-	-	65	Yes
October 1, 2023	Day	L03	L _{Aeq} , 15 hour ¹	52	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	53	No	Yes	55	Yes
			L _{Amax}	63	-	-	65	Yes
October 2, 2023	Day	L03	L _{Aeq} , 15 hour ¹	52	No	Yes	60	Yes
	Night		L _{Aeq} , 1 hour ¹	-	-	-	55	-
			L _{Amax}	-	-	-	65	-

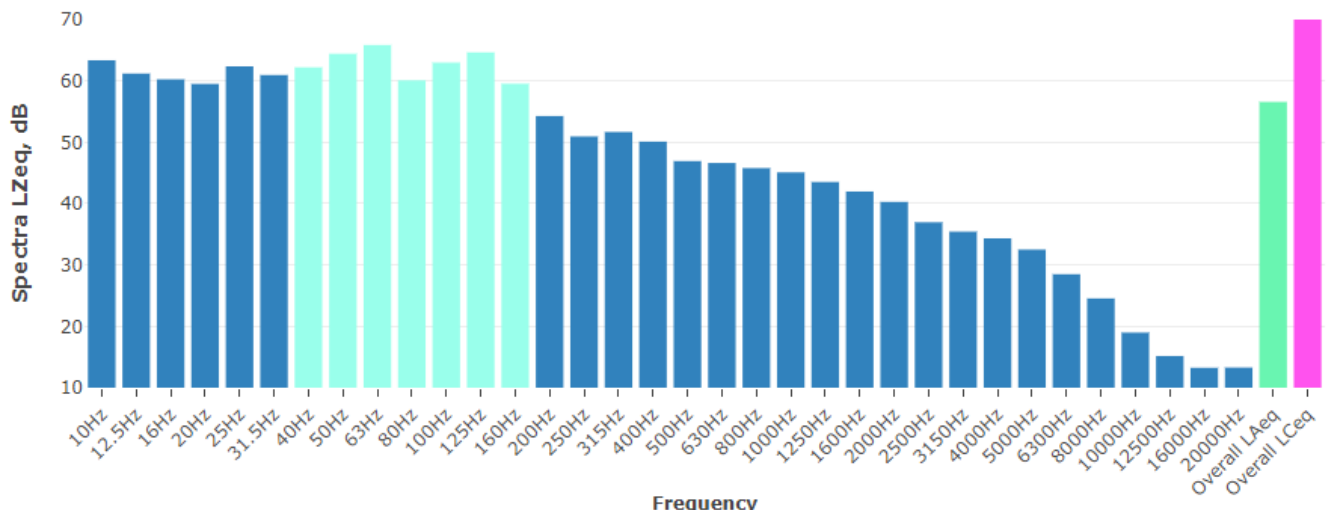
Notes

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

4.5.2 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 4.9 Typical vessel spectrum – noise level at L03

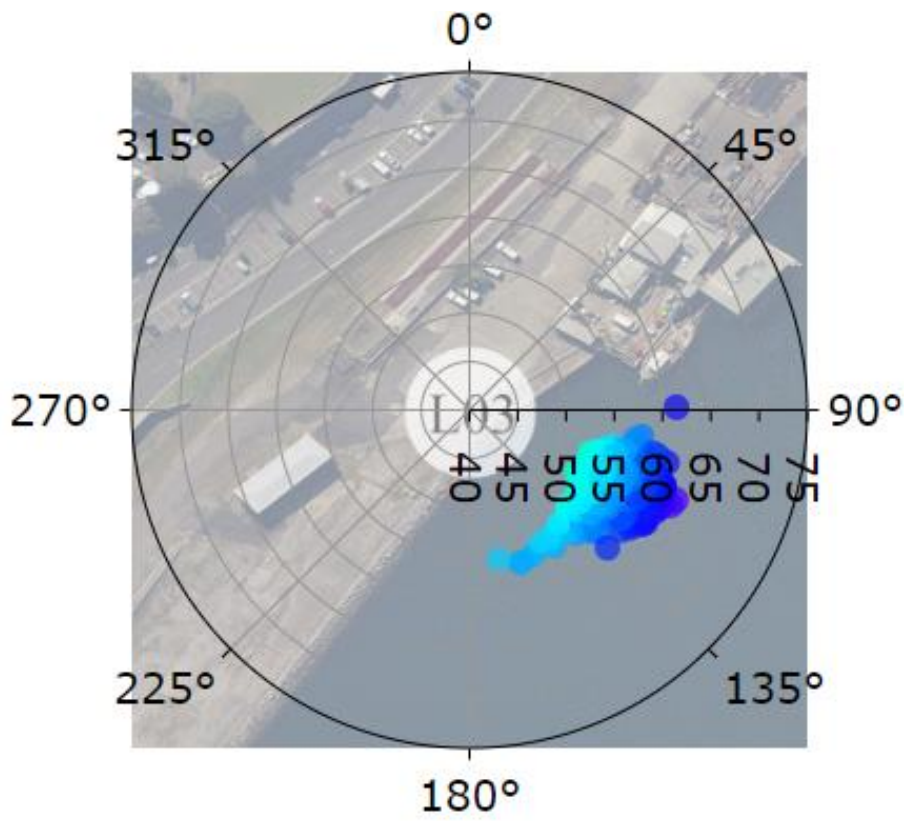


Figure 4.10 Typical vessel polar (directional) plot

4.6 Pacific Adventure – September 30 (WBCT)

The Pacific Adventure first approached the berth at White Bay Cruise Terminal at approximately 6:20 on 30 September 2023. As this was prior to 7 am, this is considered the night period. Upon arrival, the ships safety system alarm activated on Deck 15 CO2 room, as advised by the director of Maritime Operations at Carnival Australia.

The activation of the alarm led to a period of non-compliance of the White Bay Cruise Terminal Noise Restriction Policy prior to 7 am. The overall noise level was measured to be 69 dBA at noise monitoring location L01, however the alarm was deemed to be tonal at 2500 Hz, in accordance with the EPA's Noise Policy for Industry. As such, the noise level of the Pacific Adventure during this period was 74 dBA, inclusive of a 5 dB correction for tonal noise.

The graph below shows the noise level as the vessel enters the berth at White Bay Cruise Terminal. This graph shows the noise level increase to approximately 70 dBA, then decrease once the safety alarm had ceased.



Figure 4.11 A-weighted noise level at L01 as Pacific Adventure entered the WBCT berth

It is noted that the measured level of the Pacific Adventure after the alarm had ceased was 58 dBA.



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