



Monthly compliance noise monitoring report

Glebe Island / White Bay

Port Authority of New South Wales

October 2022



→ The Power of Commitment

GHD Pty Ltd | ABN 39 008 488 373


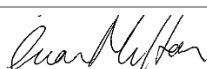
133 Castlereagh Street, Level 15

Sydney, New South Wales 2000, Australia

T +61 2 9239 7100 | **F** +61 2 9239 7199 | **E** sydmail@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 October 2022, 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 = 0.2 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 = 0.2 dB
		L04	Onsite at Glebe Island		14529644	Initial calibration level 91.4 dBA Out of use during October due to damage
Vessel name	Arrival date and time	Departure date and time		Berth location	Applicable noise monitoring location/s	
Bulk vessels						
Wyuna	October 01, 2022 / 23:45	October 04, 2022 / 02:00		GLB8	L03	
Wyuna	October 21, 2022 / 17:54	October 26, 2022 / 20:30		GLB8	L03	
CSL Reliance	October 23, 2022 / 12:06	October 26, 2022 / 18:00		GLB7	L03	

Vessel name	Arrival date and time	Departure date and time	Berth location	Applicable noise monitoring location/s
Cruise vessels				
Pacific Explorer	October 1, 2022 / 08:59	October 1, 2022 / 16:34	WBCT	L01
Pacific Explorer	October 28, 2022 / 08:45	October 28, 2022 / 16:08	WBCT	L01
Pacific Adventure	October 29, 2022 / 7:03	October 29, 2022 / 16:00	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	Oct 1 – Oct 4	L03	55	57 ^{4.5}	62 ⁴	60	55	65	Yes	No
Wyuna	Oct 21 – Oct 26	L03	53	57 ⁵	60	60	55	65	Yes	No
CSL Reliance	Oct 23 – Oct 26	L03	57	55	60	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) – worst case 1 hour period

Note: 4) The online noise platform indicated the maximum night-time noise levels was L_{Aeq, 1 hour} 56 dBA and L_{Amax} 66 dBA, however on review this was during departure and was influenced by the tug

Note: 5) The noise from the Wyuna during some periods was deemed to be tonal. As such, a 5 dB penalty has been applied in accordance with Fact Sheet 3 Corrections for annoying noise characteristics from the EPA's Noise Policy for Industry

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 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	Night
Pacific Explorer	Oct 1	L01	57	-	58	58	Yes	-
Pacific Explorer	Oct 28	L01	56	-	58	58	Yes	-
Pacific Adventure	Oct 29	L01	59	-	58	58	No	-

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

4. Detailed results – bulk vessels

4.1 Wyuna – October 1 – October 4, 2022 (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
October 2, 2022	Day	L03	L _{Aeq, 15 hour} ¹	55	No	No	60	Yes
	Night		L _{Aeq, 1 hour} ¹	57 ⁵	Yes	No	55	No
			L _{Amax}	59	-	-	65	Yes
October 3, 2022	Day	L03	L _{Aeq, 15 hour} ¹	50	No	No	60	Yes
	Night		L _{Aeq, 1 hour} ¹	49 ⁴	No	No	55	Yes
			L _{Amax}	62 ⁴	-	-	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

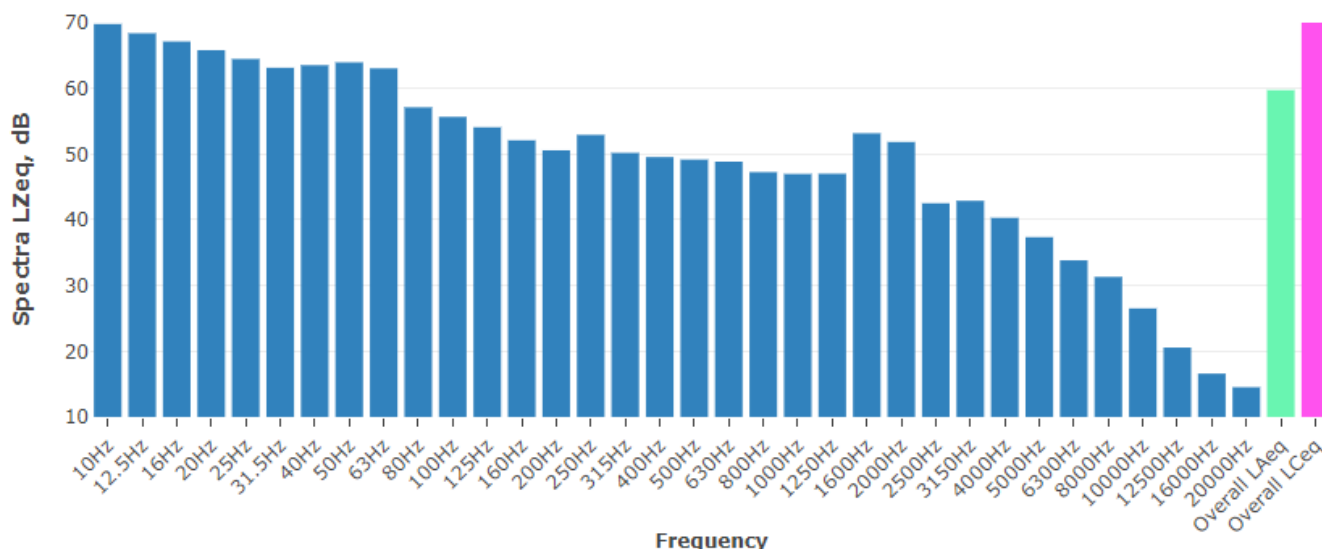
2) Inclusive of any penalties for modifying factors

3) LFN = Low Frequency Noise

4) The online noise platform indicated the maximum night-time noise levels was L_{Aeq, 1 hour} 56 dBA and L_{Amax} 66 dBA, however on review this was during departure and was influenced by the tug. The noise results presented above have been adjusted to account for this.

5) The noise from the Wyuna during some periods was deemed to be tonal. As such, a 5 dB penalty has been applied in accordance with Fact Sheet 3 Corrections for annoying noise characteristics from the EPA's Noise Policy for Industry

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

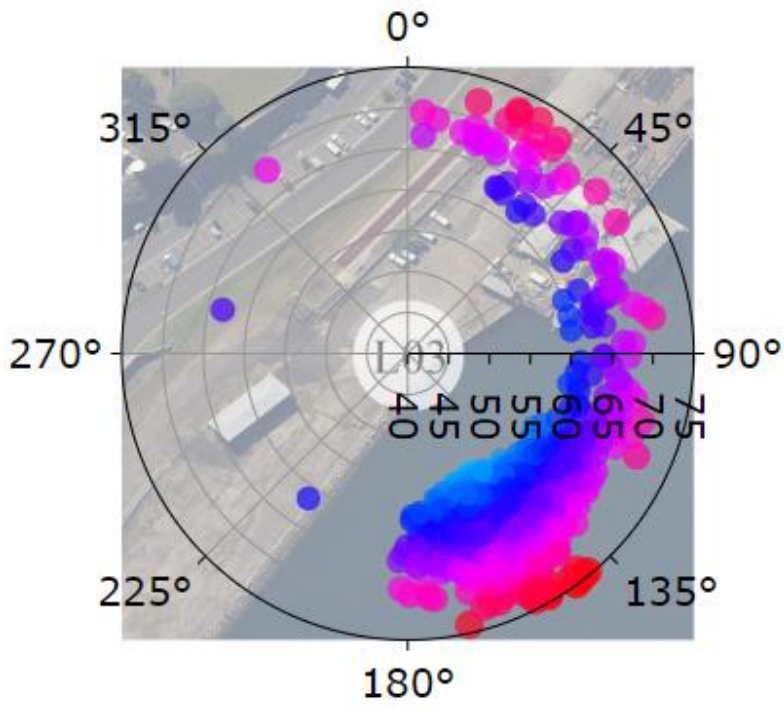


Figure 4.2 Typical vessel polar (directional) plot

4.2 Wyuna – October 21 – October 26, 2022 (GLB8)

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	
October 21, 2022	Day	L03	L _{Aeq} , 15 hour ¹	51	No	No	60	Yes	
	Night		L _{Aeq} , 1 hour ¹	57 ⁴	Yes	No	55	No	
			L _{Amax}	59	-	-	65	Yes	
October 22, 2022	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}	60	-	-	65	Yes	
October 23, 2022	Day	L03	L _{Aeq} , 15 hour ¹	56	No	No	60	Yes	
	Night		L _{Aeq} , 1 hour ¹	CSL Reliance (GLB7) and Wyuna (GLB8) were both present at this time. See discussion in Section 4.5 below. Noise was attributed to the CSL Reliance at this time					
			L _{Amax}						
October 24, 2022	Day	L03	L _{Aeq} , 15 hour ¹						
	Night		L _{Aeq} , 1 hour ¹						
			L _{Amax}						
October 25, 2022	Day	L03	L _{Aeq} , 15 hour ¹						
	Night		L _{Aeq} , 1 hour ¹						
			L _{Amax}						
October 26, 2022	Day	L03	L _{Aeq} , 15 hour ¹						
	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) The noise from the Wyuna during some periods was deemed to be tonal. As such, a 5 dB penalty has been applied in accordance with Fact Sheet 3 Corrections for annoying noise characteristics from the EPA's Noise Policy for Industry

4.2.2 Additional information

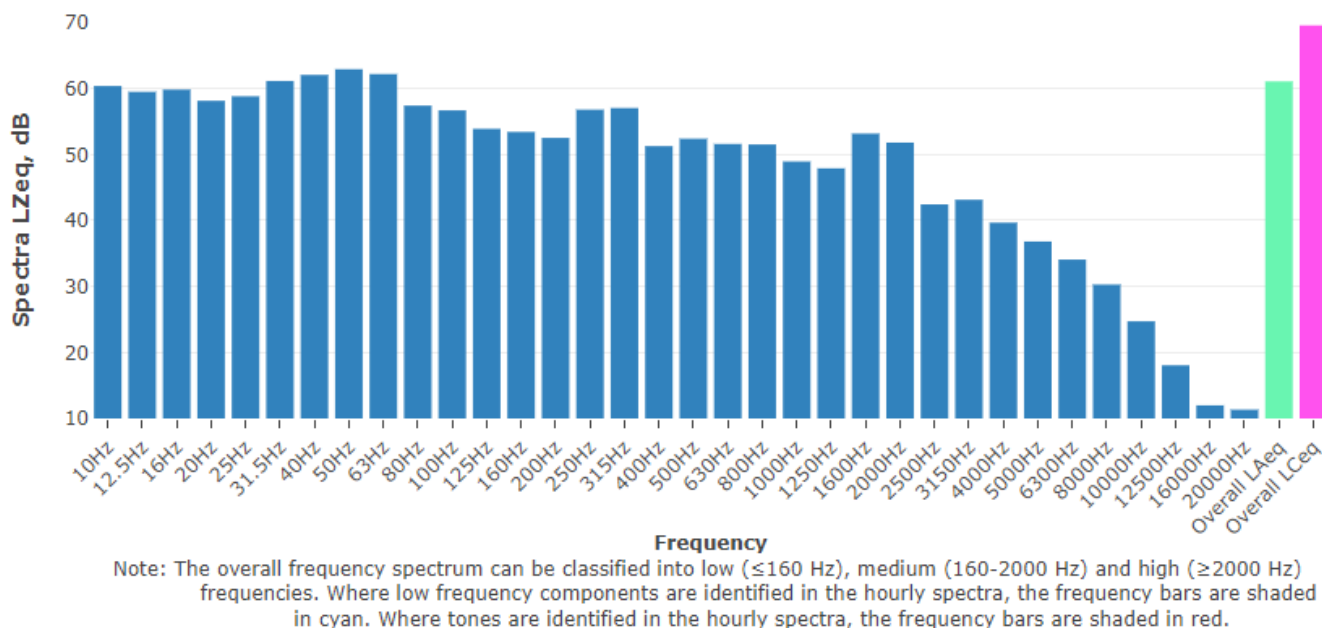


Figure 4.3 Typical vessel spectrum – noise level at L02

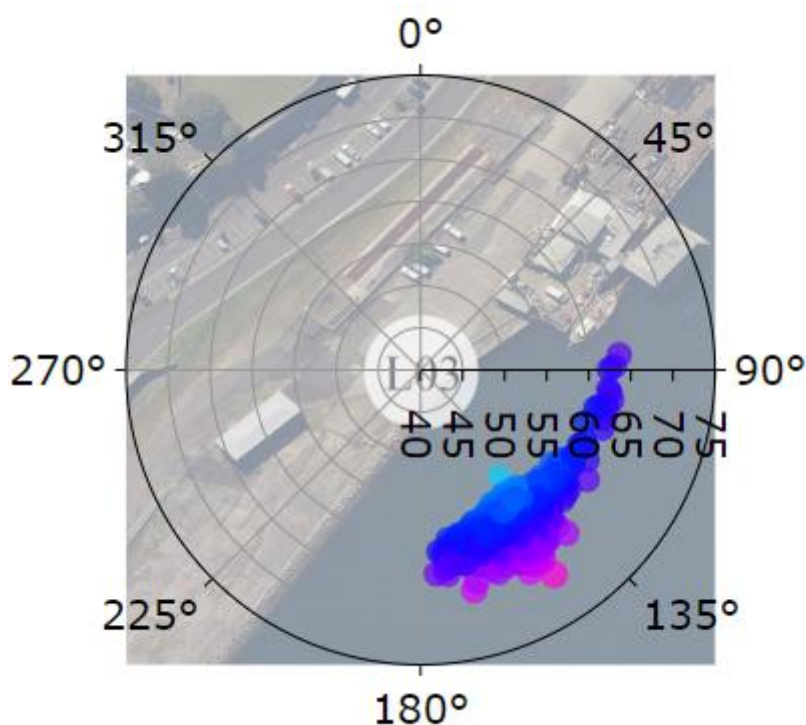


Figure 4.4 Typical vessel polar (directional) plot

4.3 Discussion regarding Wyuna non-compliance

The Wyuna was deemed to be non-compliant during both visits due to the inclusion of a 5 dB penalty for tonal noise. As per previous, the tonal noise was determined to cross over frequencies between 1600 Hz and 2000 Hz, as can be seen in Figure 4.3. Based on recordings, it was determined through narrow band analysis that the tone was between 1770 and 1780 Hz.

Investigations into the cause of this tonal noise should be undertaken by the vessel operator. Should the tonal noise be removed, measured data indicates that the vessel would be compliant with the vessel noise trigger levels.

4.4 CSL Reliance – October 23 – October 26, 2022 (GLB7)

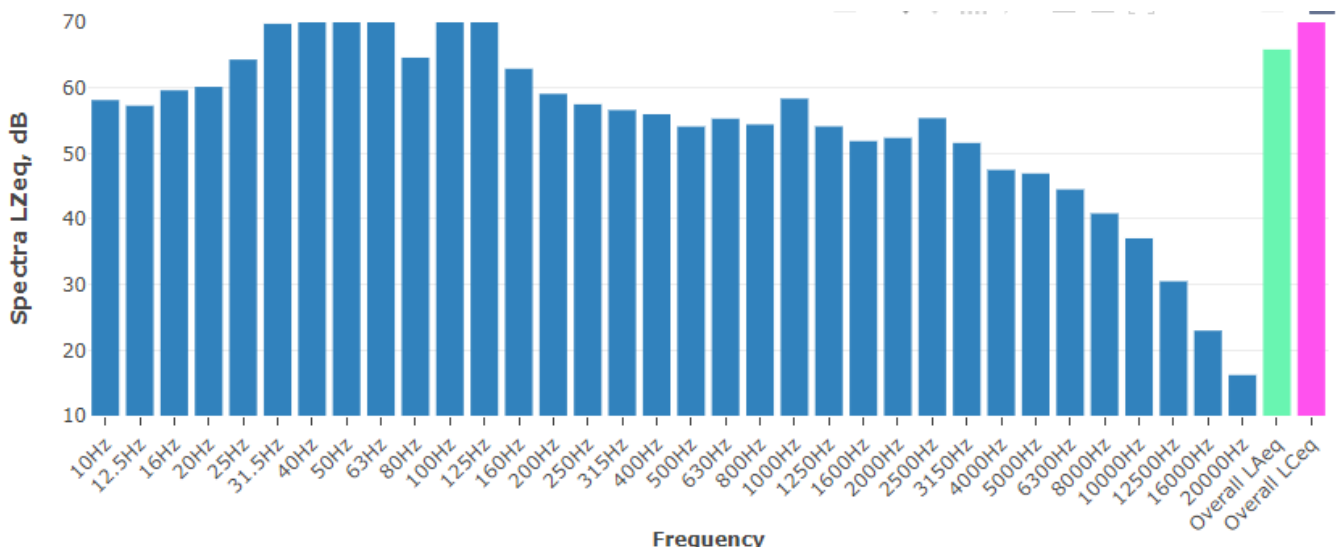
4.4.1 Daily noise monitoring results

Date	Time period ¹	Monitor location	Noise descriptor	Vessel noise level dBA ²	Tonal	LFN ³	Vessel Noise Trigger Levels, dBA	Compliance
October 23, 2022	Day	L03	L _{Aeq} , 15 hour ¹	CSL Reliance (GLB7) and Wyuna (GLB8) were both present at this time. See discussion in Section 4.5 below. Noise was attributed to the Wyuna at this time				
	Night		L _{Aeq} , 1 hour ¹					
			L _{Amax}					
October 24, 2022	Day	L03	L _{Aeq} , 15 hour ¹					
	Night		L _{Aeq} , 1 hour ¹					
			L _{Amax}					
October 25, 2022	Day	L03	L _{Aeq} , 15 hour ¹					
	Night		L _{Aeq} , 1 hour ¹					
			L _{Amax}					
October 26, 2022	Day	L03	L _{Aeq} , 15 hour ¹					
	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

4.4.2 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 4.5 Typical vessel spectrum – noise level at L03 (CSL Reliance and Wyuna combined)

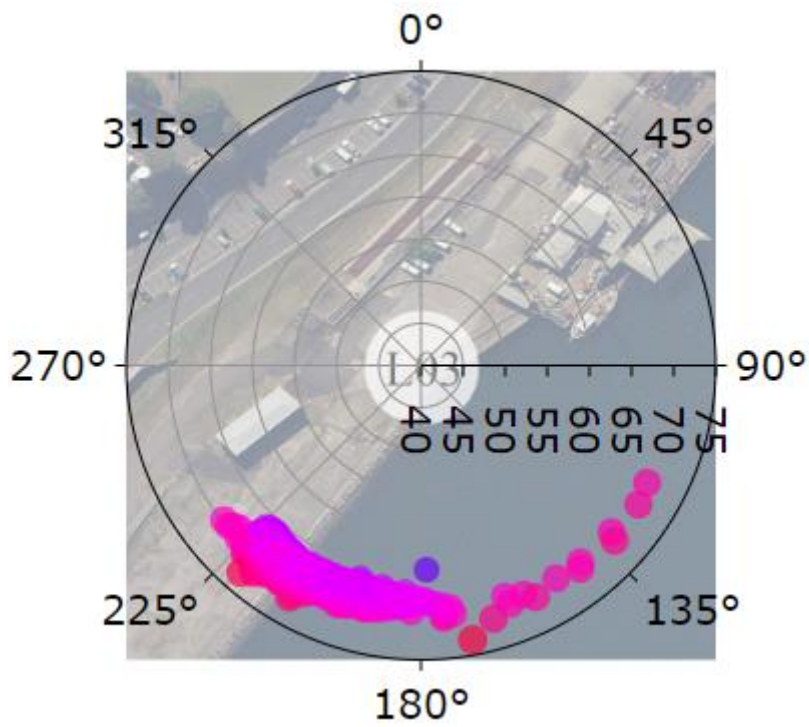


Figure 4.6 Typical vessel polar (directional) plot CSL Reliance and Wyuna combined)

4.5 Discussion regarding CSL Reliance and Wyuna

Between October 23 and October 26 2022, the CSL Reliance (GLB7) and Wyuna (GLB8) were simultaneously at berth. During this period, the noise monitoring system attributed the measured noise levels to the Wyuna. The noise monitoring system indicated that there was a potential exceedance of the Vessel Noise Trigger Levels, therefore a detailed analysis was undertaken to determine the contribution from each vessel.

Note there was no data on the night of the 24 October 2022 as the data was excluded due to weather impacts.

A review of the data was undertaken from this period, along with previously measured data. The contribution of each vessel has been estimated based on the following:

- Analysis of the measured noise levels from historical visits of the Wyuna, including prior to the CSL Reliance arriving
- Analysis of the measured noise levels between 23 and 26 October 2022 when both the CSL Reliance and Wyuna were berthed.

During this period low frequency noise was not identified for both vessels.

The estimated contributions are as follows:

Vessel	Assessment period	Noise descriptor	Estimated contribution, dBA ²
CSL Reliance	Day	L _{Aeq} , 15 hour ¹	56-57
	Night	L _{Aeq} , 1 hour ¹	54-55
Wyuna	Day	L _{Aeq} , 15 hour ¹	55
	Night	L _{Aeq} , 1 hour ¹	57 ³

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) The noise from the Wyuna during some periods was deemed to be tonal. As such, a 5 dB penalty has been applied in accordance with Fact Sheet 3 Corrections for annoying noise characteristics from the EPA's Noise Policy for Industry

5. Detailed results – cruise vessels

5.1 Pacific Explorer – October 2022 (WBCT)

5.1.1 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
October 1, 2022	Day	L01	L _{Aeq} , 15 hour ¹	57	No	Yes ⁴	58	Yes
	Night		L _{Aeq} , 9 hour ¹	-	-	-	58	-
October 28, 2022	Day	L01	L _{Aeq} , 15 hour ¹	56	No	Yes ⁴	58	Yes
	Night		L _{Aeq} , 9 hour ¹	-	-	-	58	-

Notes

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

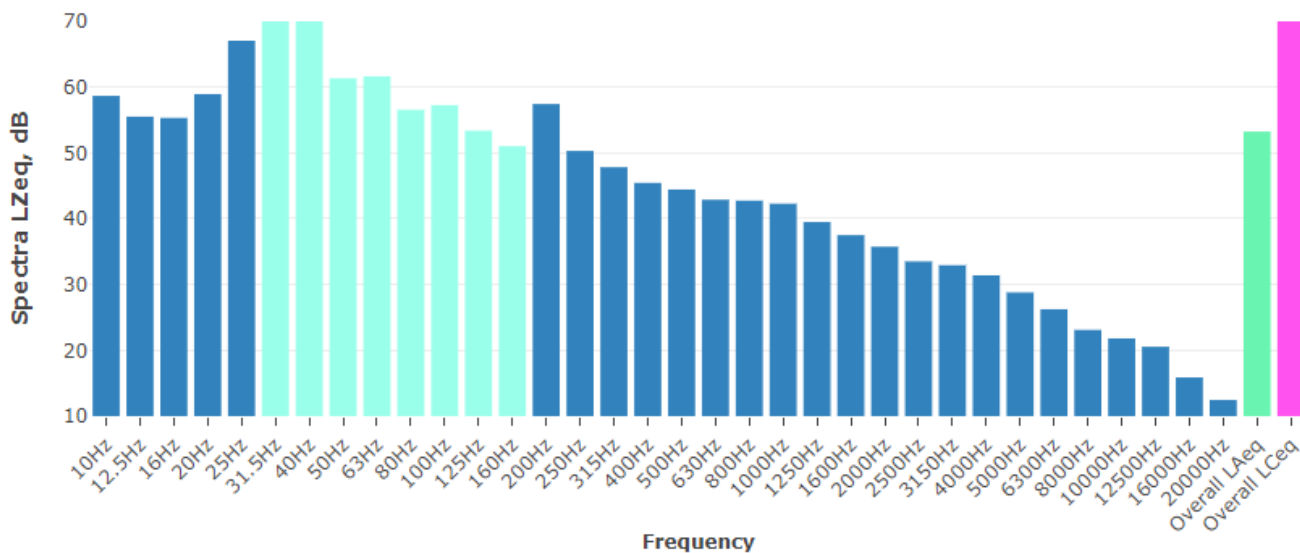
Night-time period (10 pm to 7 am) – 9 hours

2) Inclusive of any penalties for modifying factors

3) LFN = Low Frequency Noise

4) Note that the WBCT Noise Restriction Policy trigger level for excessive noise, which is based on the Noise Attenuation Program eligibility criteria, is inclusive of an assumption for low frequency noise for all cruise vessels. A 2 dB penalty for daytime and a 5 dB penalty for the evening/night-time period would apply when assessed in accordance with Fact Sheet 3 Corrections for annoying noise characteristics from the EPA's Noise Policy for Industry. Further investigation is currently being undertaken to determine impacts from low frequency noise from vessels.

5.1.2 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 5.1 Typical vessel spectrum – noise level at L01

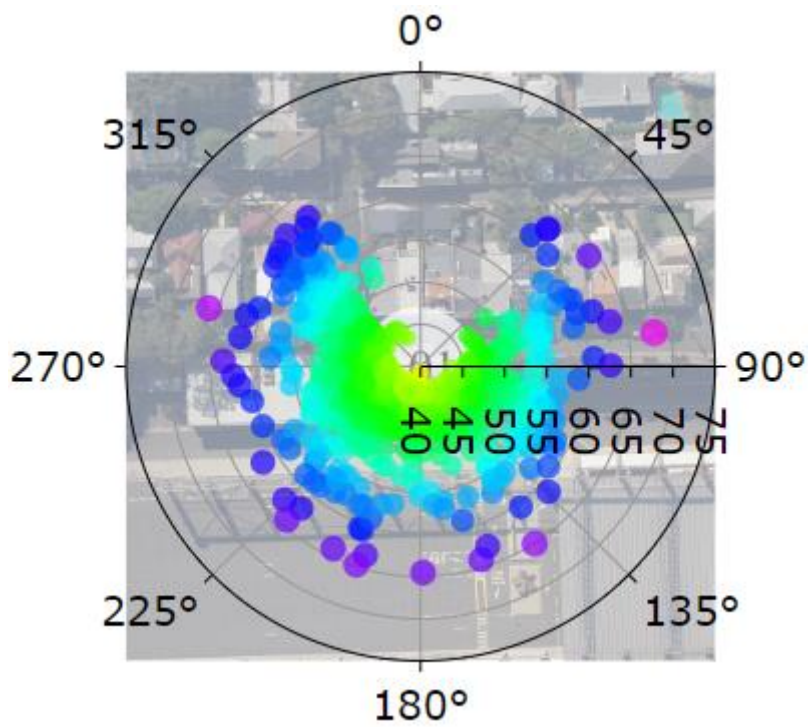


Figure 5.2 Typical vessel polar (directional) plot

5.2 Pacific Adventure – October 2022 (WBCT)

5.2.1 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
October 29, 2022	Day	L01	L _{Aeq} , 15 hour ¹	59	No	Yes ⁴	58	No
	Night		L _{Aeq} , 9 hour ¹	-	-	-	58	-

Notes

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

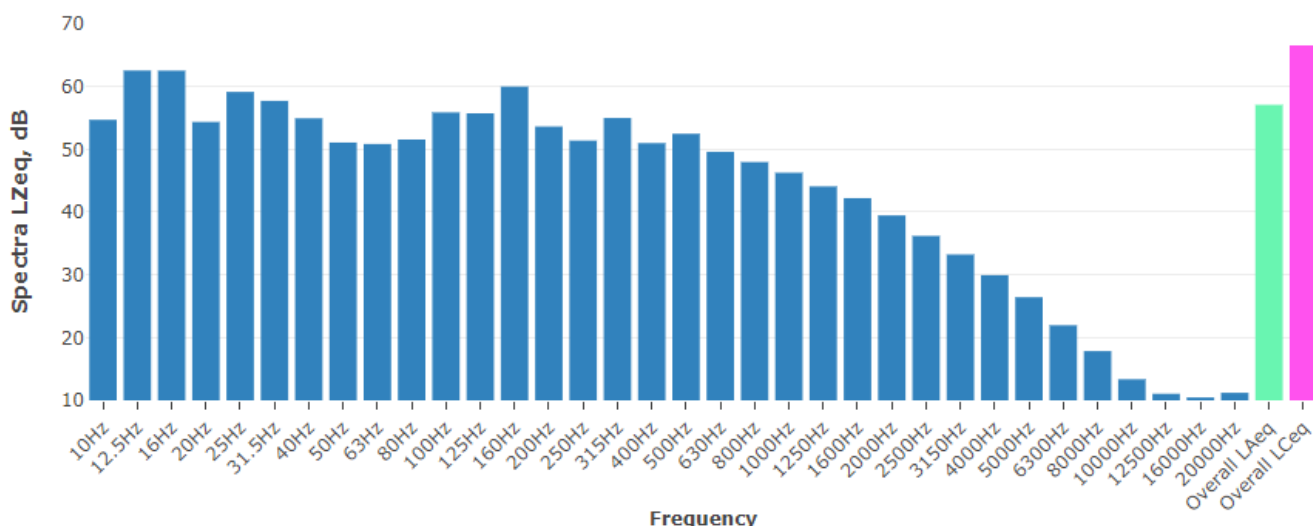
Night-time period (10 pm to 7 am) – 9 hours

2) Inclusive of any penalties for modifying factors

3) LFN = Low Frequency Noise

4) Note that the WBCT Noise Restriction Policy trigger level for excessive noise, which is based on the Noise Attenuation Program eligibility criteria, is inclusive of an assumption for low frequency noise for all cruise vessels. A 2 dB penalty for daytime and a 5 dB penalty for the evening/night-time period would apply when assessed in accordance with Fact Sheet 3 Corrections for annoying noise characteristics from the EPA's Noise Policy for Industry. Further investigation is currently being undertaken to determine impacts from low frequency noise from vessels.

5.2.2 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 5.3 Typical vessel spectrum – noise level at L01

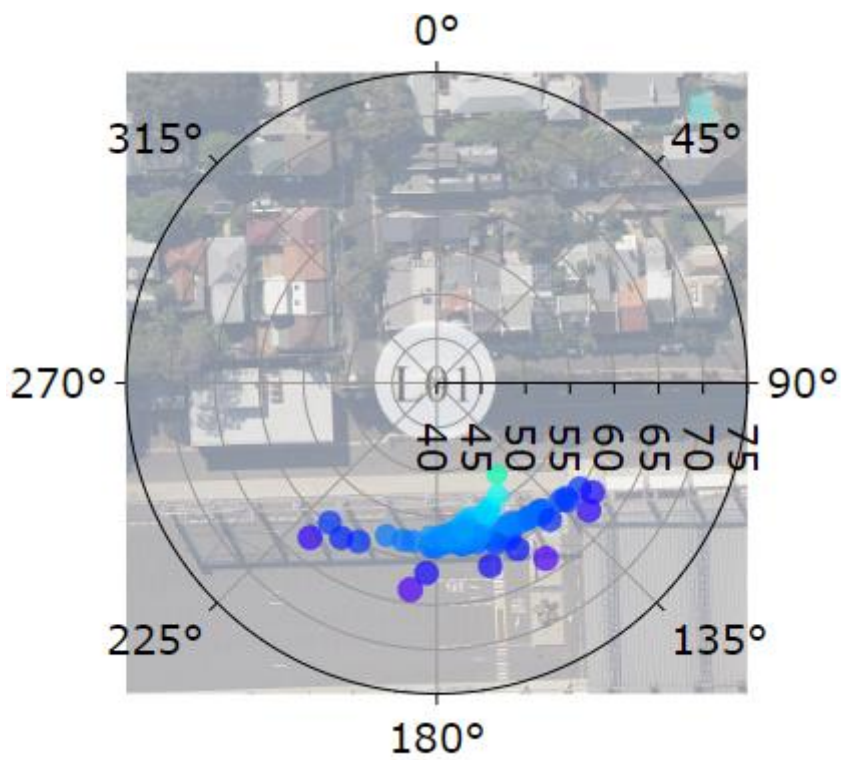


Figure 5.4 Typical vessel polar (directional) plot



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