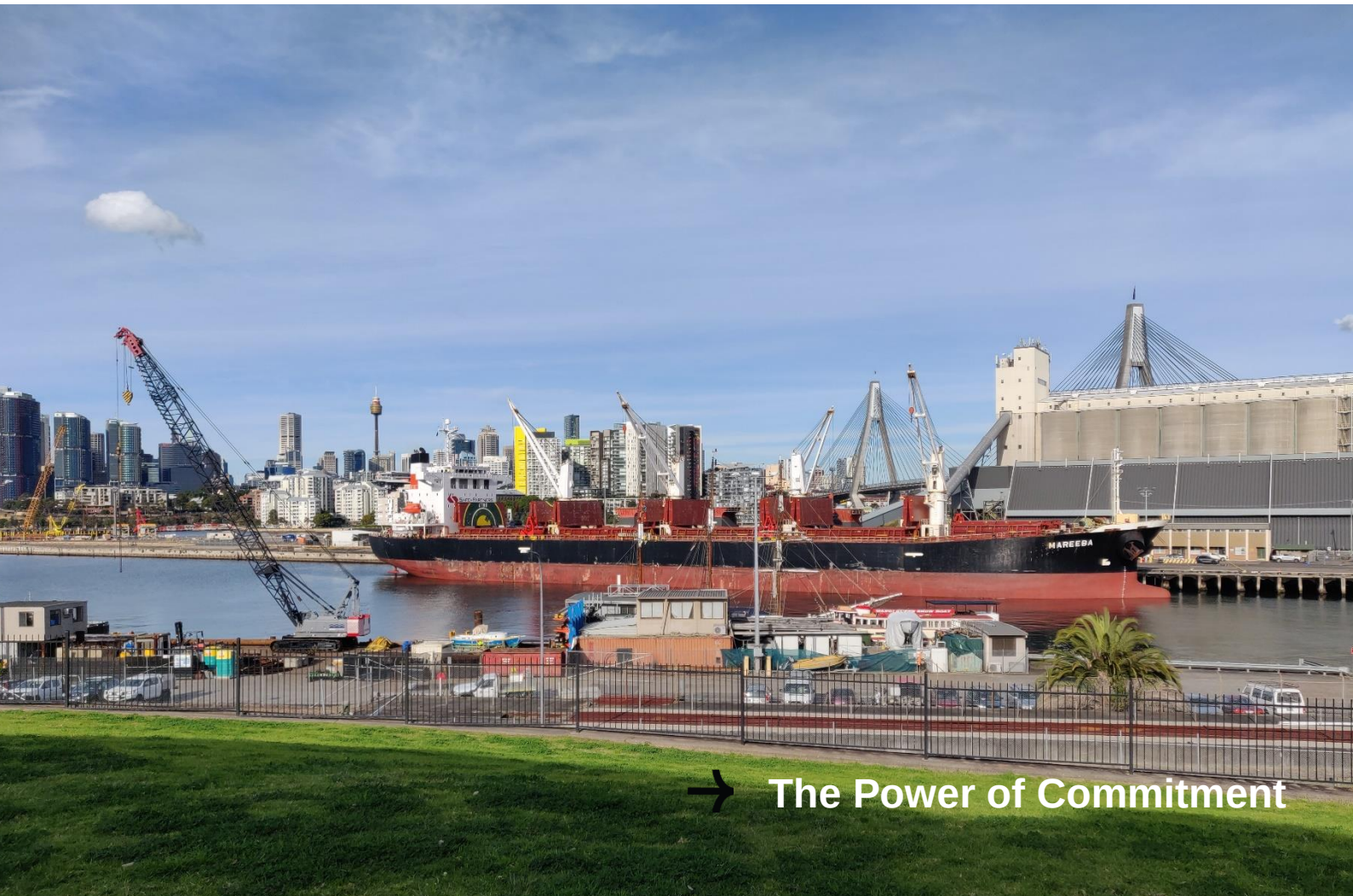
Monthly compliance noise monitoring report

Glebe Island / White Bay

Port Authority of New South Wales

February 2024



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
Client name	Port Authority of New South Wales
Document title	Monthly compliance noise monitoring report – February 2024
Revision version	Rev 4
Project number	12540862

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S4	0	C Gordon	E Milton		E Milton		13/03/2024
S4	1	C Gordon	E Milton		E Milton		03/04/2024
S4	2	C Gordon	E Milton		E Milton		04/04/2024
S4	3	C Gordon	E Milton		E Milton		03/05/2024
S4	4	C Gordon	E Milton		E Milton		09/05/2024

© GHD 2024

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

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 February 2024, 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 90.6 dBA** Min. deviation = 0.0 dB Max. deviation = 0.1 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 = 0.1 dB Max. deviation = 0.2 dB
		L04	Onsite at Glebe Island		14529640	**Initial calibration level 93.9 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				
Adelie	February 10, 2024 / 02:38	February 13, 2024 / 01:28	GLB7	L03
Pioneer	February 19, 2024 / 16:58	February 24, 2024 / 08:35	GLB7	L03

Vessel name	Arrival date and time	Departure date and time	Berth location	Applicable noise monitoring location/s
Bulk vessels				
Luga	February 24, 2024 / 23:24	February 26, 2024 / 11:53	GLB8	L03
Cruise vessels				
Azamara Journey	February 2, 2023 / 08:52	February 3, 2024 / 22:06	WBCT	L01
Azamara Journey	February 6, 2023 / 06:48	February 06, 2024 / 17:00	WBCT	L01
Regatta	February 8, 2024 / 06:30	February 8, 2024 / 17:16	WBCT	L01
Viking Sky	February 9, 2024 / 03:54	February 9, 2024 / 17:52	WHT4	L02
Norwegian Spirit	February 9, 2024 / 06:08	February 9, 2024 / 17:39	WBCT	L01
Noordam	February 10, 2024 / 06:08	February 10, 2024 / 17:28	WBCT	L01
Silver Whisper	February 14, 2024 / 07:40	February 14, 2024 / 19:12	WBCT	L01
Viking Sky	February 15, 2024 / 08:25	February 16, 2024 / 00:20	WBCT	L01
Viking Sky[1]	February 16, 2024 / 00:20	February 16, 2024 / 18:10	WHT4	L02
Disney Wonder	February 16, 2024 / 06:06	February 16, 2024 / 16:55	WBCT	L01
Viking Neptune	February 18, 2024 / 00:59	February 18, 2024 / 18:00	WBCT	L01
Seabourn Sojourn	February 19, 2024 / 07:11	February 20, 2024 / 18:30	WBCT	L01
Seabourn Odyssey	February 21, 2024 / 06:54	February 21, 2024 / 19:35	WBCT	L01
Insignia	February 22, 2024 / 08:00	February 23, 2024 / 18:01	WBCT	L01
Silver Shadow	February 23, 2024 / 07:23	February 23, 2024 / 19:18	WHT4	L02
Silver Shadow[2]	February 23, 2024 / 19:18	February 24, 2024 / 18:56	WBCT	L01
Viking Orion	February 26, 2024 / 08:10	February 28, 2024 / 17:56	WBCT	L01
Borealis	February 27, 2024 / 07:10	February 28, 2024 / 23:00	WHT4	L02
Azamara Onward	February 29, 2024 / 08:05	March 02, 2024 / 23:20	WHT4	L02
Seven Seas Mariner	February 29, 2024 / 13:43	March 1, 2024 / 17:54	WBCT	L01

Note: 1) Viking Sky relocated from White Bay Cruise Terminal to White Bay 4.

Note: 2) Silver Shadow relocated from White Bay 4 to White Bay Cruise Terminal.

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
Adelie	Feb 10 – Feb 13	L03	55	55	63	60	55	65	Yes	Yes
Pioneer	Feb 19 – Feb 24	L03	52	48[5]	66[4]	60	55	65	Yes	No[4]
Luga	Feb 24 – Feb 26	L03	54	52[5]	72[6]	60	55	65	Yes	No[6]

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 level event only occurred once during the night-time hours on the 22 February. Given it only occurred once and only a 1 dB above the maximum noise trigger level, this is not considered an adverse impact. The vessel was compliant with the night time vessel noise trigger level at all other times

Note: 5) Measurements indicated 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 nose in the area rather than the vessel. As such, no tonal correction has been applied..

Note: 6) This maximum level event occurred twice within 20 seconds of each during the night-time hours and occurred at about 6:30 am on the 25 February. The vessel was compliant with the night time vessel noise trigger level 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
Azamara Journey	Feb 2 – Feb 3	L01	55	50	N/A	58	N/A	Yes
Azamara Journey	Feb 6	L01	56	-	N/A	58	N/A	-
Regatta	Feb 8	L01	55	-	N/A	58	N/A	Yes
Viking Sky	Feb 9	L02	54[5]	54	N/A	58	N/A	Yes
Norwegian Spirit	Feb 9	L01	59	56	N/A	58	N/A	Yes
Noordam	Feb 10	L01	58	54	N/A	58	N/A	Yes
Silver Whisper	Feb 14	L01	56	-	N/A	58	N/A	-
Viking Sky	Feb 15 – Feb 16	L01	55	54	N/A	58	N/A	Yes
Viking Sky	Feb 16	L02	54[5]	54	N/A	58	N/A	Yes
Disney Wonder	Feb 16	L01	57	53	N/A	58	N/A	Yes
Viking Neptune	Feb 18	L01	50	49	N/A	58	N/A	Yes
Seabourn Sojourn	Feb 19 – Feb 20	L01	55	52	N/A	58	N/A	Yes
Seabourn Odyssey	Feb 21	L01	53	52	N/A	58	N/A	Yes
Insignia	Feb 22 – Feb 23	L01	57	54	N/A	58	N/A	Yes
Silver Shadow	Feb 23	L02	57	-	N/A	58	N/A	-
Silver Shadow[2]	Feb 23 – Feb 24	L01	57[6]	55	N/A	58	N/A	Yes
Viking Orion	Feb 26 – Feb 28	L01	54	53	N/A	58	N/A	Yes
Borealis	Feb 27 – Feb 28	L02	51[7]	46[7]	N/A	58	N/A	Yes
Azamara Onward	Feb 29 – Mar 3	L02	57	55	N/A	58	N/A	Yes
Seven Seas Mariner	Feb 29 – Mar 1	L01	57	52	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) Due to high levels of extraneous noise during the daytime period, the L_{A90} value has been used to determine the noise level of the Viking Sky

Note: 6) During this visit of the Silver Shadow, tonality was observed by the noise monitoring system for 1 hour. As the policy does not require a correction for tonality for cruise vessels, this correction has been removed.

Note: 7) Due to high levels of extraneous noise during this visit, the L_{A90} value has been used to determine the noise level of the Borealis.

4. Detailed results – bulk vessels

4.1 Adelie (GLB7) – February 10 – February 13, 2024

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
February 9, 2024[4]	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	-	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	55	No	Yes	55	Yes
			L_{Amax}	60	-	-	65	Yes
February 10, 2024	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	55	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	55	No	Yes	55	Yes
			L_{Amax}	62	-	-	65	Yes
February 11, 2024	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	54	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	53	No	Yes	55	Yes
			L_{Amax}	61	-	-	65	Yes
February 12/13, 2024[5]	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	53	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	51	Yes	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

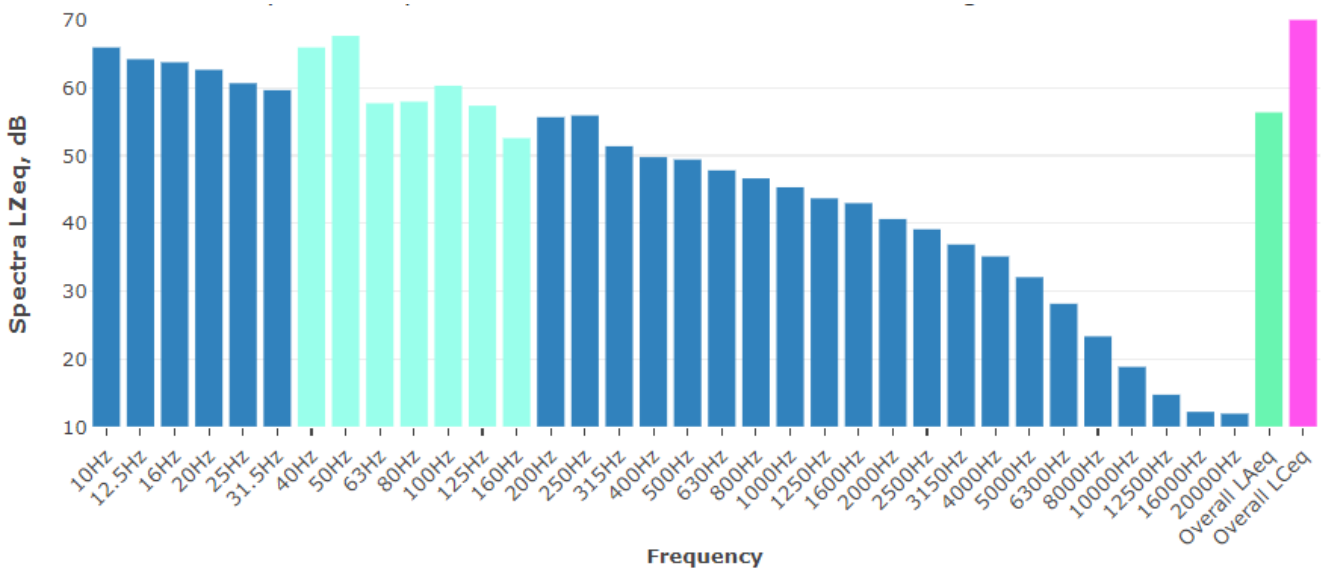
2) Inclusive of any penalties for modifying factors

3) LFN = Low Frequency Noise

4) Adelie arrived at 2:38 am on 10 February, which was captured in the system on 9 February

5) Adelie departed at 1:28 am on 13 February

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

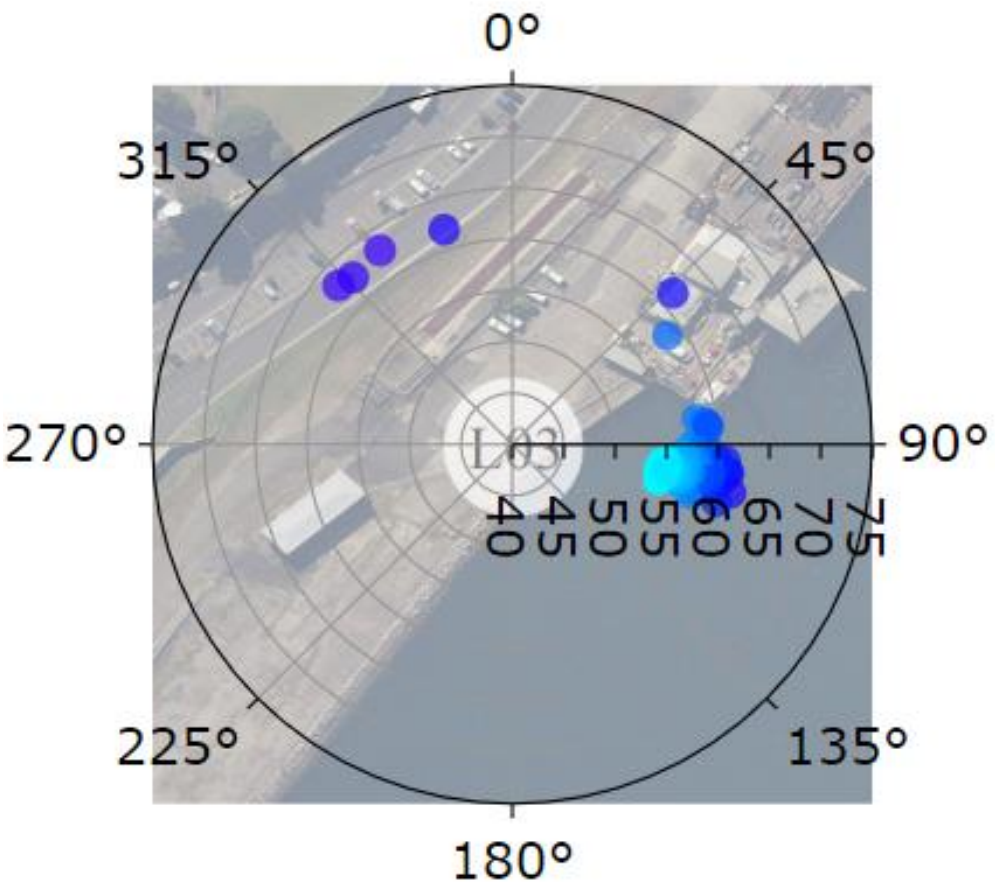


Figure 4.2 Typical vessel polar (directional) plot

4.2 Pioneer (GLB7) – February 19 – February 24, 2024

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
February 19, 2024	Day	L03	$L_{Aeq, 15\ hour}$[1]	47	No	Yes	60	Yes
	Night		$L_{Aeq, 1\ hour}$[1]	48[4]	No	Yes	55	Yes
			L_{Amax}	63	-	-*	65	Yes
February 20, 2024	Day	L03	$L_{Aeq, 15\ hour}$[1]	48	No	No	60	Yes
	Night		$L_{Aeq, 1\ hour}$[1]	48	No	No	55	Yes
			L_{Amax}	61	-	-	65	Yes
February 21, 2024	Day	L03	$L_{Aeq, 15\ hour}$[1]	49	No	No	60	Yes
	Night		$L_{Aeq, 1\ hour}$[1]	48	No	No	55	Yes
			L_{Amax}	64	-	-	65	Yes
February 22, 2024	Day	L03	$L_{Aeq, 15\ hour}$[1]	52	No	Yes	60	Yes
	Night		$L_{Aeq, 1\ hour}$[1]	46[4]	No	No	55	Yes
			L_{Amax}	66	-	-	65	No[5]
February 23, 2024	Day	L03	$L_{Aeq, 15\ hour}$[1]	47	No	Yes	60	Yes
	Night		$L_{Aeq, 1\ hour}$[1]	47	No	Yes	55	Yes
			L_{Amax}	64	-	-	65	Yes
February 24, 2024	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

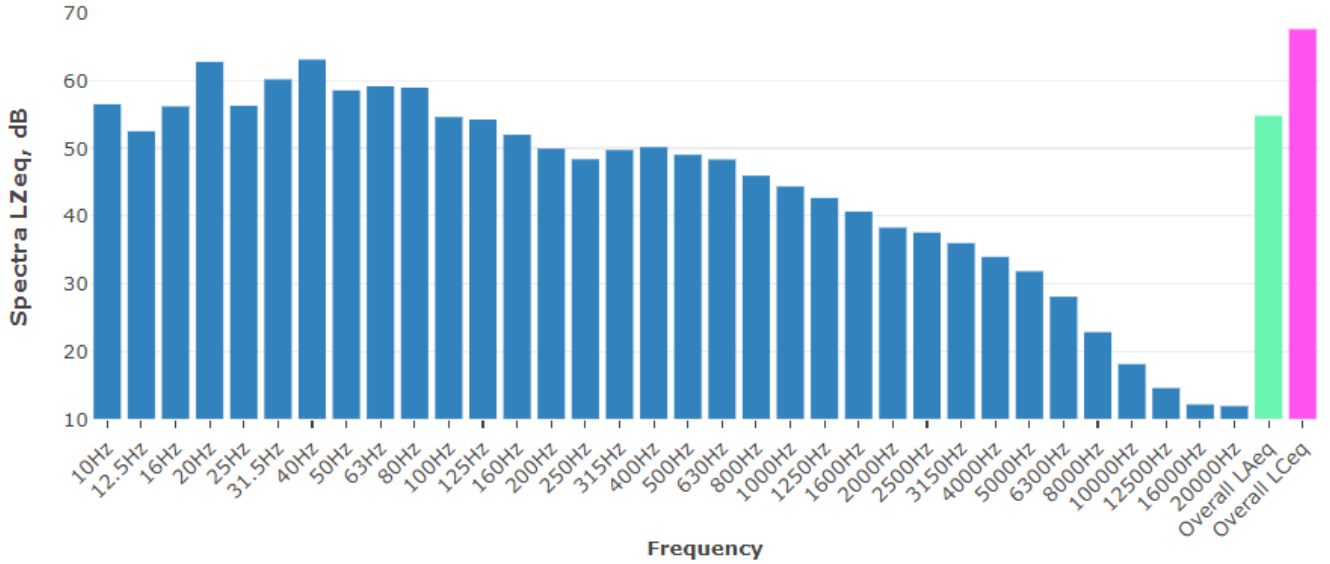
2) Inclusive of any penalties for modifying factors

3) LFN = Low Frequency Noise

4) Measurements indicated that noise was tonal at 6,300 Hz at 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 night-time hours on the 22 February. Given it only occurred once and only a 1 dB above the maximum noise trigger level, this is not considered an adverse impact. The vessel was compliant with the night time vessel noise trigger level at all other times.

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

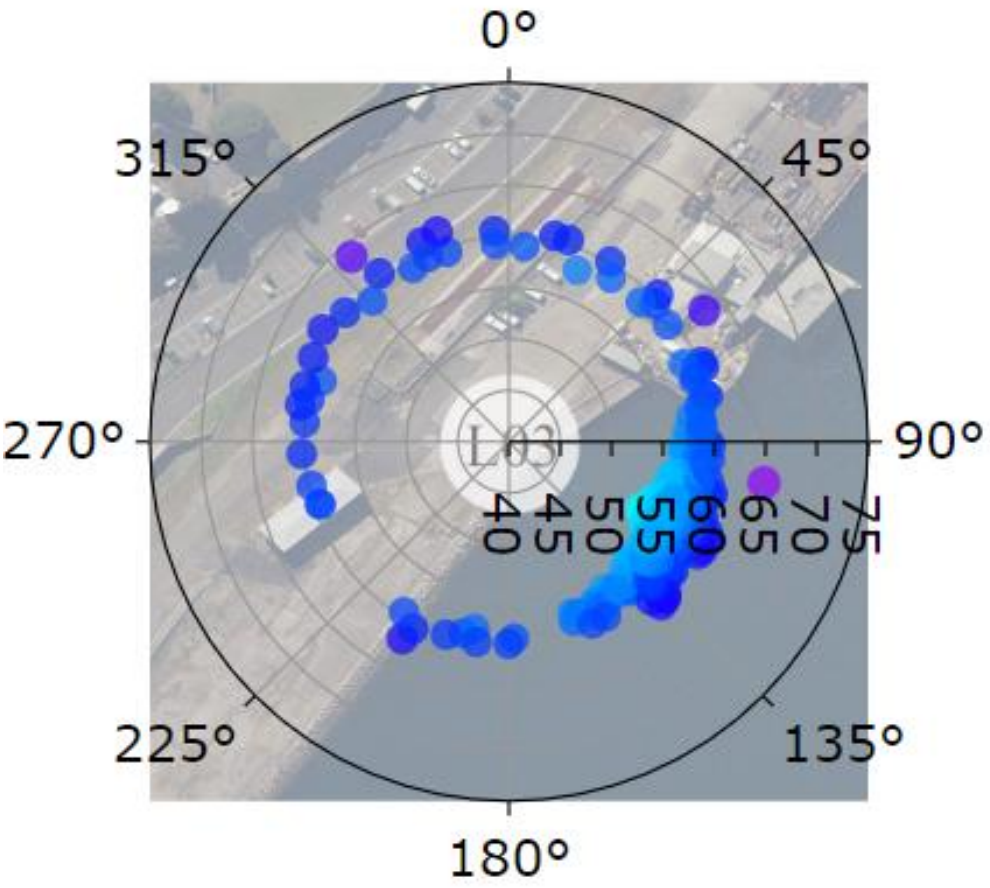


Figure 4.4 Typical vessel polar (directional) plot

4.3 Luga (GLB8) – February 24 – February 26, 2024

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
February 24, 2024	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	-	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	52	No	Yes	55	Yes
			L_{Amax}	72	-	-	65	No[5]
February 25, 2024	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	53	No	Yes	60	Yes
	Night		$L_{Aeq,\ 1\ hour}$[1]	52[4]	No	Yes	55	Yes
			L_{Amax}	65	-	-	65	Yes
February 26, 2024	Day	L03	$L_{Aeq,\ 15\ hour}$[1]	54	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

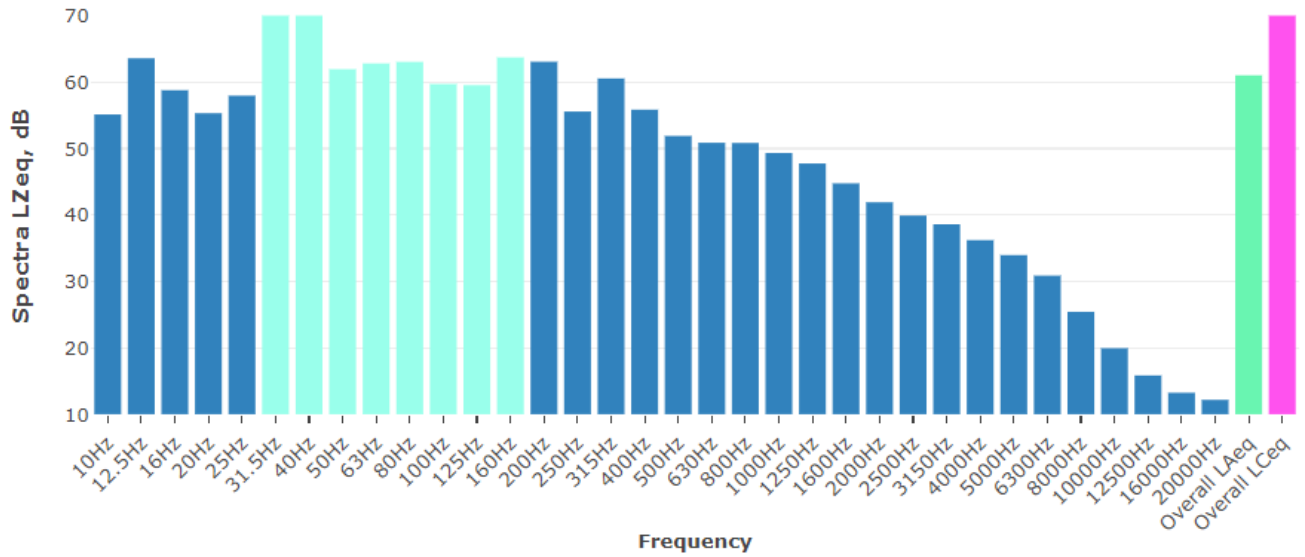
2) Inclusive of any penalties for modifying factors

3) LFN = Low Frequency Noise

4) Measurements indicated that noise was tonal at 6,300 Hz for 4 x one hour 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 occurred twice within 20 seconds of each during the night-time hours and occurred at about 6:30 on the morning of 25 February. The vessel was compliant with the night time vessel noise trigger level at all other times.

4.4 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

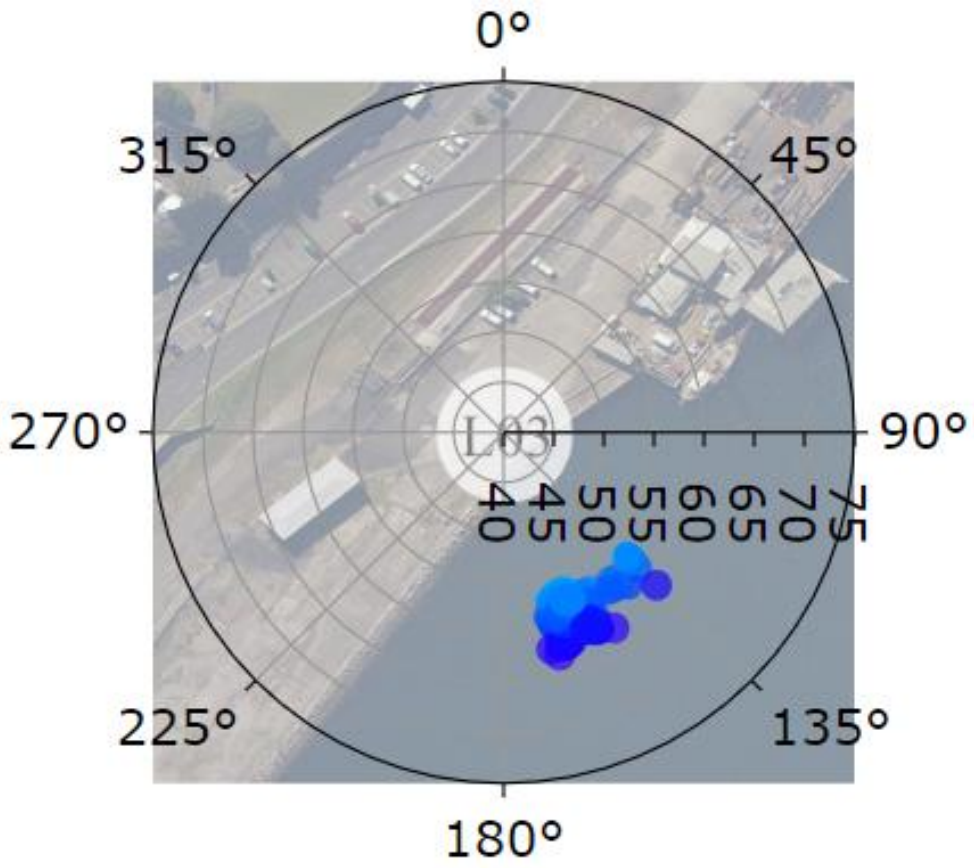


Figure 4.6 Typical vessel polar (directional) plot

ghd.com

The Power of Commitment