



# **Pacific Adventure noise monitoring report – Sept – Oct 22**

**White Bay Cruise Terminal / White Bay 4**

Port Authority of New South Wales

September/October 2022

**GHD Pty Ltd | ABN 39 008 488 373**


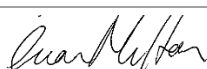
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# 1. Introduction

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 the Pacific Adventure during September and 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	L01	Grafton Street, Balmain	<b>Meter details</b> Norsonic Nor145 Sound Level Meter with Nor1297 Noise Compass	14529640	<b>Initial calibration level 92.6 dBA</b> Min. deviation = 0.2 dB Max. deviation = 0.3 dB
	Member of the Association of Australasian Acoustical Consultants (AAAC)			<b>Meter settings</b> A-weighted Fast time response 15 minute intervals		14529642
	Lead staff are Members of the Australian Acoustical Society (AAS)	L02	Maintenance Building on White Bay			
Vessel name	Arrival date and time		Departure date and time		Berth location	Applicable noise monitoring location/s
Pacific Adventure	September 9, 2022 / 17:35		September 23, 2022 / 17:42		WHT4	L02
Pacific Adventure	September 23, 2022 / 17:42		September 28, 2022 / 17:07		WBCT	L01
Pacific Adventure	October 1, 2022 / 18:19		October 7, 2022 / 15:28		WBCT	L01
Pacific Adventure	October 7, 2022 / 15:28		October 19, 2022 / 19:40		WHT4	L02
Pacific Adventure	October 19, 2022 / 19:40		October 20, 2022 / 15:46		WBCT	L01
Pacific Adventure	October 21, 2022 / 6:43		October 22, 2022 / 16:05		WBCT	L01

### 3. Compliance summary

Vessel	Dates at berth	Monitor location	Vessel Noise Level, dBA (inclusive of any modifying factor penalties)		Vessel Noise Trigger Levels, dBA		Compliance <sup>1</sup>	
			Day <sup>2</sup> L <sub>Aeq</sub> (15 hr)	Night <sup>3</sup> L <sub>Aeq</sub> (9 hr)	Day <sup>2</sup> L <sub>Aeq</sub> (15 hr)	Night <sup>3</sup> L <sub>Aeq</sub> (9 hr)	Day	Night
Pacific Adventure	9 Sept – 23 Sept	L02	58	55	58	58	Yes	Yes
Pacific Adventure	23 Sept – 28 Sept	L01	58	58	58	58	Yes	Yes
Pacific Adventure	1 Oct – 7 Oct	L01	59	59	58	58	No	No
Pacific Adventure	7 Oct – 19 Oct	L02	58	56	58	58	Yes	Yes
Pacific Adventure	19 Oct – 20 Oct	L01	58	57	58	58	Yes	Yes
Pacific Adventure	21 Oct – 22 Oct	L01	58	57	58	58	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) – 9 hour logarithmic average

## 4. Detailed results

### 4.1 Pacific Adventure – September 9 – September 23, 2022 (WHT4)

#### 4.1.1 Daily noise monitoring results

Date	Time period <sup>1</sup>	Monitor location	Noise descriptor	Vessel noise level dBA <sup>2</sup>	Tonal	LFN <sup>3</sup>	Vessel Noise Trigger Levels, dBA	Compliance
September 9, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	54	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	54	No	No	58	Yes
September 10, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	55	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	54	No	No	58	Yes
September 11, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	55	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	55	No	No	58	Yes
September 12, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	55	No	No	58	Yes
September 13, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	54	No	No	58	Yes
September 14, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	57	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	55	No	No	58	Yes
September 15, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	55	No	No	58	Yes
September 16, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	57	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	54	No	No	58	Yes
September 17, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	55	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	54	No	No	58	Yes
September 18, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	57	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	55	No	No	58	Yes
September 19, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	57	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	55	No	No	58	Yes
September 20, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	56	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	55	No	No	58	Yes
September 21, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	56	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	54	No	No	58	Yes
September 22, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	56	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	55	No	No	58	Yes
September 23, 2022	Day	L02	L <sub>Aeq, 15 hour</sub> <sup>1</sup>	56	No	No	58	Yes
	Night		L <sub>Aeq, 9 hour</sub> <sup>1</sup>	-	No	No	58	Yes

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

## 4.2 Pacific Adventure – September 23 – September 28, 2022 (WBCT)

### 4.2.1 Daily noise monitoring results

Date	Time period <sup>1</sup>	Monitor location	Noise descriptor	Vessel noise level dBA <sup>2</sup>	Tonal	LFN <sup>3</sup>	Vessel Noise Trigger Levels, dBA	Compliance
September 23, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	57	Yes <sup>4</sup>	Yes <sup>5</sup>	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	- <sup>6</sup>	-	-	58	- <sup>6</sup>
September 24, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	58	Yes <sup>4</sup>	No	58	Yes
September 25, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	Yes <sup>4</sup>	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	58	No	No	58	Yes
September 26, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	58	No	No	58	Yes
September 27, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	57	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	58	No	No	58	Yes
September 28, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	57	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	-	-	No	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) The vessel was determined to be tonal at various times during this stay, generally for short periods of time, and as such, a 5 dB penalty has not been applied. Note that the Noise Restriction Policy does not specifically refer to a penalty for tonality.

5) The Port Noise Policy does not currently apply the Noise Policy for Industry (NPI) method modifying factor for low frequency noise. 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. Note that the WBCT cruise ships Noise Restriction Policy trigger level which is based on the Noise Attenuation Program eligibility level is inclusive of an assumption for low frequency noise for all cruise vessels.

6) No data available at this time due to poor weather

## 4.3 Pacific Adventure – October 1 – October 7, 2022 (WBCT)

### 4.3.1 Daily noise monitoring results

Date	Time period <sup>1</sup>	Monitor location	Noise descriptor	Vessel noise level dBA <sup>2</sup>	Tonal	LFN <sup>3</sup>	Vessel Noise Trigger Levels, dBA	Compliance
October 1, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	58	No	No	58	Yes
October 2, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	59	No	No	58	No
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	58	No	No	58	Yes
October 3, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	58	No	No	58	Yes
October 4, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	58	No	No	58	Yes
October 5, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	59	No	No	58	No
October 6, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	57	No	No	58	Yes
October 7, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	57	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	-	-	-	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) Not that this non-compliance occurred during the day time period.

## 4.4 Pacific Adventure – October 7 – October 19, 2022 (WHT4)

### 4.4.1 Daily noise monitoring results

Date	Time period <sup>1</sup>	Monitor location	Noise descriptor	Vessel noise level dBA <sup>2</sup>	Tonal	LFN <sup>3</sup>	Vessel Noise Trigger Levels, dBA	Compliance
October 7, 2022	Day	L02	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	55	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	54	No	No	58	Yes
October 8, 2022	Day	L02	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	58	No	No	58	Yes
October 9, 2022	Day	L02	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	56	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	55	No	No	58	Yes
October 10, 2022	Day	L02	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	55	No	No	58	Yes
October 11, 2022	Day	L02	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	57	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	55	No	No	58	Yes
October 12, 2022	Day	L02	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	57	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	54	No	No	58	Yes
October 13, 2022	Day	L02	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	56	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	53	No	No	58	Yes
October 14, 2022	Day	L02	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	57	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	54	No	No	58	Yes
October 15, 2022	Day	L02	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	55	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	54	No	No	58	Yes
October 16, 2022	Day	L02	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	55	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	55	No	No	58	Yes
October 17, 2022	Day	L02	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	55	No	No	58	Yes
October 18, 2022	Day	L02	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	57	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	55	No	No	58	Yes
October 19, 2022	Day	L02	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	-	-	-	58	Yes
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								



## 4.5 Pacific Adventure – October 19 – October 20, 2022 (WBCT)

### 4.5.1 Daily noise monitoring results

Date	Time period <sup>1</sup>	Monitor location	Noise descriptor	Vessel noise level dBA <sup>2</sup>	Tonal	LFN <sup>3</sup>	Vessel Noise Trigger Levels, dBA	Compliance
October 19, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	57	No	Yes <sup>4</sup>	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	56	No	Yes <sup>4</sup>	58	Yes
October 20, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	No	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	57	No	No	58	Yes

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.

## 4.6 Pacific Adventure – October 21 – October 22, 2022 (WBCT)

### 4.6.1 Daily noise monitoring results

Date	Time period <sup>1</sup>	Monitor location	Noise descriptor	Vessel noise level dBA <sup>2</sup>	Tonal	LFN <sup>3</sup>	Vessel Noise Trigger Levels, dBA	Compliance
October 21, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	Yes <sup>4</sup>	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	57	No	Yes <sup>4</sup>	58	Yes
October 22, 2022	Day	L01	L <sub>Aeq</sub> , 15 hour <sup>1</sup>	58	No	Yes <sup>4</sup>	58	Yes
	Night		L <sub>Aeq</sub> , 9 hour <sup>1</sup>	-	-	-	58	-

#### Notes

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

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

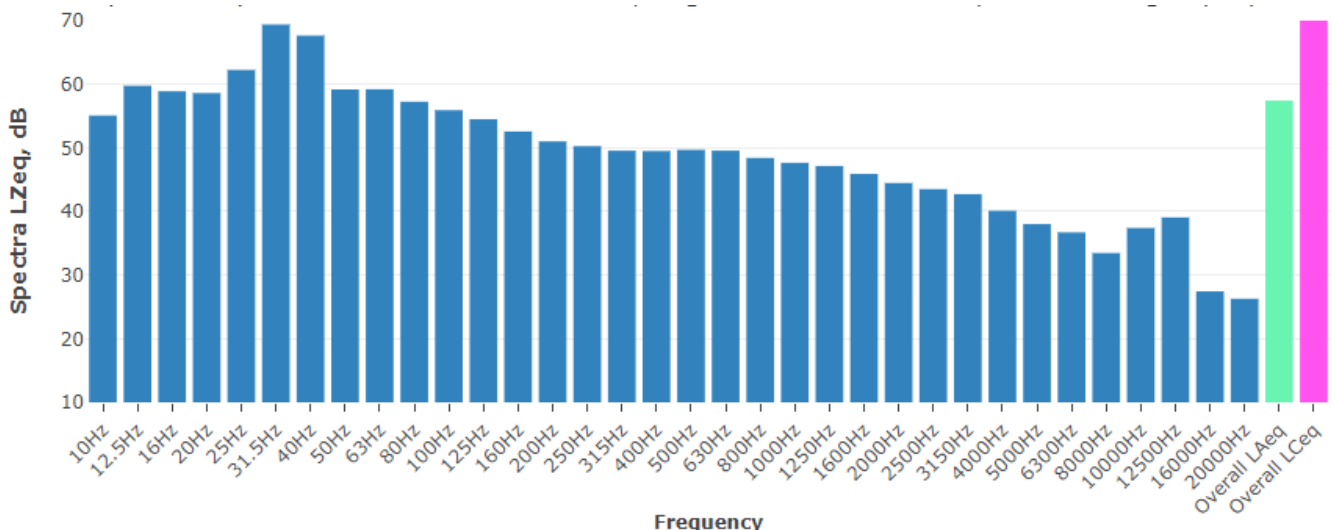
2) Inclusive of any penalties for modifying factors

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.

## 4.7 Additional information

### 4.7.1 Typical vessel spectrum and polar plot – WBCT



Note: The overall frequency spectrum can be classified into low ( $\leq 160$  Hz), medium (160-2000 Hz) and high ( $\geq 2000$  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 L01

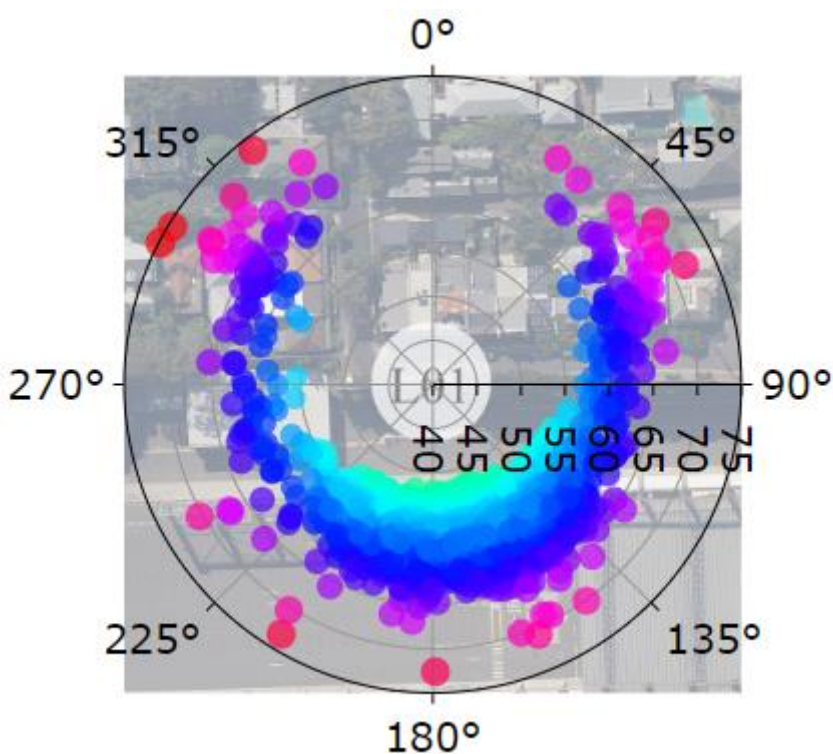


Figure 4.2 Typical vessel polar (directional) plot

## 4.7.2 Typical vessel spectrum and polar plot – WHT4

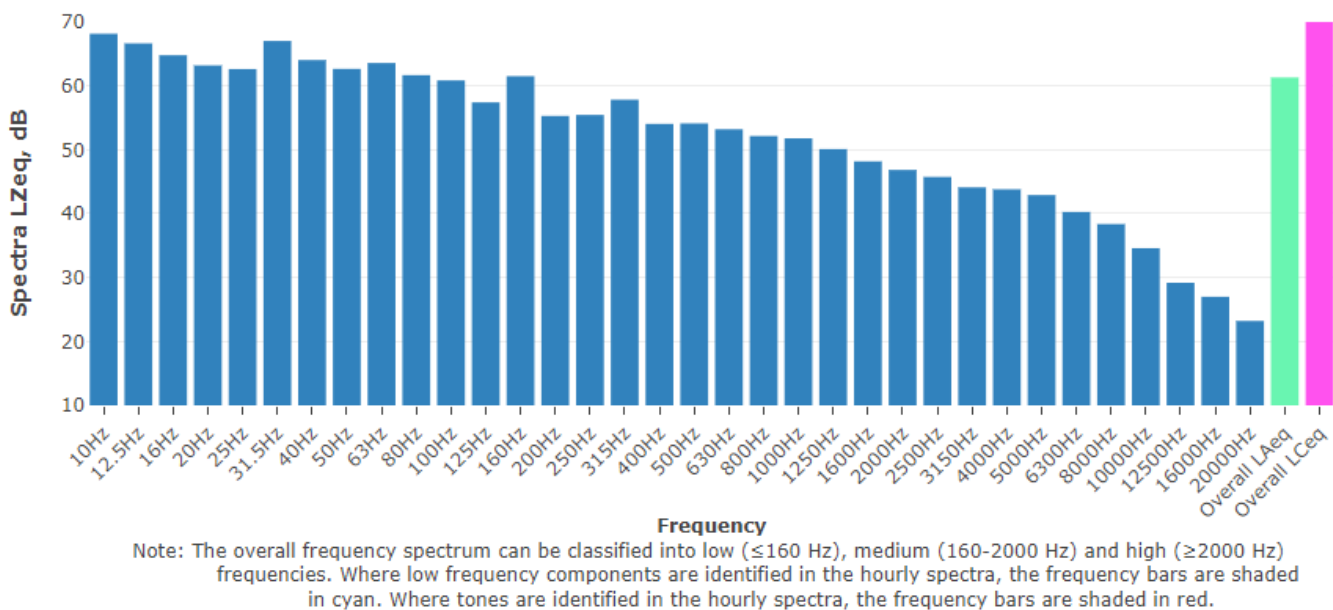


Figure 4.3 Typical vessel spectrum – noise level at L01

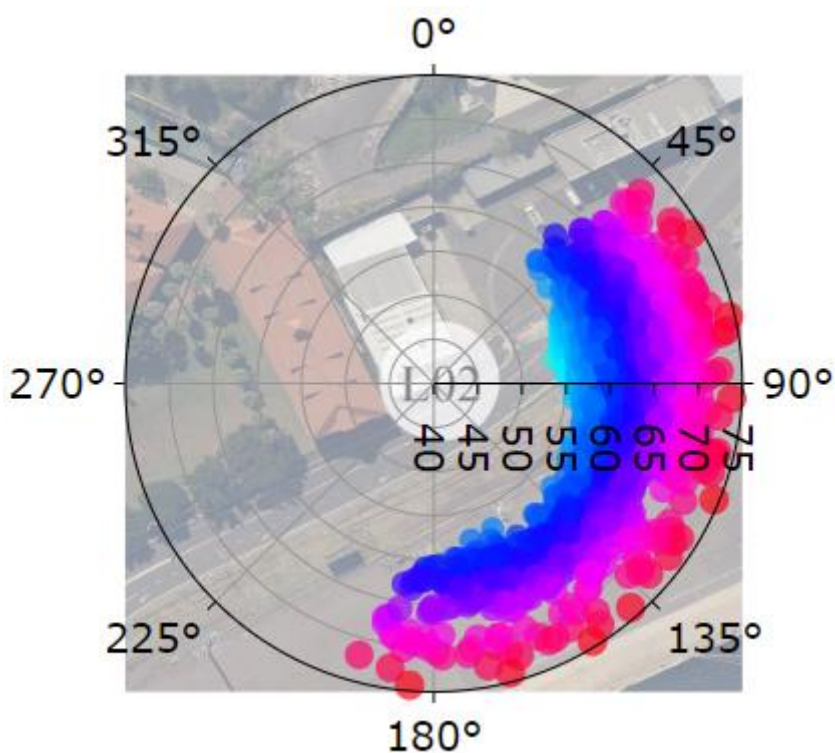


Figure 4.4 Typical vessel polar (directional) plot



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