

# NOISE LEVEL CERTIFICATE

**WHITE BAY 4**  
**March 2020**

## MEASURED NOISE LEVEL SUMMARY

Other than the Artania, the representative vessel noise levels in March 2020 complied with the 58dBA reference level outlined in the White Bay Cruise Terminal (WBCT) Noise Impact Mitigation Strategy (NIMS). The noise levels for March are presented in the table.

The noise levels from the Artania were 66dBA initially and reduced to 64dBA.

During the period from 1 March to 31 March 2020 there five cruise ship visits to White Bay 4 (WB4). Each vessel visited once only.

Table – Representative noise levels from WB4

<b>Vessel Name</b>	<b>Representative L<sub>Aeq</sub> noise level (dBA)</b>	<b>Arrival Time</b>	<b>Departure Time</b>	<b>Complies with 58dBA reference level</b>
<b>Explorer Dream</b>	54	1/03/2020 6:21	1/03/2020 18:54	Y
<b>Amsterdam</b>	53	7/03/2020 19:00	8/03/2020 18:01	Y
<b>Artania</b>	64 to 66	12/03/2020 8:30	15/03/2020 21:54	N
<b>Silver Whisper</b>	51	18/03/2020 19:20	19/03/2020 12:03	Y
<b>Pacific Explorer</b>	52	21/03/2020 7:25	2/04/2020 15:18	Y

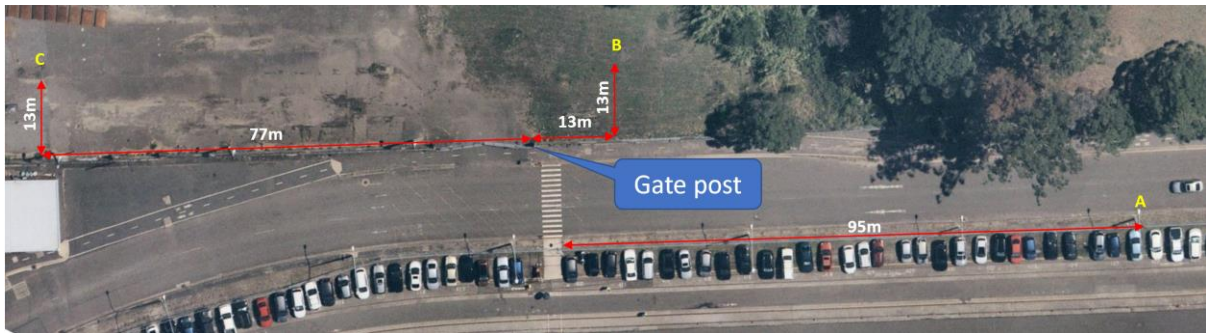
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## METHODOLOGY AND MEASUREMENT LOCATION

Attended measurements were undertaken Measurements were undertaken for WB4 between locations B and C to obtain the worst case representative noise level. The locations provide equivalent data for WB4 to noise loggers positioned on Grafton St for WBCT.

Figure – Measurement locations at White Bay 4



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## MEASUREMENT EQUIPMENT

Attended measurements were completed with a Class 1 NTi XL2 sound level meter with a current National Association of Testing Authorities, Australia (NATA) calibration certificate. Field calibration was also completed before and after the noise measurement with a Pulsar type 105 acoustic calibrator. The calibrator has a current NATA calibration certificate. The pre and post field calibration confirmed there was no significant change in calibration over the measurement period and that results are representative.

## ADDITIONAL OBSERVATIONS

Noise levels from the Artania significantly exceeded the NIMs reference level of 58dBA. On the first day of the visit the noise level was 66dBA, which is an 8dBA exceedence. The vessel was notified, and additional measurements were after 10pm that evening. By 10pm the vessel had reduced noise to 64dBA, which was a 6dBA exceedence. In addition to the measured noise reduction, the character of the emission had less low frequency noise.

Spoke Acoustics issued an exceedence certificate for the Artania.

The noise levels from all other the vessels at WB4 complied with the NIMS reference noise level of 58dBA.

Yours faithfully



Dr Simon Kean  
Director

# GLOSSARY

TERM	DESCRIPTION
Representative noise level	<p>A representative noise level is the typical noise level from a vessel during its visit and excludes short term events which may be louder.</p> <p>The typical noise level from a vessel occurs from a combination of ventilation, air conditioning systems and onboard power generators.</p> <p>Higher short term noise levels may occur during arrival/departure or due to a change in an operational procedure. These are not representative of the longer term noise exposure from the vessel while in port. Where they are unreasonable they may be addressed by amending the vessel's procedures.</p>
dBA	<p>The term dBA is an abbreviation which indicates the noise levels have been expressed in decibels (dB) using an A-weighting filter which approximates how the human ear perceives the loudness of complex noise sources with both low frequency (chugging of engines), medium (fans and engine exhaust flow) and higher frequency aspects.</p>
58dBA reference level	<p>The approval for the White Bay Cruise Terminal called for the use of feasible and reasonable noise mitigation to manage potential noise impacts. In response the Port Authority of NSW has developed a Noise Impact Mitigation Strategy which considers potential noise impacts for typical vessels with noise levels up to 58dBA.</p> <p>Based on the approach in the Noise Impact Mitigation Strategy, 58dBA has become the baseline or reference level against which all vessels are assessed.</p> <p>Representative noise levels of 58dBA and lower from a vessel are deemed acceptable as the Noise Impact Mitigation Strategy has approaches to manage these noise levels by mitigating houses.</p> <p>Representative noise levels above 58dBA are deemed unacceptable and the vessel operations are reviewed under the Port Authority's three strikes policy.</p>
$L_{Aeq}$	<p>In general, noise levels in any location vary continuously and any sound level meter will show this changing decibel level on the display. To make sense of the range in noise levels that may occur within a standard time period, various statistics are used in acoustics.</p> <p>The simplest are the <math>L_{A90}</math>, <math>L_{A50}</math> and <math>L_{A10}</math> descriptors. The number in each of these descriptors indicates the percentage of time that noise levels exceed the indicated value. For example an <math>L_{A90}</math> is the noise level that was exceeded 90% of the time, and <math>L_{A50}</math> is the noise level that was exceeded 50% of the time (also the median) and <math>L_{A10}</math> is the noise level that was exceeded 10% of the time.</p> <p>The <math>L_{Aeq}</math> is more complex to derive from changing noise levels and is an averaging process. The averaging process results in a single equivalent number for the measurement period that has the same total sound energy as the changing noise levels over the time period.</p>

# GLOSSARY

TERM	DESCRIPTION
Adverse wind and rain	Conditions are described as adverse when noise levels from wind or rain are high enough to influence noise measurement. Adverse noise may result from direct noise generation on the microphone or from wind and rain impacting other items such as the ground, pavements, structures, vegetation etc.
Noise logger	A noise logger is an automated sound level meter which repeatedly saves noise statistics for defined noise sampling periods. In NSW statistics are usually obtained for every 15 minute period each day starting at midnight.
Class 1	Sound level meters are available with different levels of accuracy. A class 1 instrument is a high precision instrument suitable for acoustic measurement of noise levels at the White Bay Cruise Terminal. To achieve a Class 1 rating the meter must comply with Standard IEC61672. Most meters that are available through retail electronics stores (including smartphone apps with claimed calibration curves) are not accurate or stable enough to achieve a class rating. Testing by Spoke Acoustics has found that noise levels measured using smartphone apps may commonly be wrong by 8dBA or more.
NATA calibration certificate	The sound level meter must have a current calibration certificate issued by a National Association of Testing Authorities (NATA) accredited laboratory for noise measurements to be valid in Australia. The certificate confirms that the meter is in good working order and complies with Standard IEC61672 and others as relevant.
Field calibration	A field calibration is conducted with a hand held acoustic calibrator and confirms the meter is working correctly and also permits minor adjustments to account for significant changes in temperature and atmospheric pressure.
Acoustic calibrator	An acoustic calibrator is used to conduct a field calibration. For the calibration to be valid the calibrator must have a current calibration certificate issued by a National Association of Testing Authorities (NATA) accredited laboratory.