

NOISE LEVEL CERTIFICATE

WHITE BAY CRUISE TERMINAL
March 2020

MEASURED NOISE LEVEL SUMMARY

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.

During the period from 1 March to 31 March 2020 there were nine cruise ship visits to WBCT. The most frequent visitors were the Sun Princess and the Pacific Explorer with two visits each. All other vessels visited once only.

Table – Representative noise levels from WBCT

Vessel Name	Representative L _{Aeq} noise level (dBA)	Arrival Time	Departure Time	Complies with 58dBA reference level
Silver Muse	54	3/03/2020 6:37	3/03/2020 18:10	Y
Amsterdam	54	7/03/2020 7:44	7/03/2020 18:25	Y
Seabourn Encore	55	8/03/2020 6:40	8/03/2020 20:09	Y
Pacific Explorer	52	11/03/2020 7:40	13/03/2020 16:40	Y
Pacific Explorer	52	16/03/2020 7:37	17/03/2020 16:29	Y
Sea Princess	54	18/03/2020 4:51	18/03/2020 16:05	Y
Sun Princess	51 to 56	18/03/2020 22:56	19/03/2020 10:30	Y
Silver Whisper	49	19/03/2020 12:28	20/03/2020 18:19	Y
Sun Princess	46 to 58	21/03/2020 9:11	31/03/2020 21:35	Y

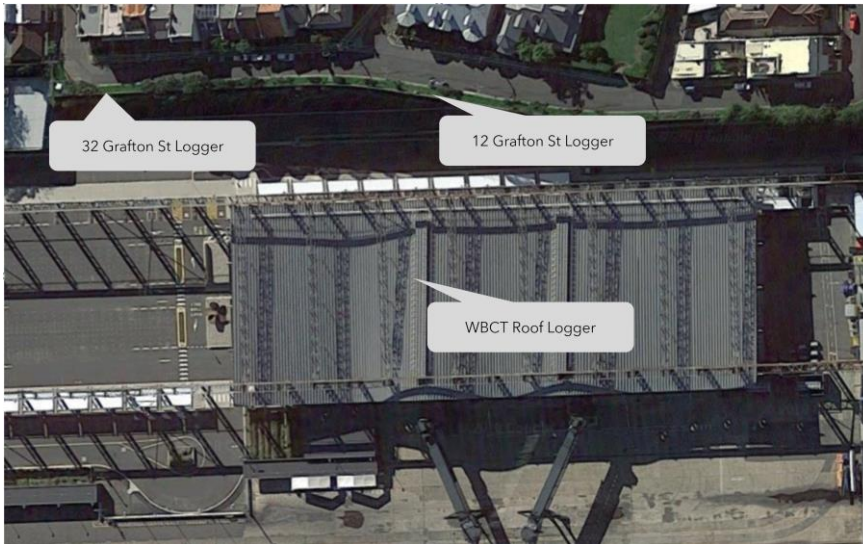
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METHODOLOGY AND MEASUREMENT LOCATION

Measurements were undertaken for WBCT using automated noise loggers on Grafton Street and on the roof of the cruise terminal as indicated in the Figure below.

Figure – Measurement locations at WBCT



Source: Google Earth

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MEASUREMENT EQUIPMENT

The measurements were completed using Class 1 Svantek 977 sound level meters with current National Association of Testing Authorities, Australia (NATA) calibration certificates. Field calibration was completed monthly with a Pulsar type 105 acoustic calibrator. The calibrator has a current NATA calibration certificate. No significant change in calibration level was detected.

ADDITIONAL OBSERVATIONS

Noise levels from the Pacific Explorer now measure 52dBA following the recent refit. Typical noise levels earlier this cruise season and last season were 56dBA to 58dBA.

The Sun Princess's noise emissions varied significantly during each visit and the second visit was an extended stay of ten days. Overall the levels ranged between 46dBA to 58dBA. We note that cruise vessel operations during this time may not have been typical due to significant schedule changes.

Noise levels from all vessels at WBCT 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 L_{A90}, L_{A50} and L_{A10} descriptors. The number in each of these descriptors indicates the percentage of time that noise levels exceed the indicated value. For example an L_{A90} is the noise level that was exceeded 90% of the time, and L_{A50} is the noise level that was exceeded 50% of the time (also the median) and L_{A10} is the noise level that was exceeded 10% of the time.</p> <p>The L_{Aeq} 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.