

15 January 2024

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Muswellbrook Coal Company Limited
PO Box 123
Muswellbrook NSW 2333

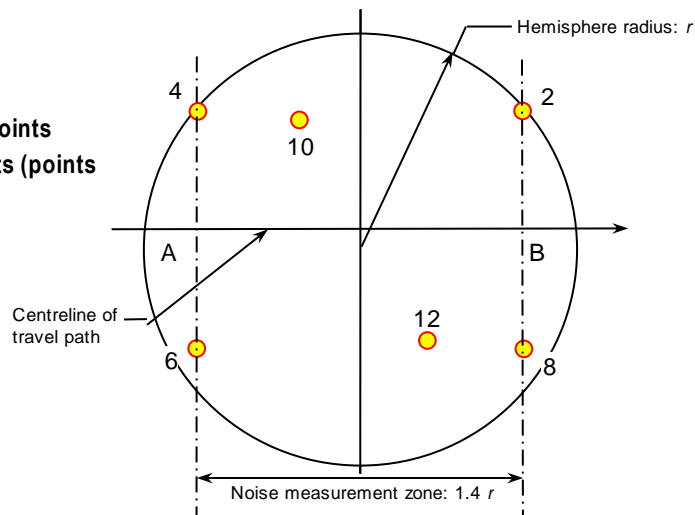
RE: PLANT NOISE TEST RESULTS – DECEMBER 2023

This letter report presents the results of plant noise testing conducted for the Muswellbrook Coal Company (MCC) on 11 December 2023 as required in Section 4.2 of the MCC Noise Management Plan (October 2020).

MONITORING PROCEDURES

Dynamic testing was conducted using a modified version of ISO 6395:2008¹ that utilises one or two microphones to capture the same data as the four ground level points in the standard. The layout of the machinery path of motion and measurement points in the Standard are shown in **Figure 1**. When applied to dump trucks in motion, the forward measurement path is from point A to point B and then from B to A so that the microphones positions record both the left and right side of the vehicle.

Figure 1. Measurement points for ISO 6395 dynamic tests (points 10 and 12 omitted).



Measurement points 2 and 4 (6 and 8) were combined into a single point and the measurement zone extended to approximately $2.8 r$ to allow for an approach distance of $1.4 r$ to represent the measurement at point 2 (4) and a departure distance of $1.4 r$ to represent the measurement at point 6 (8). For measurements of dozers 1437 and 1451 on 21 August the engine revs were held constant at 1850 rpm. NATA calibration certificates for the measurement equipment are attached to this report.

¹ Pennington, N. *Theoretical justification for modifying homologation standard ISO 6395:2008(E) to suit the working mine site*. *Acoust. Aust.* **45**, 77-84 (2017).

RESULTS

Calculated sound power levels (Lw, dB(A)) are presented in Table 1 below, with the test procedure (Stationary, dynamic or operational) noted along with the previously calculated sound power levels. All values are rounded to the nearest whole number with the method uncertainty error as defined in Annex N of ISO 6395.

TABLE 1. Sound Power Levels, Lw dB(A) 11 December 2023				
Equipment	Action/Mode	Test condition	Lw (Prev)¹	Lw, (2023)
Excavator 212	Dynamic (rotation)	Stationary (operation)	116 ± 1	115 ± 1
Water Cart 1117	Dynamic (forward)	Travel on incline	118 ± 1	116 ± 1
Water Cart 1115	Dynamic (forward)	Travel on incline	116 ± 1	117 ± 1
CAT haul truck 1218	Dynamic (forward)	Travel on incline	117 ± 1	118 ± 1
CAT haul truck 1219	Dynamic (forward)	Travel on incline	117 ± 1	117 ± 1
Dozer 1436	Dynamic fwd/rev ²	Drive-by	120 ± 1	122 ± 1
Dozer 1438	Dynamic fwd/rev ²	Drive-by	120 ± 1	120 ± 1
Dozer 1439	Dynamic fwd/rev ²	Drive-by	122 ± 1	122 ± 1
Dozer 2114	Dynamic fwd/rev ²	Drive-by	N/A	121 ± 1
Dozer 2179	Dynamic fwd/rev ²	Drive-by	N/A	122 ± 1
Blast hole drill DR947	Drilling	Stationary (operation)	N/A	117 ± 1
CAT Loader 1850	Dynamic (fwd / rev)	Travel on flat	N/A	109 ± 1

¹ Most recent measurement from previous years.

² Geometric average of results for first and second gears.

Section 4.2 of the site Noise Management Plan (NMP, October 2020) states: “MCC conducts a survey of significant noise sources to determine the noise levels from the equipment. This survey will be completed so that all significant noise generating equipment is surveyed over a 3 year period. The results of this monitoring will be compared to previous results and if there is an increase of more than 2dB an investigation into the changes will be conducted to identify if any further mitigation on the equipment is required. As part of this investigation the attended noise monitoring results and complaints history will be considered.” All items in Table 1 satisfy this requirement with respect to the most recently conducted measurements.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please do not hesitate to contact the undersigned.

Yours faithfully,

SPECTRUM ACOUSTICS PTY LIMITED



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Neil Pennington MAIP, MAAS, MASA
 Acoustical Consultant



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 Accredited for compliance with ISO/IEC 17025 - Calibration. Laboratory No. 1301



CERTIFICATE OF CALIBRATION

Certificate No: CAU2300638

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CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	No: 2653961
Microphone:	Brüel & Kjær	4966	No: 3343809
Preamplifier:	Brüel & Kjær	ZC-0032	No: 25104
Supplied Calibrator:	None		
Software version:	BZ7224 Version 4.7.6	Pattern Approval:	-
Instruction manual:	BE1897-11	Identification:	N/A

CUSTOMER:

Spectrum Acoustics Pty Ltd
 8 Panylan St
 Cardiff NSW 2285

CALIBRATION CONDITIONS:

Preconditioning: 4 hours at 23 °C
 Environment conditions: see actual values in *Environmental conditions sections*

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC61672-1:2013 class 1. Procedures from IEC 61672-3:2013 were used to perform the periodic tests. The measurements included in this document are traceable to Australian/National standards.

PROCEDURE:

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System B&K 3630 with application software type 7763 (version 8.6 - DB: 8.60) and test procedure 2250-4966.

RESULTS:

<input type="checkbox"/>	Initial calibration	<input type="checkbox"/>	Calibration prior to repair/adjustment
<input type="checkbox"/>	Calibration without repair/adjustment	<input checked="" type="checkbox"/>	Calibration after repair/adjustment

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of Calibration: 12/09/2023

Certificate issued: 12/09/2023

Sajeeb Tharayil
 Calibration Technician

Craig Patrick
 Approved signatory

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