17 September 2020

Ref: 8413/29067

Metromix Pty Ltd
150 Rhondda Road
Teralba NSW 2284

AUGUST 2020 NOISE MONITORING RESULTS – TERALBA QUARRY

This letter report presents the results of attended noise monitoring conducted for the Metromix operated Teralba Quarry (TQ) commencing on Wednesday 12th and finishing on Tuesday 18th of August, 2020. Noise monitoring was carried out in accordance with the conditions of the TQ Noise Management Plan (NMP) (dated October 2018) as shown in extract on page 2 (referenced from EPL 536).

Although the project approval nominates noise criteria at nine locations, Metromix recognises that meaningful monitoring data will continue to be collected from the closest locations to the active operational areas. As a result of this, and as outlined within the approved NMP, for periods when operations are confined to areas south of Rhondda Road, noise monitoring will be undertaken at Locations EPL-A, B, D, E and H.

Further to this, location EPL-C and EPL-F have been omitted from the noise monitoring programme given they are not required as other monitoring locations are nearby and closer to quarry related noise sources. This has been recognised by the EPA by the removal of these locations from the monitoring locations detailed in EPL 536. **Table 1** lists the address and coordinates of each noise monitoring location, with the relevant monitoring locations that were monitored during the August 2020 period highlighted in **bold**. The locations are shown on the figure in **Appendix I**.

Table 1
Noise Monitoring Locations (from PA 10-0183)

Location in EPL	Address	Easting	Northing
EPL-A (Point 12)	**Awaba Street, Teralba**	**369080**	**3651470**
EPL-B[1] (Point 13)	**Rhondda Road, Teralba**	**369250**	**6351915**
EPL-C (Point 14)	Rhondda Road, Teralba [2]	369205	6352015
EPL-D (Point 15)	**Rhondda Road, Teralba**	**369150**	**6352135**
EPL-E (Point 16)	**Victoria Avenue, Teralba**	**369060**	**6352620**
EPL-F (Point 17)	Victoria Avenue, Teralba [2]	369130	6352945
EPL-H (Point 18)	**School Road, Wakefield**	**366210**	**6352520**

1. See text in relation to changes to monitoring location
2. Metromix has obtained permission for this monitoring location to be omitted.

It is noted that during the period when monitoring is undertaken at Location B, Metromix is required to provide a spotter to record the number of trucks departing from the Quarry and not the Teralba Business Park. Spectrum Acoustics personnel undertook identification of quarry trucks as part of the noise monitoring procedure.

As part of pre monitoring protocols Spectrum Acoustics notified, by letterbox drop, all landowners in the close vicinity of each site of the impending monitoring. The resident at Location B has previously told Metromix that he doesn't want monitoring to be done near his residence so monitoring was undertaken at a point approximately 30m south (as shown in Appendix I).

The following presents noise related conditions of EPL 536 relevant to the compliance noise monitoring programme.

<table>
<tr><th>Condition</th><th>Requirement</th></tr>
<tr><td>L5.2</td><td>The licensee must ensure that noise generated by the activities within the premises do not exceed the following criteria measured by dB(A) at any residence or privately owned land.
<table>
<tr><th>Location</th><th>Day Shoulder 6:00am - 7:00am</th><th>Day 7:00am - 6:00pm</th><th>Evening 6:00pm – 10:00pm</th><th>Night 10:00pm – 6:00am</th></tr>
<tr><td></td><td>$L_{Aeq\ (15\ minute)}$</td><td>$L_{Aeq\ (15\ minute)}$</td><td>$L_{Aeq\ (15\ minute)}$</td><td>$L_{Aeq\ (15\ minute)}$
$L_{A1(1min)}$</td></tr>
<tr><td>Point 12</td><td>38</td><td>38</td><td>37</td><td>35
45</td></tr>
<tr><td>Point 13</td><td>42</td><td>46</td><td>36</td><td>35
45</td></tr>
<tr><td>Point 14</td><td>42</td><td>42</td><td>35</td><td>35
45</td></tr>
<tr><td>Point 15, Point 16, Point 18</td><td>35</td><td>35</td><td>35</td><td>35
45</td></tr>
<tr><td>Point 17</td><td>37</td><td>38</td><td>38</td><td>35
45</td></tr>
<tr><td>Note:</td><td colspan="4">The licensee may provide to the EPA written evidence of any agreement with a landholder which is subject to the above noise limits. The written evidence may be submitted with a licence variation to remove the noise monitoring requirements at the point associated with the landholder. The EPA may reinstate noise monitoring requirements to assess compliance with noise limits if noise complaints are received or at the landholder's request.</td></tr>
</table></td></tr>
<tr><td>L5.3</td><td>For the purposes of Condition L5.2:
a) Day-Shoulder is defined as the period between 6am to 7am Monday to Saturday.
b) Day is defined as:
a. the period from 7am to 6pm Monday to Saturday; and
b. the period from 8am to 6pm Sundays and Public Holidays.
c) Evening is defined as the period from 6pm to 10pm.
d) Night is defined as:
a. the period from 10pm to 7am Monday to Saturday; and
b. the period from 10pm to 8am Sundays and Public Holidays.</td></tr>
<tr><td>L5.4</td><td>The contributed noise level from the premises must not exceed the noise limits specified within EPL 536 at the most noise-affected point on or within the boundary of any residential premises to the north and/or south of the premises, except as expressly provided by this licence, or by the EPA in writing.</td></tr>
<tr><td>L5.5</td><td>The noise limits set out in conditions L5.2 apply under all meteorological conditions except for anyone of the following:
a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or
b) Stability category F temperature inversion conditions and wind speeds greater the 2 metres/second at 10 metres above ground level; or
c) Stability category G temperature inversion conditions.</td></tr>
</table>

L5.6	For the purpose of condition L5.5: a) the meteorological data to be used for determining meteorological conditions is the data recorded at the meteorological station identified in this licence as EPA Identification Point 19. b) Stability category temperature inversion conditions are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the *NSW industrial Noise Policy (EPA 2000)* Note: The weather station must be designed, commissioned and operated in a manner to obtain the necessary parameters required under the above condition.
L5.7	To determine compliance: 1. With the $L_{Aeq(15\ min)}$ noise limits in condition L5.2, the licensee must locate noise monitoring equipment; a) approximately on the boundary, where any dwelling is situated 30 metres or less from the property boundary that is closest to the premises; or, b) within 30 metres of a dwelling facade (but not closer than 3 metres) where any dwelling on the property is situated more than 30 metres from the property boundary that is closest to the premises; or where applicable c) within approximately 50 metres if the boundary of a national park or nature reserve. 2. With the LA1(1 minute) noise limits in condition L5.2, the noise monitoring equipment must be located within 1 metre of a dwelling facade. 3. With the noise limits in condition L5.2, the noise monitoring equipment must be located; a) at the most affected point at a location where there is no dwelling at the location, or b) at the most affected point within an area at a location prescribed by conditions L5.7 1(a) or L5.7 1(b).
L5.8	A non-compliance will still occur where noise generated from the premises in excess of the appropriate noise limit is measured: a) at a location other than an area prescribed by the conditions of this licence, and /or b) at a point other than the most affected point at a location.
L5.9	For the purpose of determining the noise generated at the premises the licensee must use a Class 1 or Class 2 noise monitoring device as defined by AS IEC61672.1 and AS IEC61672.2-2004, or other noise monitoring equipment accepted by the EPA in writing.
L5.10	For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.
L7.1	The licensee must comply with the operating hours specified in Column 2, Column 3, and Column 4 of the table below:

Day	Loading and Dispatch of Quarry Trucks	Extraction and Processing	Receipt of Concrete
Monday - Friday	4:00am Monday to midnight Friday	7:00am to 7:00pm	7:00am to 5:00pm
Saturday	Midnight Friday to 6:00pm Saturday	7:00am to 2:00pm	7:00am to 2:00pm
Sundays and Public Holidays	None	none	none

Note: Maintenance activities may occur at any time provided they are inaudible at privately-owned residence.
*VENM = Virgin Excavated Natural Material
**ENM = Excavated Natural Material

M9 Noise monitoring

M9.1 To assess compliance with the noise limits specified within this licence, the licensee must undertake operator attended noise monitoring at each specified noise monitoring point in accordance with the table below.

POINT 12,13,15,16,18

Assessment period	Minimum frequency in a reporting period	Minimum duration within assessment period	Minimum number of assessment period
Day	2 times a year	1.5 hours	3 consecutive operation days
Evening	2 times a year	30 minutes	3 consecutive operation days
Night	2 times a year	1 hour	3 consecutive operation days

M9.2 The licensee must undertake the operator attended noise monitoring at each one of or at one or more noise monitoring points that is representative of the worse-case location(s) listed in this licence.

NOISE MEASUREMENTS

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters" and have current NATA calibration. Field calibration of each instrument was carried out at the start and end of each monitoring period.

The noise monitoring was conducted in general accordance with the requirements of Section 10 of the NMP (Noise Monitoring Protocol and Evaluation of Compliance) as follows;

"*Metromix proposes to adopt a noise monitoring protocol that provides feedback on the effectiveness of the noise control measures and demonstrate compliance with the conditions within the Project Approval 10_0183 and Environment Protection Licence 0536.*

The approach to monitoring compliance is based substantially upon Metromix's experience to date which has identified the on-site activities have not been the source of noise complaints or any recorded non-compliance. Hence, it is considered the monitoring program needs to reflect this fact."

A-weighted noise levels were measured over 15 minute monitoring periods with data acquired at 1 second statistical intervals and the meter set to "fast" response. Each 1 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

The worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from TQ was audible, Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the quarry and other significant noise sources to the overall level.

Quarry noise from TQ is shown in the tables in bold type. Where noise from TQ is listed as faintly audible, this means the noise levels from the quarry were at least 10 dB below the ambient level during the measurement and not measurable.

Noise levels were recorded for each of the L10, Leq, Lmax, L1, L90 and Lmin percentiles. All noise levels shown in the tables of results are in dB(A) Leq (15 min). Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. Meteorological data used in this report was obtained from the quarry-operated weather station at the site. The wind speeds and directions shown in the tables of results are the arithmetic average of the five minute measurement periods throughout the entire noise monitoring period at each site.

Monitoring on the evening of the final day of the survey was unable to be conducted due to storm activity, which persisted for a few days. The final round of monitoring during the evening was conducted on the first day of good weather.

Noise Compliance Assessment

The results of the noise measurements undertaken throughout the various time periods are provided in **Tables 2** to **16**. EPL 536 refers to the various time periods as follows:

a) Day-Shoulder is defined as the period between 6am to 7am Monday to Saturday.

b) Day is defined as:
   (i) the period from 7am to 6pm Monday to Saturday; and
   (ii) the period from 8am to 6pm Sundays and Public Holidays.

c) Evening is defined as the period from 6pm to 10pm.

d) Night is defined as:
   (i) the period from 10pm to 7am Monday to Saturday; and
   (ii) the period from 10pm to 8am Sundays and Public Holidays.

Table 2
Teralba Quarry Noise Monitoring Results – 12 August 2020 (Night)

Location	Start Time	Total noise dB(A) Leq	Criterion dB(A) Leq	Wind speed (m/s) / direction	Identified Noise Sources (Leq (15 min)
A	5:36 am	54	35	1.2 / 338	Traffic (53), industry (45), frogs (43), **TQ inaudible**
B	4:30 am	50	35	0.5 / 34	Traffic (50), frogs (36), **TQ inaudible**
D	4:30 am	46	35	1.2 / 9	Traffic (45), trains (36), frogs (32), **TQ inaudible**
E	5:31 am	41	35	1.5 / 351	Birds & frogs (41), **TQ inaudible**
H	5:02 am	38	35	1.5 / 19	Traffic (35), frogs (33), **TQ inaudible**
Notes: 1. Trucks on access road.					

Table 3 Teralba Quarry Noise Monitoring Results – 12 August 2020 (Day Shoulder)					
Location	**Start Time**	**Total noise dB(A) Leq**	**Criterion dB(A) Leq**	**Wind speed (m/s) / direction**	**Identified Noise Sources (Leq (15 min)**
A	6:32 am	54	38	2.7 / 12	Traffic (53), birds (45), **TQ inaudible**
B	6:24 am	47	42	2.7 / 12	Traffic (44), industrial noise (43), **TQ (30)**[1]
D	6:48 am	50	35	1.4 / 53	Traffic (50), birds (37), **TQ inaudible**
E	6:30 am	55	35	1.4 / 40	Birds (55), traffic (37), trains (30), **TQ inaudible**
H	6:02 am	42	35	1.8 / 8	Traffic (40), birds (35), **TQ inaudible**
Notes: 1. Trucks on access road.					

Table 4 Teralba Quarry Noise Monitoring Results – 12 August 2020 (Day)					
Location	**Start Time**	**Total noise dB(A) Leq**	**Criterion dB(A) Leq**	**Wind speed (m/s) / direction**	**Identified Noise Sources (Leq (15 min)**
A	7:00 am	54	38	1.8 / 38	Traffic (54), birds (45), industry (43), **TQ inaudible**
B	8:24 am	60	46	1.3 / 35	Traffic (59), birds (51), industry (49), **TQ inaudible**
D	7:05 am	54	35	1.6 / 26	Birds (52), traffic (50), industry (32), **TQ (28)**[1]
E	8:40 am	47	35	1.4 / 26	Birds (47), traffic (35), **TQ inaudible**
H	7:18 am	41	35	2.0 / 42	Birds (41), Traffic (30), **TQ inaudible**
Notes: 1. Dozer on topsoil.					

Table 5 Teralba Quarry Noise Monitoring Results – 12 August 2020 (Evening)					
Location	**Start Time**	**Total noise dB(A) Leq**	**Criterion dB(A) Leq**	**Wind speed (m/s) / direction**	**Identified Noise Sources (Leq (15 min)**
A	6:09 pm	55	37	0.8 / 29	Birds (53), traffic (51), **TQ inaudible**
B	6:47 pm	55	36	1.0 / 18	Traffic (54), frogs (49), **TQ inaudible**
D	7:30 pm	48	35	1.7 / 44	Traffic (47), birds (40), **TQ inaudible**
E	8:12 pm	44	35	1.3 / 35	Traffic (42), birds (36), **TQ inaudible**
H	6:53 pm	39	35	1.8 / 38	Birds (38), Traffic (31), **TQ inaudible**

Table 6 Teralba Quarry Noise Monitoring Results – 13 August 2020 (Night)					
Location	**Start Time**	**Total noise dB(A) Leq**	**Criterion dB(A) Leq**	**Wind speed (m/s) / direction**	**Identified Noise Sources (Leq (15 min)**
A	5:39 am	52	35	1.9 / 34	Traffic (51), birds (44), industry (42), **TQ inaudible**
B	4:30 am	61	35	0.7 / 349	Traffic (61), insects (53), **TQ inaudible**
D	4:30 am	48	35	1.0 / 320	Birds (45), traffic (44), industry (37), trains (30), **TQ inaudible**
E	5:30 am	39	35	1.5 / 350	Frogs & birds (39), traffic (28), trains (20), **TQ inaudible**
H	5:00 am	42	35	0.8 / 329	Traffic (39), frogs (38), **TQ inaudible**

Table 7 Teralba Quarry Noise Monitoring Results – 13 August 2020 (Day Shoulder)					
Location	**Start Time**	**Total noise dB(A) Leq**	**Criterion dB(A) Leq**	**Wind speed (m/s) / direction**	**Identified Noise Sources (Leq (15 min)**
A	6:31 am	53	38	2.2 / 306	Traffic (52), birds (46), industry (42), **TQ inaudible**
B	6:23 am	49	42	2.2 / 306	Industry (48), Traffic (40), **TQ (27)**[1]
D	6:47 am	49	35	1.1 / 237	Traffic (47), birds (44), **TQ inaudible**
E	6:30 am	52	35	2.3 / 302	Birds (52), traffic (34), trains (25), **TQ inaudible**
H	6:01 am	43	35	1.7 / 348	Birds (42), traffic (32), **TQ inaudible**
Note: 1 Trucks on access road					

Table 8 Teralba Quarry Noise Monitoring Results – 13 August 2020 (Day)					
Location	**Start Time**	**Total noise dB(A) Leq**	**Criterion dB(A) Leq**	**Wind speed (m/s) / direction**	**Identified Noise Sources (Leq (15 min)**
A	7:00 am	53	38	1.7 / 316	Traffic (52), birds (45), industry (42), **TQ inaudible**
B	8:34 am	56	46	2.2 / 316	Traffic (56), birds (47), **TQ inaudible**
D	7.05 am	52	35	2.2 / 310	Birds (50), traffic (46), industry (35), **TQ inaudible**
E	8:40 am	46	35	1.7 / 316	Birds (46), traffic (34), **TQ inaudible**
H	7:08 am	43	35	1.3 / 350	Birds (42), traffic (33), **TQ inaudible**
Note: 1 Trucks on access road					

Table 9 Teralba Quarry Noise Monitoring Results – 13 August 2020 (Evening)					
Location	**Start Time**	**Total noise dB(A) Leq**	**Criterion dB(A) Leq**	**Wind speed (m/s) / direction**	**Identified Noise Sources (Leq (15 min)**
A	6:00 pm	55	37	0.1 / 5	Frogs (54), traffic (48), **TQ inaudible**
B	6:37 pm	54	36	0.2 / 302	Traffic (53), insects (46), **TQ inaudible**
D	6:43 pm	51	35	1.3 / 313	Traffic (51), **TQ inaudible**
E	7:19 pm	39	35	0.6 / 297	Traffic (38), birds (32), **TQ inaudible**
H	6:04 pm	38	35	0.8 / 338	Traffic (37), birds (30), **TQ inaudible**

Table 10 Teralba Quarry Noise Monitoring Results – 14 August 2020 (Night)					
Location	**Start Time**	**Total noise dB(A) Leq**	**Criterion dB(A) Leq**	**Wind speed (m/s) / direction**	**Identified Noise Sources (Leq (15 min)**
A	5:39 am	52	35	1.4 / 296	Traffic (50), birds (46), industry (40), **TQ inaudible**
B	4:30 am	50	35	0.3 / 259	Traffic (50), insects (40), **TQ inaudible**
D	4:30 am	42	35	0.7 / 194	Traffic (41), trains (3), birds & frogs (30), **TQ inaudible**
E	5:30 am	39	35	0.6 / 244	Birds (39), traffic (28), **TQ inaudible**
H	5:01 am	46	35	1.1 / 280	Traffic (44), birds (39), **TQ inaudible**

Table 11 Teralba Quarry Noise Monitoring Results – 14 August 2020 (Day Shoulder)					
Location	**Start Time**	**Total noise dB(A) Leq**	**Criterion dB(A) Leq**	**Wind speed (m/s) / direction**	**Identified Noise Sources (Leq (15 min)**
A	6:30 am	53	38	0.7 / 306	Traffic (52), birds (45), industry (38), **TQ inaudible**
B	6:32 am	49	42	0.7 / 306	Industry (45), traffic (45), train (38), **TQ inaudible**
D	6:47 am	51	35	0.7 / 306	Traffic (50), birds (40), **TQ inaudible**
E	6:30 am	52	35	0.8 / 150	Birds (52), traffic (34), trains (32), **TQ inaudible**
H	6:01 am	49	35	0.2 / 194	Birds (49), traffic (34), **TQ inaudible**

Table 12 Teralba Quarry Noise Monitoring Results – 14 August 2020 (Day)					
Location	**Start Time**	**Total noise dB(A) Leq**	**Criterion dB(A) Leq**	**Wind speed (m/s) / direction**	**Identified Noise Sources (Leq (15 min)**
A	7:00 am	51	38	0.6 / 155	Traffic (50), birds (40), industry (39), **TQ inaudible**
B	8:33 am	58	46	0.9 / 285	Traffic (57), birds (50), industry (49), **TQ inaudible**
D	7:05 am	52	35	2.1 / 199	Birds (50), traffic (46), trains (40), **TQ inaudible**
E	8:45 am	48	35	0.5 / 203	Birds (47), traffic (39), **TQ inaudible**
H	7:11 am	40	35	1.0 / 187	Birds (39), traffic (30), **TQ inaudible**
Note: 1 Trucks on access road					

Table 13 Teralba Quarry Noise Monitoring Results – 18 August 2020 (Evening)					
Location	**Start Time**	**Total noise dB(A) Leq**	**Criterion dB(A) Leq**	**Wind speed (m/s) / direction**	**Identified Noise Sources (Leq (15 min)**
A	6:08 pm	55	37	2.1 / 359	Traffic (54), insects (46), **TQ inaudible**
B	6:40 pm	55	36	3.4 / 342	Traffic (55), frogs (36), **TQ inaudible**
D	6:37 pm	54	35	2.0 / 13	Traffic (54), birds (30), **TQ inaudible**
E	7:12 pm	39	35	1.0 / 327	Birds (37), traffic (32), **TQ inaudible**
H	6:01 pm	34	35	2.0 / 10	Traffic (32), birds (29), **TQ (<20)**

The results shown in Tables 2 to 13 show that, under the operational and atmospheric conditions at the time of monitoring, noise emissions from TQ did not exceed the relevant criterion at any monitoring location during any part of the survey.

Monitoring location EPL-B is situated close to the corner of Rhondda Road and Railway Street. This monitoring location is included predominantly to measure quarry noise from emissions from trucks exiting the site along the private section of the access road (through the Teralba Business Park). From the monitoring location it was possible to determine which trucks were associated with the quarry and a dedicated spotter was not required during this monitoring period.

When measuring noise at the EPL-B location, the noise emissions from the exiting quarry trucks (whilst on the private section of the access road) was measured and the worst case 15-minute Leq noise level calculated based on the time each truck was on the private road. The worst case calculated Leq level for the trucks is that shown for Location B in Tables 2 to 13.

At location EPL-D the acoustic environment is significantly influenced by noise from traffic on Rhondda Rd, trains and other industries within the vicinity. Noise emissions from the batching plant which is located adjacent to TQ contributed to the received noise during some monitoring periods.

Data from those times where TQ operations were audible were analysed using the *"Evaluator"* software. This analysis showed the noise did not contain any tonal, impulsive or low frequency components as per definitions of "modifying factor corrections" in the NSW Noise Policy for Industry

In addition to the operational noise, the noise from TQ must not exceed **45 dB(A) L1 (1 min)** within the night-time period i.e. between the hours of 10 pm and 7 am, in accordance with *Condition L4.1* of EPL 536. This is to minimise the potential for sleep disturbance as a result of individual loud noises from the quarry. The compliance measurement locations are different for each of the operational and sleep disturbance noise. That is, the sleep disturbance criterion is typically applicable at 1m from the façade of a bedroom window.

To avoid undue disturbance to residents, the L1 (1 min) noise level from the operational measurements are used to show general compliance with the sleep disturbance criterion. That is, as the distance between the noise source and the operational noise monitoring location is significantly greater than the distance between the operational noise monitoring location and the sleep disturbance monitoring location (i.e. 1m from the facade of the house) there will be little variation in L1 (1 min) levels between the two monitoring locations. It must be noted, however, that the sleep disturbance criterion is to be measured near a bedroom window. As the internal layout of each residence is not known, to consider a worst case, a bedroom window is assumed to be facing the operational noise monitoring location.

The results of the sleep disturbance measurements are shown in **Tables 14** to **16**.

Table 14
Teralba Quarry (L1 (1min)) Noise Monitoring Results – 12 August 2020 (Night)

Location	Time	dB(A), $L_{1(1minute)}$	Wind speed (m/s) / direction	L_{A1} source	Identified Quarry Sources ($L_{1\,(1\,min)}$)
A	5:36 am	58	1.2 / 338	Traffic	n/a
B	4:30 am	67	0.5 / 34	Traffic	n/a
D	4:30 am	52	1.2 / 9	Traffic	n/a
E	5:31 am	56	1.5 / 351	Birds	n/a
H	5:02 am	57	1.5 / 19	Birds	n/a

Table 15
Teralba Quarry (L1 (1min)) Noise Monitoring Results – 13 August 2020 (Night)

Location	Time	dB(A), $L_{1(1minute)}$	Wind speed (m/s) / direction	L_{A1} source	Identified Quarry Sources ($L_{1\,(1\,min)}$)
A	5:39 am	59	1.9 / 34	Traffic	n/a
B	4:30 am	73	0.7 / 349	Traffic	n/a
D	4:30 am	51	1.0 / 320	Traffic	n/a
E	5:30 am	49	1.5 / 350	Birds	n/a
H	5:00 am	56	0.8 / 329	Birds	n/a

Table 16 Teralba Quarry (L1 (1min)) Noise Monitoring Results – 14 August 2020 (Night)					
Location	**Time**	**dB(A), $L_{1(1minute)}$**	**Wind speed (m/s) / direction**	**L_{A1} source**	**Identified Quarry Sources ($L_{1\ (1\ min)}$)**
A	5:39 am	59	1.4 / 296	Traffic	n/a
B	4:30 am	60	0.3 / 259	Traffic	n/a
D	4:30 am	55	0.7 / 194	Birds	n/a
E	5:30 am	50	0.6 / 244	Birds	n/a
H	5:01 am	60	1.1 / 280	Birds	n/a

As shown in Tables 14 to 16, during the night time measurement circuits the L1 (1 min) noise from TQ did not exceed 45 dB(A) at any monitoring location.

In summary the results of the noise monitoring programme have shown that the Teralba Quarry continues to operate within approved noise limits. No actions are recommended with respect to noise management at Teralba Quarry.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

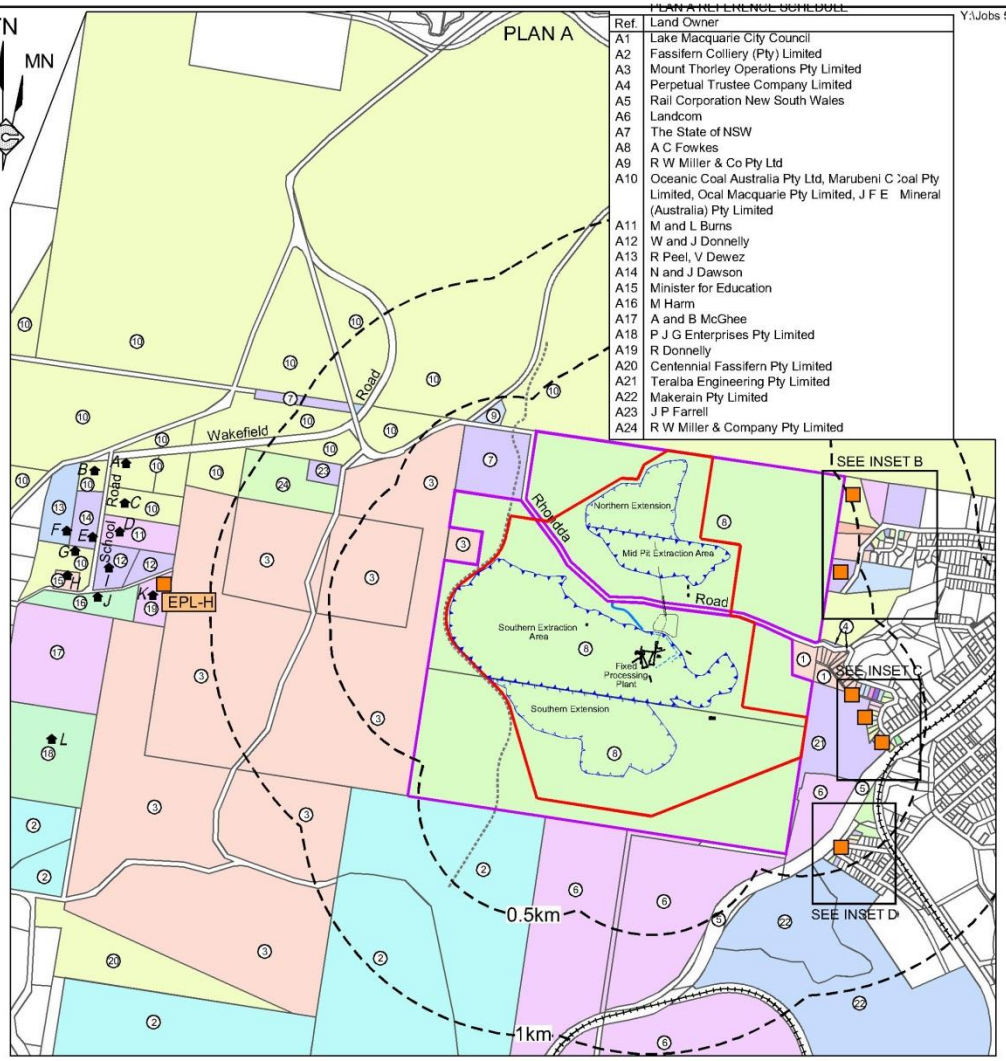
Author:

Neil Pennington MAIP, MAAS, MASA
Acoustical Consultant

Review:

Ross Hodge MAAS
Acoustical Consultant

Y:\Jobs 531 to 1000\559\Post April 2004\Reports\55912 - EA _Quarry Extension_2011 - C\CAD\ 559Base.dwg _D Noise Monitoring -18.02.2014-10:04 AM



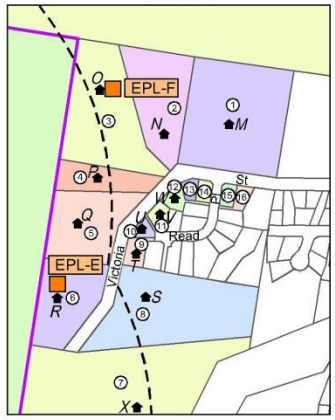
PLAN A REFERENCE SCHEDULE

Ref.	Land Owner
A1	Lake Macquarie City Council
A2	Fassifern Colliery (Pty) Limited
A3	Mount Thorley Operations Pty Limited
A4	Perpetual Trustee Company Limited
A5	Rail Corporation New South Wales
A6	Landcom
A7	The State of NSW
A8	A C Fowkes
A9	R W Miller & Co Pty Ltd
A10	Oceanic Coal Australia Pty Ltd, Marubeni C Coal Pty Limited, Ocal Macquarie Pty Limited, J F E Mineral (Australia) Pty Limited
A11	M and L Burns
A12	W and J Donnelly
A13	R Peel, V Dewez
A14	N and J Dawson
A15	Minister for Education
A16	M Harm
A17	A and B McGhee
A18	P J G Enterprises Pty Limited
A19	R Donnelly
A20	Centennial Fassifern Pty Limited
A21	Teralba Engineering Pty Limited
A22	Makerain Pty Limited
A23	J P Farrell
A24	R W Miller & Company Pty Limited

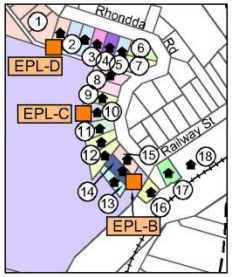
INSET B REFERENCE SCHEDULE

Ref.	Land Owner
B1	C & H Stellar
B2	C Roche
B3	N W Green
B4	M A Burgess
B5	G B Hillyard, M L Ashton
B6	D P and S I Black
B7	G and V Hardes
B8	J and R Mannweiler
B9	M L Stocker
B10	K W Philp, P D Noble
B11	M A Philippa
B12	B F and K E Folbigg
B13	P J and D M Hansen
B14	S D and P R Wilson
B15	S M and L C Toomey
B16	P W and C Wilson

INSET B



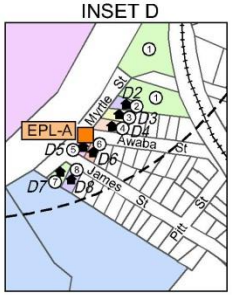
INSET C



INSET C REFERENCE SCHEDULE

Ref.	Land Owner
C1	Lake Macquarie City Council
C2	D & S Halton
C3	Mr Thomas
C4	A Bradbury
C5	Mr and Mrs Miller
C6	K & N M Johnson
C7	K J Lang
C8	T Bock
C9	D S Campbell
C10	Mr & Mrs Tate
C11	Mr Hutchinson
C12	P Hall
C13	R Pitstock & T Davies
C14	S Muller & J Cowand
C15	T & M T Brown
C16	A C & L Drew
C17	K P Tanner
C18	Rail Corporation New South Wales

INSET D



INSET D REFERENCE SCHEDULE

Ref.	Land Owner
D1	P Adams
D2	S Odgers
D3	M Bass
D4	M & S Vale
D5	K and B Weatherstone
D6	B and S Hewitt
D7	K Lassig
D8	A Durrant

INSET SCALE

100 0 100 200 300 400m

SCALE 1:30 000 (A4)

500 0 500 1000 1500 m

Land Ownership Source: Dept. of Lands - Date of Online Search: 25 January 2010

REFERENCE

- Quarry Site Boundary
- Property Boundary
- Cadastral Boundary
- Railway Line
- Buffer
- EPL-D Noise Monitoring Location
- Land Owner Reference (see Schedules)
- Residence
- Formed Public Road
- Coal Haul Road

Figure 7.1

SURROUNDING RESIDENCES AND NOISE MONITORING LOCATIONS

Location EPL – Point 13 Modified noise monitoring location