

Appendix 4

Acoustic Assessment

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16 March 2015

Ref: 08421/5665

R.W. Corkery & Co. Pty Limited

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Brooklyn NSW 2083

RE: NEW BERRIMA QUARRY – NOISE ASSESSMENT FOR PROPOSED MODIFICATION

This letter report presents the results of a noise impact assessment resulting from the proposed changes (the 'Modified Project') to the approved New Berrima Clay/Shale Quarry (PA 08_0212). The assessment has been conducted for inclusion with an application to amend the Project Approval under Section 75W of the *Environmental Planning and assessment Act* (EP&A Act) 1979.

1. PROPOSED CHANGES

The modified Project would include the following components (as outlined on **Figure 1**), principally within and surrounding the modified extraction area.

- Relocation of the extraction area to a location within the clay/shale resource boundary with access to higher quality materials than the approved extraction area.
- Construction of appropriately located visual visibility barriers (constructed progressively).
- Relocation and replacement of water management / sedimentation dams and related water diversion structures.

There is no proposal to modify the hours of operations, machinery used or any other aspect of the Project.

2. NOISE MODELLING

Modelling of noise emissions from the Project Site was conducted using the point calculation mode of the Environmental Noise Model (ENM) within the noise report that accompanied the application for development consent (Spectrum Acoustics, 2010). Noise levels were calculated for the same residential receivers considered in the 2010 report. Revised noise modelling was undertaken for a construction and operational scenario.

The following meteorological scenarios were considered in the original (Spectrum, 2010) and current noise modelling scenarios:

- Neutral conditions of 20⁰C, 70% relative humidity and a 1⁰C/100m lapse have been modelled to represent typical calm conditions.
- 3m/s winds from the west and northeast.



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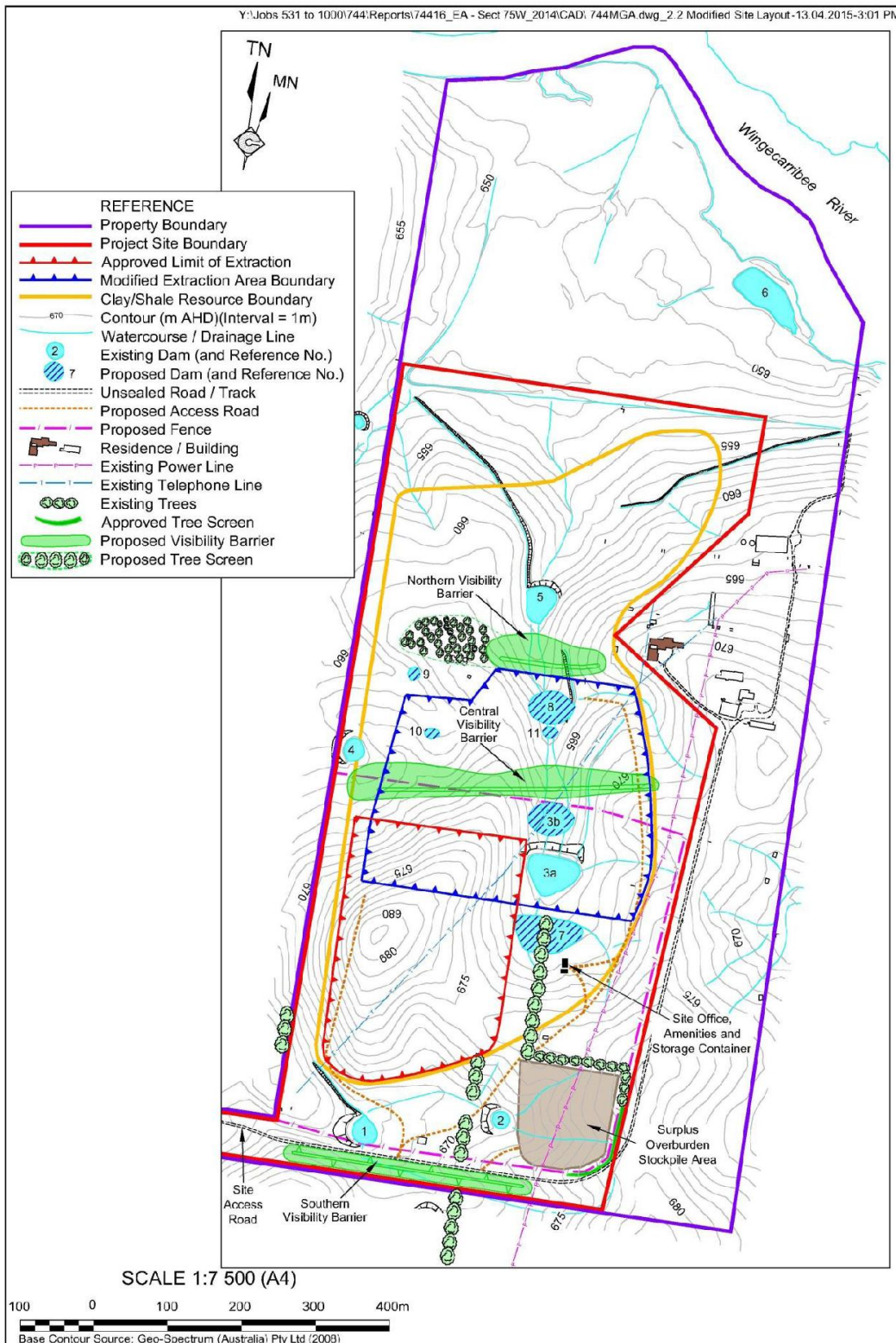


Figure 1. Proposed Modifications





3. PREDICTED NOISE LEVELS

Construction Scenario

The construction scenario utilised a scraper and bulldozer to form the proposed Northern, Central and Southern visibility barriers. Plant items were modelled at 1m above the respective finished heights of each barrier and at locations nearest to residential receivers. Point calculation results are shown in **Table 1** at all identified receivers, along with the predicted levels from Spectrum (2010) assessment included in brackets.

Table 1. Predicted Construction Noise Levels dB(A)_{Leq(15minute)}

Ref	Land owner	Meteorological Condition					
		South/central bund			North bund		
		Calm	W wind	NE wind	Calm	W wind	NE wind
R2	M.S. Sidde	39 (40)	33 (36)	45 (47)	31 (34)	27 (31)	35 (38)
R3	Cowley Hills Pty Ltd	23 (20)	32 (30)	20 (<20)	24 (25)	33 (35)	<20(<20)
R4	Bistro Lake Pty Ltd	23 (24)	34 (35)	30 (30)	26 (30)	31 (35)	28 (32)
R5	P.A. & R.F. Rusconi	25 (25)	35 (35)	30 (30)	28(28)	32 (32)	30 (30)
R6	A.V. Dickson	25 (25)	34 (33)	26 (25)	25(25)	34 (34)	26 (26)
R7	M. & R.K. Senior	25 (25)	32 (32)	25 (25)	27(27)	34 (34)	28 (28)
R8	P.R. Rosen	24 (22)	31(30)	22 (20)	(25)	33 (33)	26 (26)
R11	C. & K. Vella Enterprises Pty Ltd	36 (35)	36 (35)	36 (35)	36 (35)	34 (35)	35 (35)
R12	Pingama Pty Ltd	34 (35)	35 (35)	35 (35)	36 (35)	35 (35)	35 (35)
R13	J.G. Thorn	30 (30)	30 (30)	30 (30)	36 (35)	32 (32)	32 (31)
R14	G.W. Holdings Pty Ltd	30 (30)	30 (30)	30 (30)	36 (35)	33 (32)	32 (31)
R15	Flocolo Pty Ltd	29 (29)	27 (27)	24 (24)	30 (28)	29 (28)	29 (30)
R16	R.L. Lavender	29 (29)	27 (27)	24 (24)	29 (28)	29 (28)	30 (30)
R17	P. Holecek	29 (29)	27 (27)	24 (24)	30 (28)	30 (28)	31 (30)
R19	Mulberrygong Investments Pty Ltd	20	29	<20	21	30	<20

The results in **Table 1** show that construction noise levels under the proposed modifications will increase from the 2010 noise modelling results by no more than 1-2 dB and will remain under the daytime construction noise criterion of 43 dB(A)_{Leq(15minute)} with the exception of a minor 2 dB exceedance at R2. This exceedance would only occur for a short duration when bund construction is nearest to the receiver and only under a NE wind scenario. Predominant conditions in the area are westerly winds resulting in noise levels below the criterion. As a result of this, the Applicant would ensure that the construction of the bunds would not be undertaken when a northeast wind is present.

It is important to also note that a number of residences will experience decreased noise levels as a result of the Proposal.

Operational Scenario

Spectrum (2010) considered operational scenarios at the southern and northern ends of the now approved extraction area, called Scenario 2 and Scenario 3 respectively. Based on the proposed modified extraction area in **Figure 1**, which is generally shifted to the north, Scenario 2 (2010) is no longer within the extraction footprint and Scenario 3 (2010) represented noise emissions from the southern end of the proposed extraction area, with extraction operations at natural ground level.





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Predicted noise levels from the northern end of the proposed modified extraction area are summarised in **Table 2**. This scenario models commencement of topsoil and overburden removal and extraction of clay/shale at the northern extent of the proposed modified extraction area.

Table 2. Predicted Operational Noise Levels from northern end of proposed extraction area dB(A)_{Leq(15minute)}

Ref	Land owner	Meteorological condition		
		Calm	W wind	NE wind
R2	M.S. Siddle	28	28	32
R3	Cowley Hills Pty Ltd	<20	26	<20
R4	Bistro Lake Pty Ltd	<20	21	21
R5	P.A. & R.F. Rusconi	<20	22	22
R6	A.V. Dickson	<20	23	<20
R7	M. & R.K. Senior	<20	22	<20
R8	P.R. Rosen	<20	22	<20
R11	C. & K. Vella Enterprises Pty Ltd	21	22	<20
R12	Pingama Pty Ltd	22	21	<20
R13	J.G. Thorn	22	<20	<20
R14	G.W. Holdings Pty Ltd	21	<20	<20
R15	Flocdo Pty Ltd	22	22	21
R16	R.L. Lavender	22	21	20
R17	P. Hodecek	21	21	20
R19	Mulberrygong Investments Pty Ltd	20	<20	23

The results in **Table 2** show that operational noise levels from extraction at the northern end of the proposed modified extraction area will be well below the daytime operational noise criterion of 38 dB(A)_{Leq(15minute)}.

The assessment of the Modified Project's extraction footprint and construction of associated visual amenity barriers has found that noise levels would be below the applicable noise criteria at all assessed residential receivers.

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

Neil Pennington
 Acoustical Consultant

