

Draft For Adequacy

APPENDIX B

Noise Impact Assessment

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Attn: Mr Daniel Sullivan

Dear Daniel,

**RE: DRAYTON MINE –
MODIFICATION TO DEVELOPMENT CONSENT
ENVIRONMENTAL NOISE REVIEW**

Thank you for your instructions to review environmental noise issues associated with the proposed Modification to the Drayton Mine Project Approval 06_0202. The Modification is sought to allow a 36.5 hectare extension of the Approved Mining Disturbance Footprint to recover an additional 2 million tonne remnant coal resource and to provide additional working room to develop more sustainable final highwalls. This review is based on the following data:

- Drayton Mine Extension Environmental Assessment (Hansen Bailey, August 2007);
- A plan of the existing approved and the proposed disturbance areas (Hansen Bailey, October 2011) attached as Appendix A;
- A terrain file in Autocad format showing the anticipated final landform within the proposed disturbance area; and
- A description of the proposed Modification (Hansen Bailey, November 2011).

CURRENTLY APPROVED MINE

Anglo American Metallurgical Coal (AAMC) currently operates Drayton Mine under Project Approval 06_0202 granted on 1 February 2008, which allows up to 8 million tonnes of Run of Mine (ROM) coal to be extracted each year until 2017. The mine uses a combination of dragline and truck/shovel operations to uncover and extract coal from mining areas in the northern, southern and eastern portions of the lease. The existing Project Approval includes a number of conditions to control the operation and protect the environment, including intrusive noise criteria at a number of residential receivers in Antiene located generally north of the site.

The Environmental Assessment prepared in 2007 described a number of noise control measures that were adopted by AAMC to minimise environmental noise levels at nearest residential properties. Adopted noise control measures were primarily designed to control noise from the North Pit and the Coal Handling and Preparation Plant (CHPP) and included:

- Only one loading unit (excavator or front end loader) would work in the North Pit during the evening or night, primarily to minimise exposed truck movements associated with overburden or coal haulage from the North Pit;
- North and East Pit overburden trucks would dump in shielded locations during the evening and night;

- North Pit prestrip haul roads would be shielded by the pit walls or a berm in the direction of residences, at least during the evening and night;
- Loading units within the North Pit prestrip area would be located in a shielded area below the natural surface during the evening and night;
- The coal haul road from the South Pit would be realigned to the lowest possible elevation, with minimal long straight sections of road directly in line with a residence and effective shielding with earth berms along the sides of the road where possible;
- The proposed ROM stockpile south of the workshop would have a 5 m wall or equivalent berm on the northern side and returned along part of the eastern and western sides to minimise noise from the loader and trucks working on the stockpile;
- A 4 m berm and/or wall would be constructed along the eastern side of the coal haul road from the ROM stockpile to meet the existing ROM hopper wall, including returns along side roads to minimise the effect of gaps in the barrier;
- A sound power limit of 103 dBA each for the three new reclaimers and one ROM coal stacker;
- Steel sheeting would be installed on the northern face of the secondary crusher building after removal of the rotary breaker and installation of the new screen and crusher; and
- Upgraded exhaust mufflers on some trucks with the exception of the South Pit overburden fleet.

PROPOSED MODIFICATION

Drayton proposes to extend its operations into three small areas collectively known as the Modification Areas, as shown on Figure 1 in Appendix A, including the:

- Eastern Modification Area, which includes 20.3 ha or 4.2% additional disturbance to the Approved Mining Disturbance Footprint;
- Northern Modification Area, which includes 8.8 ha or 1.8% additional disturbance to the Approved Mining Disturbance Footprint; and
- Southern Modification Area, which includes 7.4 ha or 1.5% additional disturbance to the Approved Mining Disturbance Footprint.

AAMC is also seeking approval to modify the approved equipment fleet to utilise 30 x 180 tonne trucks (instead of the previously proposed 25 trucks of 180 tonne and 280 tonne capacity) due to operational constraints.

No other changes to Drayton Mine's operations, production limits or approved mine life are proposed. The Modification would be developed generally in accordance with Project Approval 06_0202.

NOISE ASSESSMENT

Proposed Modification Areas

Inspection of the terrain between the Modification area and closest privately owned properties indicates similar terrain features, with the Northern Modification Area at a similar elevation as the adjoining approved mining area and the Eastern and Southern Modification Areas at a lower elevation than adjacent areas. Differences in terrain would therefore not affect, or would if anything reduce, noise levels from the Modification Areas compared to noise from adjacent mining areas.

In the absence of any other differences, any changes in noise level due to the Modification would primarily be due to variations in distance from the existing approved area and the Modification Areas to each receiver property.

The noise assessment included in the Drayton Mine Extension Environmental Assessment (2007) included tables of predicted noise levels to nearby receiver properties under acoustically neutral and prevailing weather conditions. Table 11 from that noise assessment, showing predicted noise levels under prevailing weather conditions, is reproduced below along with the predicted difference in noise level due to mining and use of haul roads within the proposed Modification Areas, with the primary focus being the Northern Modification Area. Predicted noise level differences due to the Modification Areas have been determined based on the following strategy:

- Assume a reasonable worst case assessment with one half of the site's noise emissions originating from within the Northern Modification Area and the other half from elsewhere within the mine, typically within the eastern or southern pits;
- Assuming all equipment working within the Northern Modification Area would otherwise have been working at the closest point within the currently approved mining area;
- Applying a correction for differences in distance from the existing approved mine or the Northern Modification Area to each residence and applying that correction to half of the total received noise level while leaving noise levels from the remaining equipment fleet unmodified; and
- Reporting the overall difference in mining noise levels by combining corrected noise levels from the northern half of the mine with uncorrected noise levels from the remainder of the mine.

Table 1: Predicted Received Noise Levels, Prevailing Weather Conditions, LAeq,15min

Receivers	Predicted Received Noise Levels, LAeq,15min									Adopted Noise Criteria	Difference due to Modification
	Year 1			Year 5			Year 10				
	Day	Even	Night	Day	Even	Night	Day	Even	Night		
11 Yarramolong	34	34	33	34	33	32	32	32	32	35	-0.2
12 Newton	35	36	36	36	35	35	34	35	35	37	-0.4
13 Jacobson	35	36	34	36	36	34	35	34	33	35	-0.1
14 Budd	38	39	38	40	39	37	38	39	38	37	-0.4
16 Doherty	40	41	39	41	41	39	40	41	39	37	-0.5
17 Page	37	38	36	37	37	36	36	37	36	37	-0.3
18 Page	38	39	38	38	39	37	37	38	37	37	-0.4
19 Duck	40	40	39	40	40	39	39	40	39	37	-0.5
20 Osborn	39	40	39	39	39	39	38	39	39	35	-0.6
21 Reynolds	37	38	38	38	38	37	36	37	37	35	-0.4
22 Halloran	37	38	38	38	38	38	36	37	37	35	-0.6
23 Jackson	34	34	34	34	34	33	32	33	33	37	-0.2
25 Collins	35	37	37	36	36	36	34	35	35	37	-0.4
26 Baxter	35	37	38	36	36	38	34	36	37	37	-0.6
27 de Boer	35	37	39	36	36	39	34	36	38	37	-0.7
28 Bird	34	37	40	35	36	39	33	36	39	37	-0.6
29 Wallman	34	35	36	34	34	35	32	33	34	37	-0.4
31 Summerville	33	35	37	34	34	36	32	34	35	37	-0.4
32 Cross	31	34	40	32	33	39	30	33	39	37	-0.3
33 Fisher	30	33	38	31	32	37	<30	32	36	35	-0.3
34 Davis	<30	31	36	<30	30	35	<30	<30	34	35	-0.3
35 Wilson	<30	31	35	30	30	35	<30	30	34	35	-0.3
37 King	<30	30	35	<30	<30	34	<30	<30	33	35	-0.2
42 Smith	<30	<30	31	<30	<30	32	<30	<30	31	35	0.2
61 Skinner	38	40	39	39	39	39	37	39	39	35	-0.7
69 Clifton	35	37	41	35	37	41	34	36	40	37	-0.7
70 Jones	34	36	41	35	36	41	33	36	40	37	-0.5
71 Hunter	33	35	41	34	35	40	32	35	40	37	-0.4

Receivers	Predicted Received Noise Levels, LAeq,15min									Adopted Noise Criteria	Difference due to Modification
	Year 1			Year 5			Year 10				
	Day	Even	Night	Day	Even	Night	Day	Even	Night		
72 Robertson	35	37	42	36	37	42	34	36	42	37	-0.4
75 Sharman	33	35	41	34	35	40	32	34	40	37	-0.3
76 Horder	34	36	42	35	36	41	33	35	42	37	-0.3
86 Wild Group	30	31	38	31	31	38	30	31	38	35	0.0

Table 1 shows a maximum increase of 0.2 dBA at Receiver 42 compared to currently approved noise levels would occur if the Modification proceeds, with no change to noise levels at Receiver 86 and slightly lower noise levels at all other receivers. As predicted noise levels at Receiver 42 are well within the criterion, the Modification would not contribute to any exceedances of the noise criteria at any receiver.

Proposed Truck Fleet Changes

Noise level differences due to the proposed changes to the truck fleet have also been calculated based on the following strategy:

- Review available sound power data for 180 tonne and 280 tonne trucks, particularly those used on the Drayton Mine site, to determine relevant sound power levels;
- Calculate the truck fleet's total sound power level for the approved and proposed situations; and
- Assuming overburden trucks contribute half of all received noise levels, which is considered reasonable for Drayton Mine, calculate the likely change in received noise due to the proposed truck fleet.

Drayton Mine's 180 tonne trucks are fitted with upgraded exhaust silencers following a commitment in the 2007 EA. On-site noise measurement results provided by Spectrum Acoustics in 2008 indicate a truck sound power level of 116.7 dBA averaged over 6 machines and averaged over both uphill and downhill operation. This result should be compared with the 2007 EA which assumed an average sound power level of 118.3 dBA for uphill and downhill operation and small and large trucks. This indicates each 180t truck is approximately 1.6 dBA quieter than assumed in the EA.

Noise measurement data for 280 tonne trucks fitted with upgraded exhaust silencers are not available, as machines in that configuration are not known to exist. A typical difference of 2 dBA from small to large trucks in standard configuration, which is assumed to also apply to trucks fitted with upgraded exhaust silencers, has therefore been adopted. Table 2 shows the approved, actual and proposed truck fleet sound power levels.

Table 2: Calculated Truck Fleet Sound Power Levels, dBA

Scenario	2007 EA Assumed		2007 EA Units 'Actual' Noise Levels		Proposed	
	Small 180t	Large 280t	Small 180t	Large 280t	Small 180t	Large 280t
Unit Sound Power Level	118.3	118.3	116.7	118.7	116.7	118.7
Number of Units	11	14	11	14	30	0
Total Sound Power Level	128.7	129.8	127.1	130.2	131.5	0
Fleet Sound Power Level	132.3		131.9		131.5	

Calculations in Table 2 indicate the approved truck fleet would actually be 0.4 dBA quieter than assumed in the EA while the proposed truck fleet, with more of the smaller capacity trucks, would be 0.8 dBA quieter than assumed in the EA and 0.4 dBA quieter than the approved truck fleet. As trucks are not the only sources of noise associated with Drayton Mine, total mining noise levels at all receivers would reduce by approximately 0.2 dBA which is insignificant and unlikely to be measurable.

BLASTING ASSESSMENT

Blasting is expected to be required within the Modification Areas to loosen overburden and coal for removal or extraction. Drayton Mine currently has a network of blast monitors within the Antiene residential area which are used to provide feedback on ground vibration and blast noise (overpressure) levels for each blast. Data collected from the monitors is correlated with blast parameters such as charge weight and location and used to ensure future blasts are adequately designed to avoid exceedances of appropriate noise and vibration criteria. This feedback and design process would continue and remains appropriate for future blasts within the Modification area.

As the Modification areas are at a similar distance or, if anything, further from closest receivers, vibration and overpressure levels from blasts within the Modification area would be similar to those from adjacent approved mining areas.

CONCLUSION

Results in Table 1 lead to the conclusion that proposed mining and associated activity within the Modification Areas would produce similar or slightly lower noise levels compared to approved operations in the adjacent mining areas, provided the adopted noise mitigation and management measures described in the 2007 EA are also applied to proposed operations in the Modification Areas where appropriate.

The proposed changes to the truck fleet, including additional trucks, would also result in a slight reduction in noise levels although the difference is considered insignificant and impossible to confirm by noise monitoring. This conclusion assumes the additional trucks, except those used for overburden haulage in the south pit, would be fitted with upgraded exhaust silencers similar to the silencers fitted to existing trucks.

Blasts within the Modification Areas would produce similar, or slightly lower, vibration and overpressure levels compared to blasts within currently approved mining areas, provided the current monitoring and blast design procedures also apply to blasting within the Modification Areas.

We trust this review satisfies your requirements. Please contact the undersigned for any further information or discussion.

Yours faithfully,

BRIDGES ACOUSTICS



MARK BRIDGES BE (Mech) (Hons) MAAS
Principal Consultant

APPENDIX A: SITE PLAN



Site plan prepared by Hansen Bailey