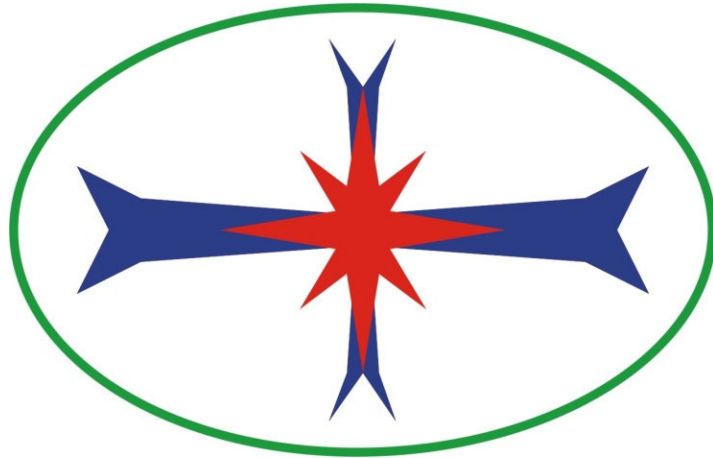


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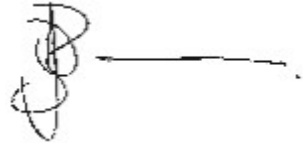


Quality Service on Time

Comments Report: Blast Impact Assessment

Bundu Mining (Pty) Ltd

Rietvalei Mining Right Application Project

Report Date:	19 November 2024	
Document Ref No:	Rietvalei Mining Right Application_EIARReport_C&R_241119	
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Company Reg. No:	2015/061002/07	
Company Address:	61 Sovereign Drive, Route 21 Corporate Park, Irene Ext 30, 0157	

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1 Comments and Responses

1.1 Comment:

Elize Pieterse indicated her house and mudhouse are older than 100 years and she would like to have it inspected,

1.2 Response:

As I remember it was indicated that this house is not located very close to the proposed quarry area. However review of the expected levels of ground vibration at 500 m from the quarry area is 6.2 mm/s. The nearest house is 511 m with expected level of 6.0 mm/s. It was understood that the house in question is quite further from the pit than the 511 m. Ground vibration attenuated over distance and will be significantly lower with increased distance. For example at 1000 m the expected levels of ground vibration is 2.0 mm/s.

The 6 mm/s levels is normally associated with ground vibration limits for traditional built mud houses. To ensure that damage is not induced. It can then be said as well that any other structure better built will have higher limits of restriction.

A further support to this is the latest published limits for structures are as follows:

Mine Health and Safety Act No. 29 of 1996;

Under the Mine Health and Safety Act the following was published in the Government Gazette and used in the report.: No. 5097 on 2 August 2024: Guideline For A Mandatory Code Of Practice For Minimum Standards On Ground Vibrations, Noise, Air-Blast And Fly rock Near Surface Structures And Communities To Be Protected.

STRUCTURE DESCRIPTION	PEAK PARTICLE VELOCITY (mm/s)
National roads / tar roads	150
Electrical lines (pylons)	75
Railway	150
Transformers	25
Waters wells	50
Telecoms tower	50
General houses of proper construction	USBM criteria or 25 mm/s
Houses of lesser proper construction	12.5
Rural building – mud houses	6

Further reference is the following:

In terms of the blasting effects on adjoining structures, initial guidance must be taken from the SAICE Geotechnical Division, Lateral Support in Surface Excavation, Code of Practice (1989), and Table H1: Maximum Particle Velocities (Vibration), p184.

TABLE H1 MAXIMUM PARTICLE VELOCITIES (VIBRATION)	
MAXIMUM PEAK PARTICLE VELOCITY (mm/s)	EFFECT ON PEOPLE AND BUILDINGS
0,5	Threshold of human perception unlikely to cause damage of any type
5	Limit for blasting adjacent to historical monuments
25	Limit for blasting near private dwellings in order to reduce disturbance to residents to a minimum
50	Limit for blasting adjacent to residential structures on good foundations
84	Limit for property owned by concern doing the blasting (i.e. minor plaster cracks acceptable)
120	Recommended maximum level for blasting adjacent to sturdy reinforced concrete structures

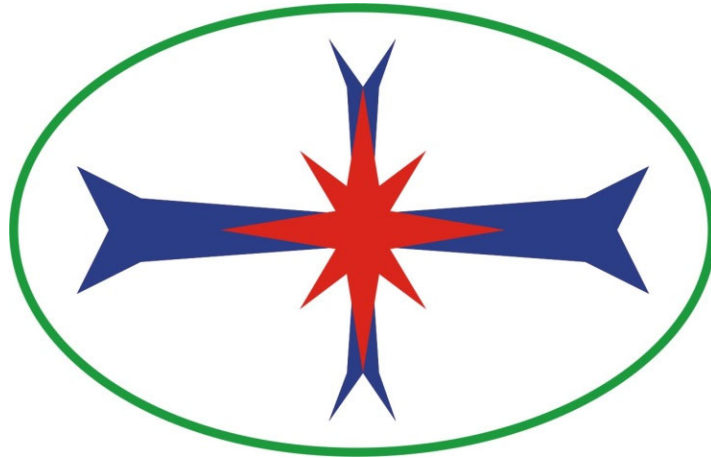
Specifically the reference to the limits for historical buildings at 5 mm/s. Blasting in the quarry 5 mm/s is expected to yield 5 mm/s at a distance of 565 m.

It must be noted that one of the recommendations made in my report is that structure surveys / crack survey must be done prior to any blasting commences. This will include houses and buildings within a set range from the pit area.

2 Conclusion

It may be concluded that expected levels of ground vibration will be significantly less than levels required to induce damage to the houses.

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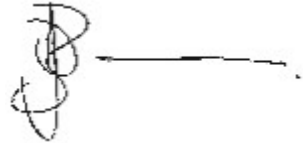


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Comments Report: Blast Impact Assessment

Bundu Mining (Pty) Ltd

Rietvalei Mining Right Application Project

Report Date:	21 November 2024	
Document Ref No:	Rietvalei Mining Right Application_EIARReport_C&R_241119	
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1 Comments and Responses

1.1 Comment 01:

Elize Pieterse indicated her house and mudhouse are older than 100 years and she would like to have it inspected.

1.2 Response 01:

As I remember it was indicated that this house is not located very close to the proposed quarry area. However review of the expected levels of ground vibration at 500 m from the quarry area is 6.2 mm/s. The nearest house is 511 m with expected level of 6.0 mm/s. It was understood that the house in question is quite further from the pit than the 511 m. Ground vibration attenuated over distance and will be significantly lower with increased distance. For example at 1000 m the expected levels of ground vibration is 2.0 mm/s.

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It may be concluded that expected levels of ground vibration will be significantly less than levels required to induce damage to the houses.

1.3 Comment 02:

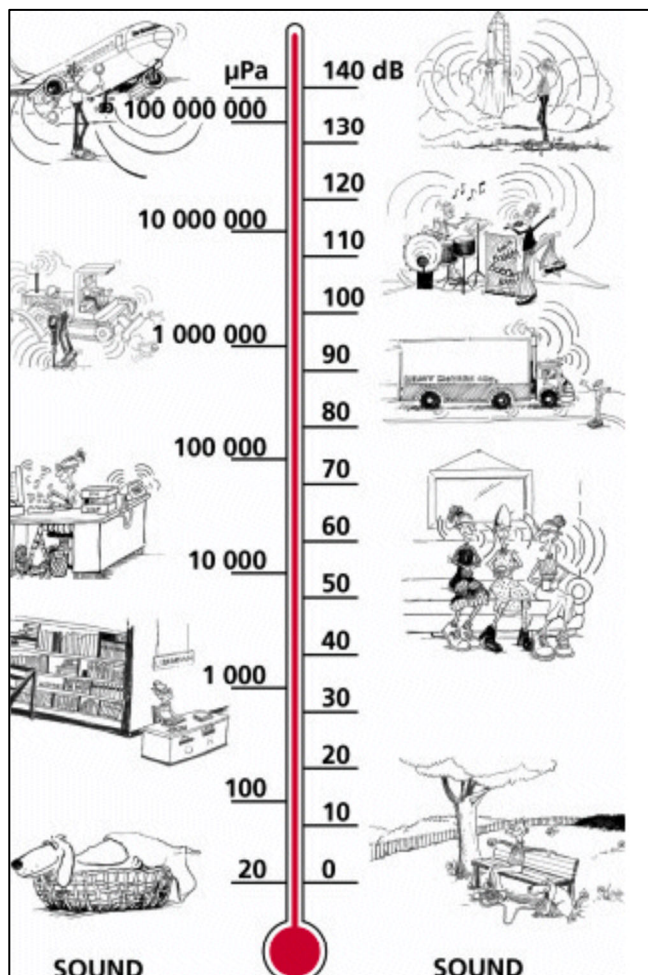
Ms Alet du Preez said they have been breeding with parrots which are a registered endangered specie since 2007. According to the breeding agreement the location of breeding could not be changed. In order to achieve this the mine may not conduct blasting activities during July to December, which is the breeding time of the parrots. What solution can be proposed as it was not easy to register the breeding program. Mr Zeeman said it has been noted and an investigation will be done and feedback given. Located at 20 Loots St.

1.4 Response 02:

The house / comment made in question refers to location marked in BMC reports as POI 98. This structure is located 1013 m from the nearest point of the pit. The expected levels of air blast is 124.1 dBL for the maximum charge evaluated.

Firstly I need to qualify that the air blast level referred to is the air overpressure that may be caused by the blast. This is not the noise level. This pressure also occurs for a very short fraction of time – at the peak of the spike maybe a few milliseconds. This air blast is also part of the inaudible shockwave (less than 20 Hz – human ear does not hear sounds less than 20 HZ). Apart from the air

blast, yes there is also a noise component. Any blast done also generates some noise. This noise is however very difficult to predict due to a significant number of variables that have influence on the sound level. This sound is also of short duration. How would it influence animal life? Blasting done properly is not a sudden “bang” event like the crack of thunder lightning or the firing of of a shotgun. Blasting is a rumble noise effect. Using a guideline calculation it is expected that a 124.1 dBL air blast level may lead to a sound level of 84.6 dB(A) for a short period of the blast. Please note this is a rough guideline. This level is similar to that of a truck moving or farming equipment operating. See the guideline below.



There has been a significant number of studies done with regards to birdlife, too many to list here. No specific study that I have seen addresses the effect of blasting on parrots. So it is a bit of a grey area what influence can be expected. In comparison if we use chicken as example the reaction to blasting is also variable. In some cases the chickens did not show any major reaction – lifted their heads and then continued grazing, some cases did show the chickens scramble a bit and then continued grazing. The main concern remains that proper blast best practices must be applied. This means proper stemming controls ensuring that all blastholes are stemmed with the correct material and the correct stemming length. This controls the effect of air blast and the noise generated.

Animal life also habituate to the noises that occurs in the area. In many case birds will just do that. Blasting will not necessarily chase birds away.

I am of the opinion that if blasting is done with proper attention to best practices the effect at a distance of 1013 m where the house is would be minimal. Recommendation would be that specific monitoring should be done at this location and possible reactions of the birds monitored.

1.5 Comment 03:

The minutes indicate that the complaints process needs to be advertised. Is this correct?

1.6 Response 03:

There is no requirement that the complaints procedure must be advertised. A complaints procedure must be available to the public. The DMRE do however require that the procedure must be captured in the mines applicable Code of Practise.

1.7 Comment 04:

Mr Zeeman replied there will be a pre photographic record completed and if there is damage afterwards such records could be adjudicated and compared. A complaints process needs to be followed which should be documented and advertised after which inspection on the house will be done. It normally follows the rout of an insurance claim.

1.8 Response 04:

In our report for the EIA we did make recommendations that a photographic inspection be done prior to any blasting done. This inspection is a process of capturing the status of structures – in other words writing up and photographing all cracks in the structures inside and out. It is not a structural engineers type report. This report can then be used to adjudicate the status of cracks should there be complaints.

There is no requirement that the complaints procedure must be advertised. A complaints procedure must be available to the public. The DMRE do however require that the procedure must be captured in the mines applicable Code of Practise.

1.9 Comment 05:

"Wanneer word die seismologiese toerusting gebruik? Bly dit permanent in die grond?"

1.10 Response 05:

Seismographs are used to monitoring the ground vibration and air blast from the blasting operation. In the case of this type of operation the seismographs will be placed at specific locations before the blast, measure the blast and then remove. A proper report on the results recorded should then be compiled for record keeping.

So no the equipment is not left in the ground. Measurements done as per blast done. In EIA report recommendations were made of monitoring locations.