Environmental Noise Survey

Prepared for:

Proposed or Projection of a Typical B&E International Crushing and Screening Plant

16 May 2025

Compiled by:

Ebenaeser Environmental Consultants cc

P.O. BOX 7873
Westgate, 1734

Tel : 011 664 8703
Fax : 011 664 8714
Cell : 0828029398

CK95_13712/23

Environmental Noise Study

For a Typical B&E International Crushing and Screening Plant
Proposed Location: Old Ruigtevley Quarry

1. Introduction

This noise impact study has been compiled for the proposed operation of a B&E International mobile crushing and screening plant at the old Ruigtevley Quarry.

The facility will comprise:

- A **primary crusher** for initial size reduction,
- A **secondary crusher** for further refinement,
- A series of **vibrating screens** for aggregate sizing.

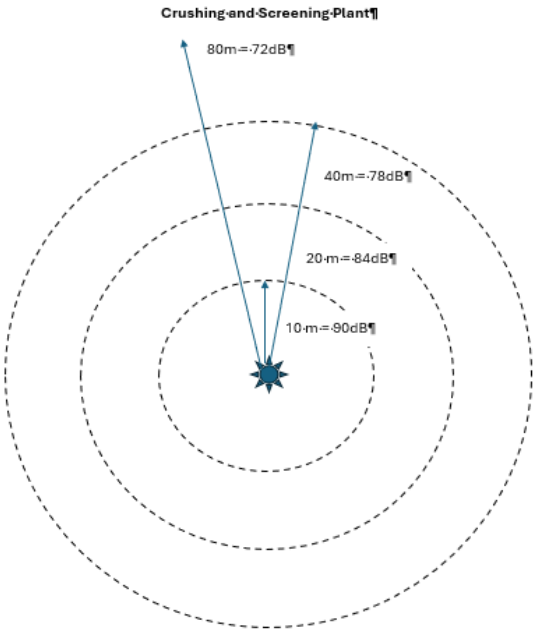
The purpose of this report is to evaluate the potential environmental noise impact of the proposed plant, particularly its effect on adjacent wildlife—specifically a Buffalo herd residing near the former operational zone.

2. Equipment and Typical Operational Noise Levels

The B&E International setup considered in this study includes:

And actual measurement was done on a similar B&E International Plant

Equipment	Approximate dB(A) at 10m	Actual Measurements at 200m	Actual Measurements At 250m
Primary Crusher	85 – 90	Between 43dB and 50dB	Between 30dB and 35dB
Secondary Crusher	80 – 85		
Vibrating Screens	75 – 80		
Conveyors & Feeders	70 – 75		



3. Environmental Context

The Ruigtevley Quarry is in a semi-rural environment with moderate vegetation cover and minor elevation variations. The surrounding area includes open land used by wildlife, including a resident **Buffalo herd** approximately 400–500 meters from the proposed crushing and screening site.

Atmospheric Pollution Prevention Act and Regulations (45/1965)

Table 1 – Acceptable Rating Levels for Noise in Districts

1	2	3	4	5	6	7
Type of district	**Equivalent continuous rating level ($L_{Reg.T}$) for noise dB(A)**					
	Outdoors			**Indoors, with open windows**		
	Day-night $L_{R,dn}$	**Day-time $L_{Reg,d}$[b]**	**Night-time $L_{Reg,n}$[b]**	**Day-night $L_{R,dn}$**	**Day-time $L_{Reg,d}$[b]**	**Night-time $L_{Reg,n}$[b]**
RESIDENTIAL DISTRICTS						
a) Rural district	45	45	35	35	35	25
b) Suburban district with little road traffic	50	50	40	40	40	30
c) Urban districts	55	55	45	45	45	35
NON RESIDENTIAL DISTRICTS						
d) Urban districts with some workshops, with business premises, and with main roads	60	60	50	50	50	40
e) Central business districts	65	65	55	55	55	45
f) Industrial districts	70	70	60	60	60	50
NOTE 1 If the measurements or calculation time interval is considerably shorter that the reference time intervals, significant deviations from the values given in the table may result. NOTE 2 If the spectrum of the sound contains significant low frequency components, or when unbalanced spectrum towards the low frequencies is suspected, special precautions should be taken and specialist advice should be obtained. In this case the indoor sound levels may significantly differ from the values given in columns 5 to 7. NOTE 3 Residential buildings e.g. dormitories, hotel accommodation, residences etc. should only be allowed in non-residential districts on condition that the calculated or anticipated indoor $L_{Reg.T}$ values.						
a The values given in columns 2 and 5 are equivalent continuous rating levels and include corrections for tonal character, impulsiveness of the noise and the time of day. b The values given in columns 3, 4, 6 and 7 are equivalent continuous rating levels and include corrections for tonal character and impulsiveness of the noise.						

Table 2 – Categories of Community / Group Response

1	2	3
Excess $L_{Reg.T}$ dB(A)	**Estimated community / group response**	
	Category	**Description**
0 – 10 5 – 10 10 – 20 > 15	Little Medium Strong Very strong	Sporadic complaints Widespread complaints Threats of community / group action Vigorous community / group action
a $L_{Reg.T}$ should be calculated from the appropriate of the following:		
1) $L_{Reg.T}$ = $L_{Reg.T}$ of ambient noise under investigation MINUS $L_{Reg.T}$ of the residual noise (determined in the absence of the specific noise under investigation).		
2) $L_{Reg.T}$ = $L_{Reg.T}$ of ambient noise under investigation MINUS the maximum rating level for the ambient noise.		
3) $L_{Reg.T}$ = $L_{Reg.T}$ of ambient noise under investigation MINUS the acceptable rating level for the applicable district as determined from table 1.		
4) $L_{Reg.T}$ = Expected increase in $L_{Reg.T}$ of ambient noise in an area because of a proposed development under investigation.		
NOTE Overlapping ranges for the excess values are given because a spread in the community reaction may be anticipated.		

4. Noise Attenuation Factors

The following natural and operational factors contribute to noise attenuation:

- **Vegetative Buffering**: Dense bush and tree lines between the site and the buffalo habitat offer significant natural sound absorption.
- **Topography**: Slight depressions and ridges in terrain further diffuse and absorb sound waves.
- **Distance Decay**: Sound levels decrease exponentially with distance. A typical reduction of 6 dB per doubling of distance applies.

5. Wildlife Considerations

Buffalo (Syncerus caffer) are known for their resilience to moderate background noise, particularly when it is consistent and predictable. This is also an existing quarry that was previously in operation.

An **illustration of comparative noise dispersion** from a similar B&E plant setup (see *Illustration 1*) demonstrates that noise levels at the Buffalo zone will be reduced to **below 35 dB(A)** — equivalent to the ambient noise of light wind or distant traffic.

6. Conclusion

Based on historical performance, expected equipment noise levels, and environmental conditions at the site:

- The **operation of the proposed B&E International plant** will not result in harmful or disturbing noise levels to local wildlife.
- The **Buffalo herd adjacent to the old Ruigtevley Quarry** is **unlikely to be disturbed**, with noise exposure well within acceptable thresholds for large mammals.
- Therefore, the **operation will have minimal to no impact on the neighbouring environment and wildlife**.

7. Recommendations

- Implement routine noise monitoring during initial operation.
- Maintain vegetative barriers.
- Avoid unnecessary high-rev operations during early morning and late afternoon to further reduce wildlife stress.

Yours Faithfully

S.J. Strauss
Technical Signatory
Registered Occupational Hygienist(SAIOH) (BOSH)ROH
Registered Occupational Safety Professional IOSM (ROSProf)

Annexure 1 – Department of Labour Accreditation
Annexure 2 – Sound Level Meter Calibration Certificate