FINANCIAL PROVISION CALCULATION FOR THE PROPOSED BLOEMHOF QUARRY, PARYS, FREE STATE PROVINCE

REFERENCE NUMBER: FS 30/5/1/2/2/10045 MR

JULY 2020

PREPARED FOR:

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EXECUTIVE SUMMARY

Inzalo Crushing and Aggregates (Pty) Ltd (hereinafter referred to as the “Applicant”) applied (15 May 2018) for a Mining Right (MR) on the Remaining Extent of the farm Bloemhof No 14 in the magisterial district of Parys of the Free State Province.

The mining right application extends over 25.4 ha, and will entail the extension of the existing quarry at the above mentioned property. The pending mining right area incorporates the footprint of an expired mining permit area, and the applicant will further make use of the existing mining infrastructure on site should the MR application be approved.

This document provides an assessment of the quantum of financial provision submitted as being sufficient to cover the environmental liability at the time and for closure of the mine at that time, and was compiled in accordance with the Guideline Document for the Evaluation of the Quantum of Closure-related Financial Provision by a Mine as published by the Department of Mineral Resources and Energy.

The financial provision to be provided to the Department of Mineral Resources and Energy by Inzalo Crushing and Aggregates (Pty) Ltd for the proposed mining right area amounts to R3 943 679.55.

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ABBREVIATIONS

DMRE	-	Department of Mineral Resources and Energy
EMPR	-	Environmental Management Programme
MPRDA	-	Minerals and Petroleum Resources Development Act 28 of 2002

1. INTRODUCTION

Inzalo Crushing and Aggregates (Pty) Ltd (hereinafter referred to as the “Applicant”) applied (15 May 2018) for a Mining Right (MR) on the Remaining Extent of the farm Bloemhof No 14 in the magisterial district of Parys of the Free State Province.

The mining right application extends over 25.4 ha, and will entail the extension of the existing quarry at the above mentioned property. B&E International (Pty) Ltd previously held a mining permit (FS 30/5/1/3/2/10001MP) on the property which expired on 09 November 2018. The pending mining right area incorporates the footprint of the expired mining permit area, and the applicant will further make use of the existing mining infrastructure on site should the MR application be approved.

This document provides an assessment of the quantum of financial provision submitted as being sufficient to cover the environmental liability at the time and for closure of the mine at that time, and was compiled in accordance with the Guideline Document for the Evaluation of the Quantum of Closure-related Financial Provision by a Mine as published by the Department of Mineral Resources and Energy.

2. REHABILITATION OBJECTIVES

The Environmental Impact Assessment Report and Environmental Management Programme (April 2019) of the mine state that the closure objectives must ensure that:

a) the areas disturbed by the mining activities are rehabilitated and/or landscaped;
b) that the site and areas disturbed by mining activities are visually appealing and are left in a neat and tidy condition;
c) contaminants/pollution sources are removed from the site or that appropriate measures are in place to control long-term contamination sources;
d) the site and surrounding disturbed areas are in a stable condition.

The rehabilitation of the mining area must ensure that the quarry pit is rendered safe, and the remainder of the mining area is landscaped and returned to agricultural use. Further to this, upon cessation of the mining activities, rehabilitation will entail the following:

Rehabilitation of the excavated area:

Due to the impracticality of importing large volumes of fill to restore the quarry area to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form slopes on the benches below, thereby reducing the overall face angle.

Fill and topsoil could be placed over the benches to provide a suitable medium for the establishment of vegetation, especially trees which will break up the line of the faces and enhance their appearance. The floor of the quarry must be capped with suitable soil material and re-vegetated.

Rocks and coarse material removed from the excavation must be dumped into the excavation.

No waste will be permitted to be deposited in the excavations. Once overburden, rocks and coarse natural materials has been dumped into the excavated area and profiled with acceptable contours and erosion control measures, topsoil shall be returned over the area.

The area shall be fertilized to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora. If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

Rehabilitation of plant, office and service areas:

Coarse natural material used for the construction of ramps must be removed and dumped into the excavations. Stockpiles will be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium. On completion of operations, all structures or objects shall be dealt with in accordance with Section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.

- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200 mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

Prior to replacing the topsoil, the material that was removed from these areas will be replaced in the same order as it originally occurred. The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

Final rehabilitation:

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding and maintenance, and weed / alien clearing.

All infrastructures, equipment, plant, temporary housing and other items used during the mining period will be removed from the site.

Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species regarded as the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as

need to be eradicated from the site on final closure. Final rehabilitation shall be completed within a period specified by the Regional Manager.

Seeding of the area:

Once the pit slopes have been shaped and the soil replaced, the initial goal is to establish a good cover of a robust grass that will stabilise the soil and start the accumulation of soil organic carbon. This will be done using a combination of hydro seeding and physical planting of runners to apply a mix of commercial and indigenous species that includes both tufted and creeping species. The plants that were collected during the establishment and operational phases and kept in the designated area will be replanted.

Rehabilitation Areas:

The figure and table below illustrates how the footprint of the proposed mining area was used in the calculation of the quantum to determine the financial provision amount.

Figure 1: Satellite view of the proposed mining area (white outline), where the blue shaded polygon indicate the proposed opencast area (±8.7 ha), the brown shaded polygon shows the proposed overburden and stockpile areas (±6.6 ha), and the green shaded area represents the proposed general surface to be altered (±8.7 ha). (Image obtained from Google Earth).

Table 1: Areas to be rehabilitated upon closure of the site

AREAS TO BE REHABILITATED UPON CLOSURE OF THE SITE		
NO	**DESCRIPTION**	**CALCULATION OF QUANTITIES**
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	**N/A –** *Presently it is proposed that mobile equipment will be used.*
2(A)	Demolition of steel buildings and structures	**N/A –** *Not applicable as mobile equipment/containers will be used.*
2(B)	Demolition of reinforced concrete buildings and structures	**N/A –** *No concrete buildings or structure are presently planned for the mine.*
3	Rehabilitation of access roads	**N/A –** *The access road to the site will be retained upon closure for future use and as such will not require rehabilitation.*
4(A)	Demolition and rehabilitation of electrified railway lines	**N/A –** *No electrified railway lines to be rehabilitated.*
4(B)	Demolition and rehabilitation of non-electrified railway lines	**N/A –** *No non-electrified railway lines to be rehabilitated.*
5	Demolition of housing and/or administration facilities	**N/A –** *The right holder will make use of portable administration facilities.*
6	Opencast rehabilitation including final voids and ramps	**8.7 ha**
7	Sealing of shaft, adits and inclines	**N/A –** *No shaft, adits and inclines to be rehabilitated.*
8(A)	Rehabilitation of overburden and spoils	**6.6 ha**
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	**N/A –** *No evaporation ponds will be used on site.*
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	**N/A –** *No acidic or metal-rich waste deposits or evaporation ponds to be rehabilitated.*
9	Rehabilitation of subsided areas	**N/A –** *No subsided areas to be rehabilitated.*
10	General surface rehabilitation	**8.7 ha**
11	River diversions	**N/A –** *No river diversions to be rehabilitated.*
12	Fencing	**N/A –** *No fencing needs to be rehabilitated.*
13	Water Management	**N/A –** *No water management needs to be done on site.*

AREAS TO BE REHABILITATED UPON CLOSURE OF THE SITE		
NO	**DESCRIPTION**	**CALCULATION OF QUANTITIES**
14	2 to 3 years of maintenance and aftercare	**25.4 ha**

3. QUANTUM CALCULATIONS

The Mineral and Petroleum Resources Development Act (MPRDA), (Act No. 28 of 2002) (as amended) and its Regulations was promulgated on 1 May 2004. Financial provision for environmental rehabilitation and closure requirements of mining operations forms an integral part of the MPRDA. Section 41 of the MPRDA and Regulations 53 and 54 promulgated in terms of the MPRDA deal with financial provision for mine rehabilitation and closure. The holder of a mining right must provide the DMRE with sufficient financial provision. Officials in the DMRE Regional Offices are required to assess, review and approve the quantum of financial provision submitted (that is, the monetary value of the financial provision that has been computed by the holder of a mining right during the annual review) as being sufficient to cover the environmental liability at that time and for closure of the mine at that time.

In November 2015, Regulation 53 and 54 were replaced by the NEMA: Regulations pertaining to the financial provision for prospecting, exploration, mining or production operations that specified that a holder of a financial provision approved in terms of the Act at the time of the coming into operation of these Regulations, must review and align the financial provision with the provisions of these Regulations. According to Regulation 5, the scope of a financial provision requires an applicant or holder of a right or permit to make financial provision for—

(a) Rehabilitation and remediation;
(b) Decommissioning and closure activities at the end of prospecting, exploration, mining or production operations; and
(c) Remediation and management of latent or residual environmental impacts which may become known in future, including the pumping and treatment of polluted or extraneous water.

As per Regulation 6, an applicant must determine the financial provision through a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for—

a) Annual rehabilitation, as reflected in an annual rehabilitation plan;

b) Final rehabilitation, decommissioning and closure of the prospecting, exploration, mining or production operations at the end of the life of operations, as reflected in a final rehabilitation, decommissioning and closure plan; and
c) Remediation of latent or residual environmental impacts which may become known in the future, including the pumping and treatment of polluted or extraneous water, as reflected in an environmental risk assessment report.

Following, a calculation of the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the guideline document prescribed in terms of Regulation 54 (1), is presented. The calculation of the quantum for financial provision was according to Section B of the working manual for the determination of the quantum.

3.1 Mine type and saleable mineral by-product

According to Tables B.12, B.13 and B.14

Mine type	Aggregate
Saleable mineral by-product	None

3.2 Primary Risk Class

According to Tables B.12 or B.13

Primary risk ranking	Class C
Revised risk ranking	N/A

3.3 Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine	Low

3.4 Level of information

According to Step 4.1

Level of information available	Extensive

3.5 Identification of closure components

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
		Open-cast Mine	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	**NO**
2(A)	Demolition of steel buildings and structures	-	**NO**
2(B)	Demolition of reinforced concrete buildings and structures	-	**NO**
3	Rehabilitation of access roads	-	**NO**
4(A)	Demolition and rehabilitation of electrified railway lines	-	**NO**
4(B)	Demolition and rehabilitation of non-electrified railway lines	**-**	**NO**
5	Demolition of housing and facilities	**-**	**NO**
6	Opencast rehabilitation including final voids and ramps	**YES**	-
7	Sealing of shafts, adits and inclines	-	**NO**
8(A)	Rehabilitation of overburden and spoils	**YES**	-
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	**-**	**NO**
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	**NO**
9	Rehabilitation of subsided areas	-	**NO**
10	General surface rehabilitation, including grassing of all denuded areas	**YES**	-
11	River diversions	-	**NO**
12	Fencing	-	**NO**
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	**NO**
14	2 to 3 years of maintenance and aftercare	**YES**	-

3.6 Unit rates for closure components

According to Table B.6 master rates and multiplication factors for applicable closure components. The master rate from the DMRE Master Rates table for financial provision of 2020 has been used.

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of **processing plant and related structures** (including overland conveyors and power lines)	-	-
2(A)	Demolition of **steel buildings and structures**	-	-
2(B)	Demolition of **reinforced concrete buildings and structures**	-	-
3	Rehabilitation of **access roads**	-	-
4(A)	Demolition and rehabilitation of **electrified railway lines**	-	-
4(B)	Demolition and rehabilitation of **non-electrified railway lines**	-	-
5	Demolition of **housing and facilities**	-	-
6	**Opencast rehabilitation** including final voids and ramps	253 019	0.04
7	Sealing of **shafts, adits and inclines**	-	-
8(A)	Rehabilitation of **overburden and spoils**	168 679	1.00
8(B)	Rehabilitation of **processing waste deposits and evaporation ponds (basic, salt-producing)**	-	-
8(C)	Rehabilitation of **processing waste deposits and evaporation ponds (acidic, metal-rich)**	-	-
9	Rehabilitation of **subsided areas**	-	-
10	**General surface rehabilitation**, including grassing of all denuded areas	133 622	1.00
11	**River diversions**	-	-
12	**Fencing**	-	-
13	**Water management** (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	-
14	2 to 3 years of **maintenance and aftercare**	17 782	1.00

3.7 Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.00 (Flat)
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05 (Peri-Urban)

3.8 Calculation of Closure Costs

CALCULATION OF THE QUANTUM						
Mine:		Bloemhof Quarry		**Location:**		Parys
Evaluators:		C Fouché		**Date:**		17/07/2020
	Description	**A Quantity**	**B Master rate**	**C Multiplication factor**	**D Weighting factor 1**	**E=A *B*C*D Amount (rands)**
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	0	17	1.00	1.00	R 0,00
2(A)	Demolition of steel buildings and structures	0	241	1.00	1.00	R 0,00
2(B)	Demolition of reinforced concrete buildings and structures	0	356	1.00	1.00	R 0,00
3	Rehabilitation of access roads	0	43	1.00	1.00	R 0,00
4(A)	Demolition and rehabilitation of electrified railway lines	0	419	1.00	1.00	R 0,00
4(B)	Demolition and rehabilitations of non-electrified railway lines	0	229	1.00	1.00	R 0,00
5	Demolition of housing and/or administration facilities	0	483	1.00	1.00	R 0,00
6	Opencast rehabilitation including final voids and ramps	8.7	253 019	0.04	1.00	R 88 050.61
7	Sealing of shaft, audits and inclines	0	130	1.00	1.00	R 0,00
8(A)	Rehabilitation of overburden and spoils	6.6	168 679	1.00	1.00	R 1 113 281.40
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	0	210 087	1.00	1.00	R 0,00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	0	610 192	0.51	1.00	R 0,00
9	Rehabilitation of subsided areas	0	141 244	1.00	1.00	R 0,00
10	General surface rehabilitation	8.7	133 622	1.00	1.00	R 1 162 511.40
11	River diversions	0	133 622	1.00	1.00	R 0,00
12	Fencing	0	152	1.00	1.00	R 0,00
13	Water Management	0	50 807	0.17	1.00	R 0,00
14	2 to 3 years of maintenance and aftercare	25.4	17 782	1.00	1.00	R 451 662.80
	Specialists study	0			1.00	R 0,00
	Specialists study	0				R 0.00

CALCULATION OF THE QUANTUM						
						R 2 815 506.21
	Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05	R 2 815 506.21	**Sub Total 1**	R 2 956 281.52
	Preliminary and General	6%				R 177 376.89
	Contingency		10.0% of Subtotal 1			R 295 628.15
	(Subtotal 1 plus management and contingency)				**Sub Total 2**	R 3 429 286.57
	Vat (15%)				**Sub Total 3**	R 514 392.98
	(Subtotal 3 plus VAT)				**GRAND TOTAL**	R 3 943 679.55

4. CONCLUSION

In view of the above calculations the financial provision to be provided to the Department of Mineral Resources and Energy by Inzalo Crushing and Aggregates (Pty) Ltd for the proposed mining right area amounts to R 3 943 679.55.

5. SITE LAYOUT MAP