# REVISED BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR THE APPLICATION OF A MINING PERMIT SITUATED ON PORTION 2 OF THE FARM BOESMANSKOP 115, IN THE MAGISTERIAL DISTRICT OF BLOEMFONTEIN

## FOR

## MALUTI PLANT AND CRUSHERS CC

## DMR REF. NO. FS 10290 MP


**COMPILED BY: ENGEDI MINERALS AND ENERGY**

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mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

# REVISED BASIC ASSESSMENT REPORT

# AND

# ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORISATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

**NAME OF APPLICANT:** MALUTI PLANT AND CRUSHERS CC

**REFERENCE NUMBER:** FS 10290 MP

**PROJECT NAME:** PORTION 2 OF THE FARM BOESMANSKOP 115

**DATE:** 29 August 2019

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# ABBREVIATIONS USED IN THIS REPORT

| | | |
|---|---|---|
| **DMR** | : | Department of Mineral Resources |
| **DRPW** | : | Department of Roads and Public Works |
| **DWS** | : | Department of Water and Sanitation |
| **ECO** | : | Environmental Control Official |
| **EIA** | : | Environmental Impact Assessment |
| **EMP** | : | Environmental Management Programme |
| **FS** | : | Free State |
| **IAPs** | : | Interested and Affected Parties |
| **LOM** | : | Life of Mine |
| **MPRDA** | : | Minerals and Petroleum Resources Development Act |
| **NEMA** | : | National Environmental Management Act |
| **SAHRA** | : | South African Heritage Resources Agency |
| **SAPS** | : | South African Police Services |

## 1.1 IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002, as amended), the Minister must grant a mining or mining right if among other the mining "will not result in unacceptable pollution, ecological degradation or damage to the environment".

Unless an Environmental Authorization can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Program report in term so of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3) (b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17(1) (c) the Competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the Competent Authority to the submission of applications.

**It is therefore an instruction** that the prescribed reports required in respect of applications for an environmental authorization for listed activities triggered by an application for a right or a permit submitted in the exact format of, and provide all information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorization being refused.

**It is furthermore an instruction that** the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

## 1.2 OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

The objective of the basic assessment process is to, through a consultative process

(a) Determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;

(b) Identify the alternatives considered, including the activity, location, and technology alternatives;

(c) Describe the need and desirability of the proposed alternatives;

(d) Through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within the sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:

i. The nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and

ii. The degree to which these impacts –

   a. Can be reversed

   b. May cause irreplaceable loss of resources; and

   c. Can be managed, avoided or mitigated;

(e) Through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to –

i. Identify and motivate a preferred site, activity and technology alternative;

ii. Identify suitable measures to manage, avoid or mitigate identified impacts; and

iii. Identify residual risks that need to be managed and monitored.

## PROJECT DETAILS

| | |
|---|---|
| **Name of Project:** | Portion 2 of the Farm Boesmanskop 115 |
| **Mining Permit:** | FS 10290 MP |
| **Name of Applicant:** | Maluti Plant and Crushers CC |
| **Responsible person:** | Drake Kwashi Ahaddi |
| **Physical Address:** | N/A |
| **Postal Address:** | P.O Box 4212, Bloemfontein 9300 |
| **Telephone:** | 072 641 4448 |

**Environmental Consultant (EAP):** Mr T Mulaudzi

| | |
|---|---|
| **Responsible Person:** | Mr T Mulaudzi |
| **Physical Address:** | 15 Barnes Street, Langebaan building, Bloemfontein |
| **Postal Address:** | P.O. Box 29567, Danhof, 9310 |
| **Telephone:** | 051 4301748 |
| **Facsimile:** | 086 556 2568 |
| **E-mail:** | info@engedime.com |
| **Expertise of EAP:** | Refer to Part A (3) (a) (ii) on the expertise of EAP |

# PART A

# SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

## 1.3 Contact details of

### a) Details of

### i. Details of the EAP

Name of the Practitioner: Tshimangadzo Mulaudzi
Tel No.: 015 430 1748
Fax No.:086 556 2568
Email address: info@engedime.com

### ii. Expertise of the EAP

1) **The qualifications of the EAP** (with evidence)

Tshimangadzo Mulaudzi hold an Honours Degree in Mining and Environmental Geology from the University of Venda. Have since been working as an environmental geologist and environmental practitioner. He has 5 years' experience in Environmental Science, 5 years' experience in Geology, and 5 years' experience in public participation.

2) **Summary of the EAP's past experience** (in carrying out the Environmental Impact Assessment Procedure)

Tshimangadzo Mulaudzi has been carrying out Environmental Impact Assessment Procedure since 2012, in 2012, he joined a large mining consulting company in Kimberly called Breeze Court Investments 47 (Pty) Ltd (Geologist and Mining Consulting firm). This is where Mr Mulaudzi acquired in-depth experience and know how in the mining consulting business by assisting the large to small scale mining companies to obtain prospecting right, mining rights, mining permits, technical co-operate permits, reconnaissance permits, exploration rights, production rights, integrated water use license, and environmental authorisation among other licenses. Mulaudzi has five years

working experience in environmental management, geology and public participation process.

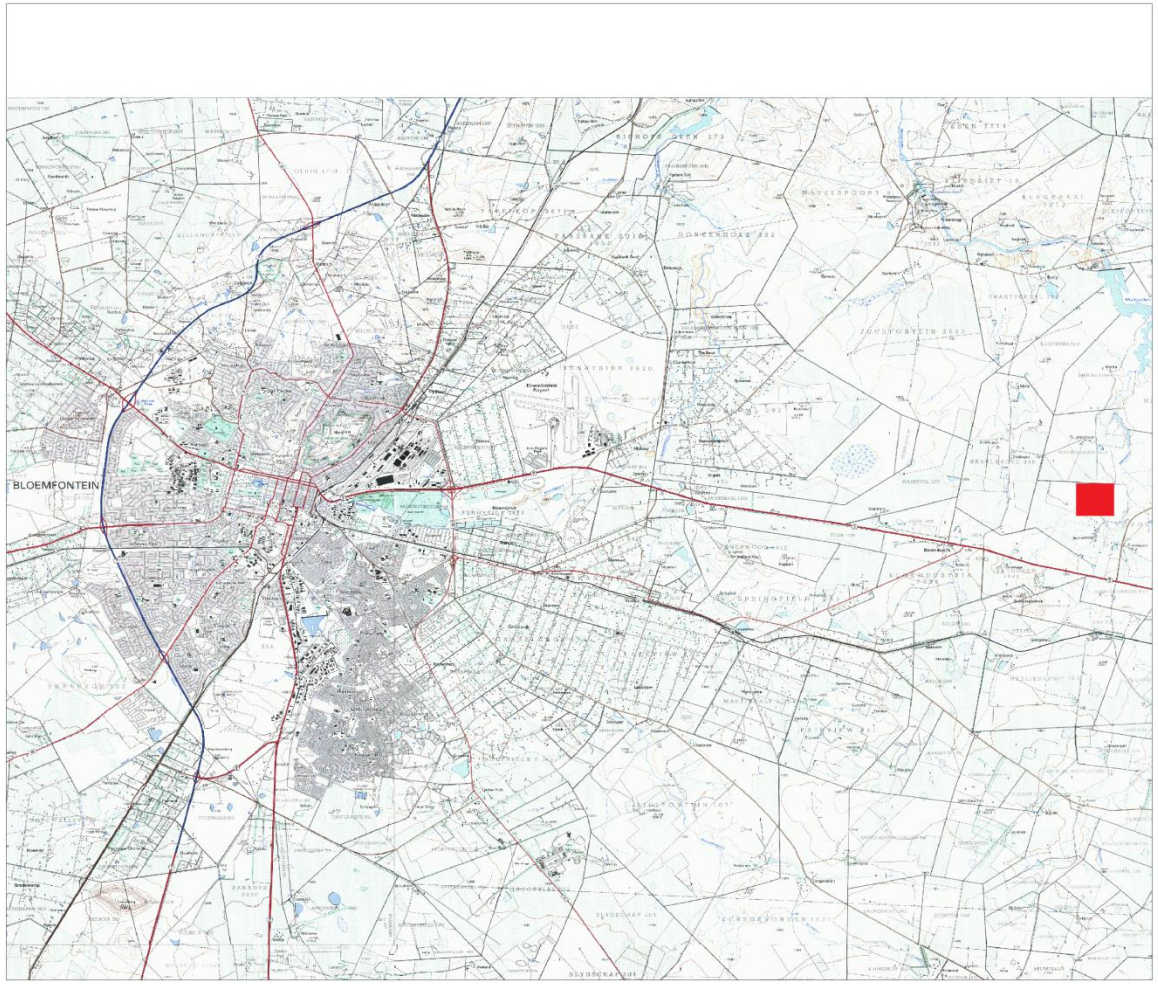
**b) Location of the overall Activity**

| | |
|---|---|
| **Farm name:** | Portion 2 of the farm Boesmanskop 115 |
| **Application area (Ha):** | 5 Hectares |
| **Magisterial district:** | Bloemfontein |
| **Distance and direction from nearest town:** | Approximately 24 km east of Bloemfontein |
| **21 digit Surveyor General Code for each farm portion:** | F00300000000011500002 |

**c) Locality map**

(show nearest town; scale not smaller than 1:250 000)

# LOCALITY MAP FOR MALUTI PLANT AND CRUSHERS




N

**LEGEND**

Mining Permit Area

**COORDINATES**

| ID: | LONG | LAT |
|---|---|---|
| A: | 26.456914; | -29.117859 |
| B: | 26.456000; | -29.119771 |
| C: | 26.458048; | -29.120443 |
| D: | 26.458885; | -29.118493 |

0 3 6 12 18 24 Kilometers

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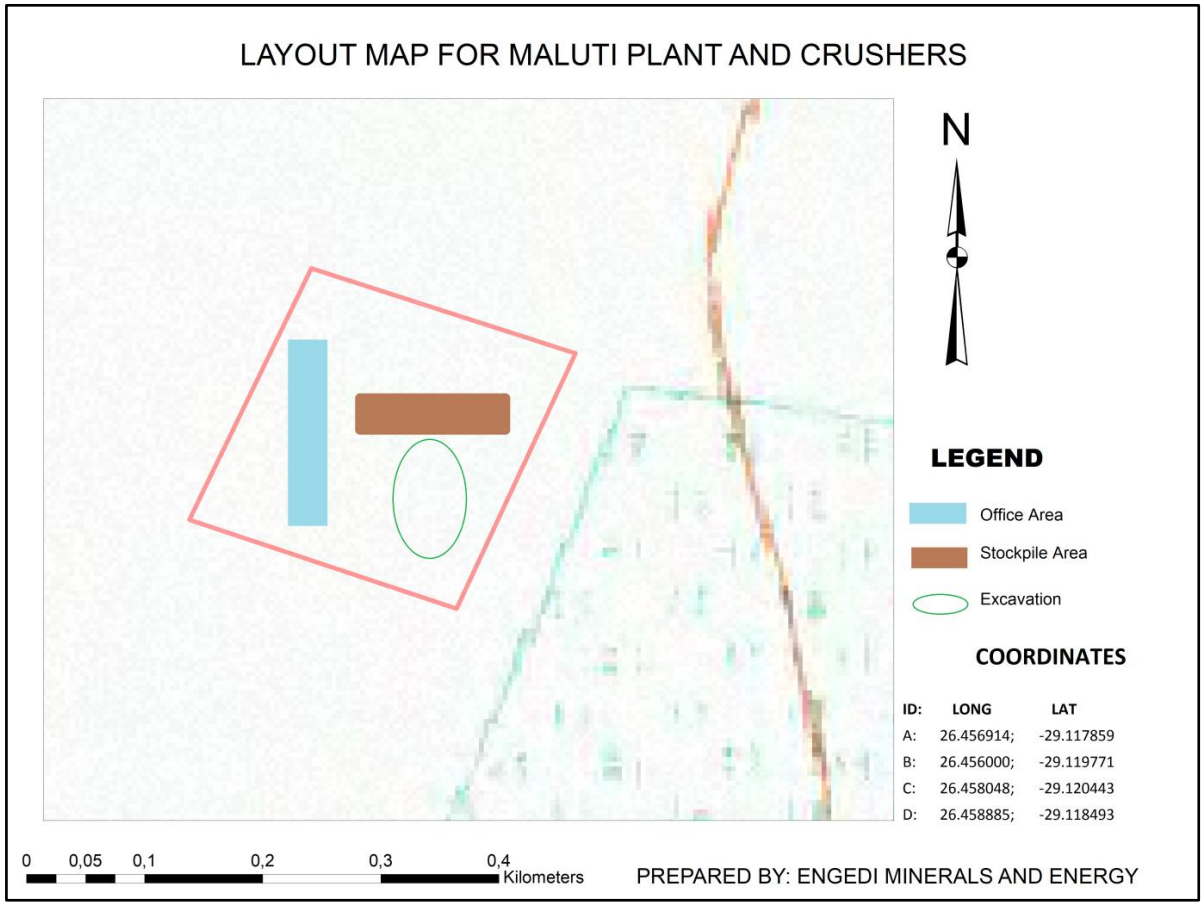
## d) Description of the scope of the proposed overall activity

(Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site)

The activity is for the mining permit which will involve the mining of stone aggregate, gravel and clay at the proposed area. Open pit mines will be used to extract the commodities.



**e) Listed and specified activities**

| NAME OF ACTIVITY<br><br>**E.g. for mining** – excavation, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and pitting and trenching, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, **etc.**) | AERIAL EXTENT OF THE ACTIVITY<br><br>(Ha or $m^2$) | LISTED ACTIVITY<br><br>**(**Mark with an **X** where applicable or affected**)** | APPLICABLE LISTING NOTICE (GNR 324, GNR 325 OR GNR 327) |
|---|---|---|---|
| Excavation | 5 Ha | X | Listing Notice 1, Activity No. 21 |
| Stock piles | 0.04 Ha | X | Listing Notice 1, Activity No. 21 |
| Loading, hauling, and transport | | X | Listing Notice 1 Activity No. 21 |
| Access road | 0.4 Ha | X | Listing Notice 1, Activity No. 21 |
| Dumps | 0.01 Ha | X | Listing Notice 1 Activity No. 21 |

**i. Description of the activities to be undertaken** (Describe Methodology or technology to be employed, including the type of commodity to be prospected/mined and for a linear activity, a description of the route of the activity)

The activity is for the mining permit, which will involve the mining of stone aggregate, gravel and clay. Open pit mines will be used to extract the commodities. To open-pit mine for the above-mentioned commodities, four operations are necessary: (1) site clearing (removal of trees and vegetation, soil, and other overburden; soil will be stockpiled and reused later), (2) mining, (3) processing (crushing, screening, washing, blending and stockpiling of the mined material to conform to standards), and (4) reclamation of the mined area.

### f) Policy and Legislative Context

| **APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT**<br><br>(a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process). | **REFERENCE WHERE APPLIED** | **HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT**<br><br>(E.g. in terms of the National Water Act a Water Use License has/has not been applied for) |
|---|---|---|
| National Environmental Management Act (NEMA), No. 107 of 1998, as amended | Section 24 | In terms of the National Environmental Management Act, an application for an Environmental Authorisation has been applied for. |

| | | |
|---|---|---|
| Regulation 982. National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations, 2014 | Regulation 19 | In terms of the NEMA EIA Regulations a Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) were prepared to submit to the competent authority. |
| Regulation 983. National Environmental Management Act (Act No. 107 of 1998): Listing notice 1: List of activities and competent authorities identified in terms of sections 24(2) and 24D | Regulation 20 | In terms of NEMA EIA Regulations R.983, Listing notice 1, the activity triggers regulation 21 which refers to a mining permit application and therefore needs an Environmental Authorizations to proceed as well as follow procedures as prescribed in regulation 19 of R.982 (EIA Regulations, 2014). |
| Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) | Section 27 | In terms of the MPRDA, any person who wishes to apply for a mining permit must lodge the application in the prescribed manner. |
| Mineral and Petroleum Resources Development Amendment Act (Act No. 49 of 2008) | Section 23 | In terms of the MPRDA, any person who wishes to apply for a mining permit must simultaneously apply for an environmental authorisation and must lodge the application to requirements contemplated by competent authority. |

**g) Need and desirability of the proposed activities**

(*Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location*)

The need for the proposed development is of paramount importance as it is going to assist the local community in terms of poverty alleviation through job creation, black economic empowerment in terms of the mining charter which will contribute to the nation's visions of job creation.

**h) Motivation for the overall preferred site, activities and technology alternative**

The proposed mining site is preferred because:

1. It contains the right quality of stone aggregate, gravel and clay bearing material required for the recovering of sand and has a good history of good sand quality;
2. The mining site still has good high grade stone aggregate, gravel and clay bearing material;
3. The site is close to the processing plant, thus minimizing transportation costs; and
4. The area was cleared for previous mine support structures, hence preferred than opening a new area which could entail cutting down some trees.
5. There won't be a need to start excavating on virgin ground since the recovering will only be focused on the material along the historic rail line skeletons.

**i) Full description of the process followed to reach the proposed preferred alternatives within the site**

NB!!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

i. **Details of the development footprint alternatives considered.**

With reference to the site plan provided below and the location of the individual activities on site, provide details of the alternatives considered with respect to:

**a.** The property on which or location where it is proposed to undertake the activity;
**b.** The type of activity to be undertaken;
**c.** The design or layout of the activity;
**d.** The technology to be used in the activity;
**e.** The operational aspects of the activity; and
**f.** The option of not implementing the activity

No alternatives are applicable to this project since the stone aggregate, gravel and clay is contained in the proposed area. Locating the development to another area will result in the stone aggregate, gravel and clay possibly not being found and the economy and society not benefitting from proposed mining activity.

ii. **Details of the Public Participation Process Followed** (Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attend public meetings. Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land).

***Definitions:***

**'consultation'** means a two way communication process between the applicant and the community or interested and affected party wherein the former is seeking, listening to, and considering the latter's response, which allows openness in the decision making process.

**'community'** means a group of historically disadvantaged persons with interest or rights in a particular area of land on which the members have or exercise communal rights in terms of an agreement, custom or law: Provided that, where as a consequence

of the provisions of the Act negotiations or consultations with the community are required, the community shall include the members or part of the community, directly affected by mining or mining, on land occupied by such members or part of the community.

**'Interested and affected' parties** include, but are not limited to; –

- Host Communities
- Landowners (Traditional and Title Deed owners)
- Traditional Authority
- Land Claimants
- Lawful land occupier
- The Department of Land Affairs,
- Any other person ( including on adjacent and non-adjacent properties) whose socio-economic conditions may be directly affected by the proposed mining or mining operation
- The Metropolitan Municipality,
- The relevant Government Departments, agencies and institutions responsible for the various aspects of the environment and for infrastructure which may be affected by the proposed project.

The following I&APs were contacted:

- Land owner
- Free State Department of Rural, Environment and Agricultural Development
- Chief Director: Department of Rural Development and Land Reform (Free State);
- Mangaung Metropolitan Municipality – Municipal Office;
- Department of Water and Sanitation
- Other relevant parties or departments.

The identified I&APs were provided with information regarding the applied proposed mining. The final location of the planned excavations will be decided in consultation

with the landowners during mining. All comments from the identified I&APs will be noted and taken into consideration.

After the directly affected land owner has been identified, these parties were consulted telephonically, per email or personally (whichever method is most convenient for the party concerned).

The public participation process mainly comprises engagement with Interested and Affected Parties (I&APs) and is of utmost importance in any environmental assessment process. The public participation process, *inter alia*, involves the following:

- Inform, raise awareness, educate and increase understanding of a broad range of environmental issues that might be arise with the proposed extension in the size of mining operation.
- Establish lines of communication between stakeholders, I&APs and the project team.
- Provide opportunity to all parties for the exchange of information and expression of views and concerns.
- Obtain contributions of stakeholders and I&APs and ensure that all views, issues, concerns and queries raised are fully documented.
- Identify all the significant issues associated with the proposed extension of project

**Engedi Minerals and Energy (Pty) Ltd** was appointed by **Maluti Plant and Crushers CC** as the independent consultant to conduct the public participation process as part of the Basic Assessment Report and Environmental Management Programme Report. As stipulated in Section 27 (5) (b) of the MPRDA (Act 28 of 2002) as amended by the MPRDA (Act 49 of 2008) and Regulations, Interested and Affected Parties (I&APs) need to be notified and consulted with, as part of a mining permit application and extension thereof.

The public participation process aims to provide I&APs with objective information in order to assist them to:

- Raise issues of concern and make suggestions for enhanced benefits;
- Contribute local knowledge and experience;
- Verify that their issues have been captured;
- Verify that their issues have been considered; and
- Comment on the findings of the EMP.

An email explaining the project and the background information will be sent to all other I&APs introducing the project. Specifically, the Free State Department of Mineral Resources responded that **Engedi Minerals and Energy (Pty) Ltd** does not need to send them any information as the BAR and EMPr will be provided to them from the DMR once the BAR and EMPr is submitted.

The draft BAR and EMPr was made available for all the registered I&APs. The draft BAR and EMPr was made available to inform the I&APs of the activities, background information of the area, the possible impacts and mitigation measures and other relevant information, and to request input and comment on it.

**iii. Summary of issues raised by I&APs (Complete the table summarizing comments and issues raised, and reaction to those responses) -**

| **Interested and Affected Parties**<br><br>**List the names of persons consulted in this column, and**<br><br>**Mark with an X where those who must be consulted were in fact consulted** | | **Date Comments Received** | **Issues raised** | **EAPs response to issues as mandated by the applicant** | **Section and paragraph reference in this report where the issues and or response were incorporated** |
|---|---|---|---|---|---|
| **AFFECTED PARTIES** | | | | | |
| **Landowner/s** | **x** | | | | |
| | | | Results of public participation to be forwarded to your department. | | |
| | | | | | |
| **Lawful occupier/s of the land** | **x** | | | | |
| | | | | | |
| | | | | | |
| **Landowners or lawful occupiers on adjacent properties** | **x** | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Municipal councilor** | | | | | |
| **Metropolitan Municipality – Mangaung Metropolitan Municipality** | | | | | |
| **Organs of state (Responsible for infrastructure that may be affected i.e. Roads Department, Eskom, Telkom, DWA etc.)** | | | | | |
| Department of Water and Sanitation – Free State | **X** | | | | |
| **Communities** | | | | | |
| | | | | | |
| | | | | | |
| **Department of Land Affairs** | | | | | |
| Department of Rural Development and Land Reform, Free State | **X** | | | | |
| **Traditional Leaders** | | | | | |
| ***No traditional leaders are present on site*** | | | | | |
| **Department of Environmental Affairs** | | | | | |
| Free State Department Economic Development, Environment, Conservation and Tourism | **X** | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Other Competent Authorities affected** | | | | | |
| ***No other competent authorities will be affected as of yet.*** | | | | | |
| **OTHER AFFECTED PARTIES** | | | | | |
| ***No other affected parties have been identified*** | | | | | |
| | | | | | |
| **INTERESTED PARTIES** | | | | | |
| Community | | | | | |

## 1.4 THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES

(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects).

**a) Type of environment affected by the proposed activity**

(Its current geographical, physical, biological, socio-economic, and cultural character)

### 1.4.1 Baseline Environment

**Location**

Bloemfontein is the capital city of the province of Free State of South Africa; and, as the judicial capital of the nation, one of South Africa's three national capitals. It is the seventh largest city in South Africa and forms part of the Mangaung Metropolitan Municipality. It covers 6 300 $km^2$ with a population of just under a million people. Mangaung Metropolitan Municipality is a Category A municipality. It is situated in the heart-land of the Free State Province. The economy is strongly driven by the government sector, which has seen the fastest growth in the last five years as a result of increased government programmes in livelihoods improvement interventions. The finance sector is the second-fastest growing sector due to very active estate and construction activities. Main Economic Sectors: Community services (35.3%), finance (26.8%), trade (16%), transport (11.8%), manufacturing (3.5%).

**Climate**

Bloemfontein is influenced by the local steppe climate. There is not much rainfall in Bloemfontein all year long. The climate here is classified as BSk by the Köppen-Geiger system. The average annual temperature in Bloemfontein is 16.1 °C. In a year, the average rainfall is 548 mm. The mean annual precipitation of the region is approximately 407 mm. Most of the precipitation is in the form of convectional rain fall between December and January. Frost also occurs frequently in the area with an average of 43 days per year. The average temperature for Bloemfontein range from 16 ºC in June and 29 ºC in January with the average minimum temperature of 0ºC during July.

**Topography and Elevation**

Bloemfontein is located in central South Africa on the southern edge of the Highveld at an elevation of 1 400 metres, bordering on the semi-arid region of the Karoo. Furthermore, it is generally flat with occasional hills.

**Geology and Soils**

Bloemfontein is situated on the Adelaide Subgroup of the Beaufort Group. The Beaufort Group falls within the Karoo Super Group and consist of Blue-grey and purple mudstone interbedded with yellow aggregate and gravelstone and siltstone in the southeastern part of the basin, the late Permian Adelaide Subgroup comprises the Koonap, Middleton and Balfour Formations. In the west, the Abrahamskraal and Teekloof Formations are the approximate equivalents of the Koonap and Middleton Formations. The Middleton and Teekloof Formations are characterized by a greater relative abundance of red mudstone compared to the underlying and overlying units, in practice the boundaries are linked to specific sandstone-rich marker units, thus the arenaceous Poortjie and Oudeberg Members constitute the base of the Teekloof and Balfour Formations, respectively. In the northeastern region, the Normandien Formation is present The Adelaide Subgroup attains a maximum thickness of approximately 5000 m in the southeast, which decreases rapidly to approximately 800 m in the centre of the Basin and thereafter more 29 gradually to 100-200 m in the extreme north.

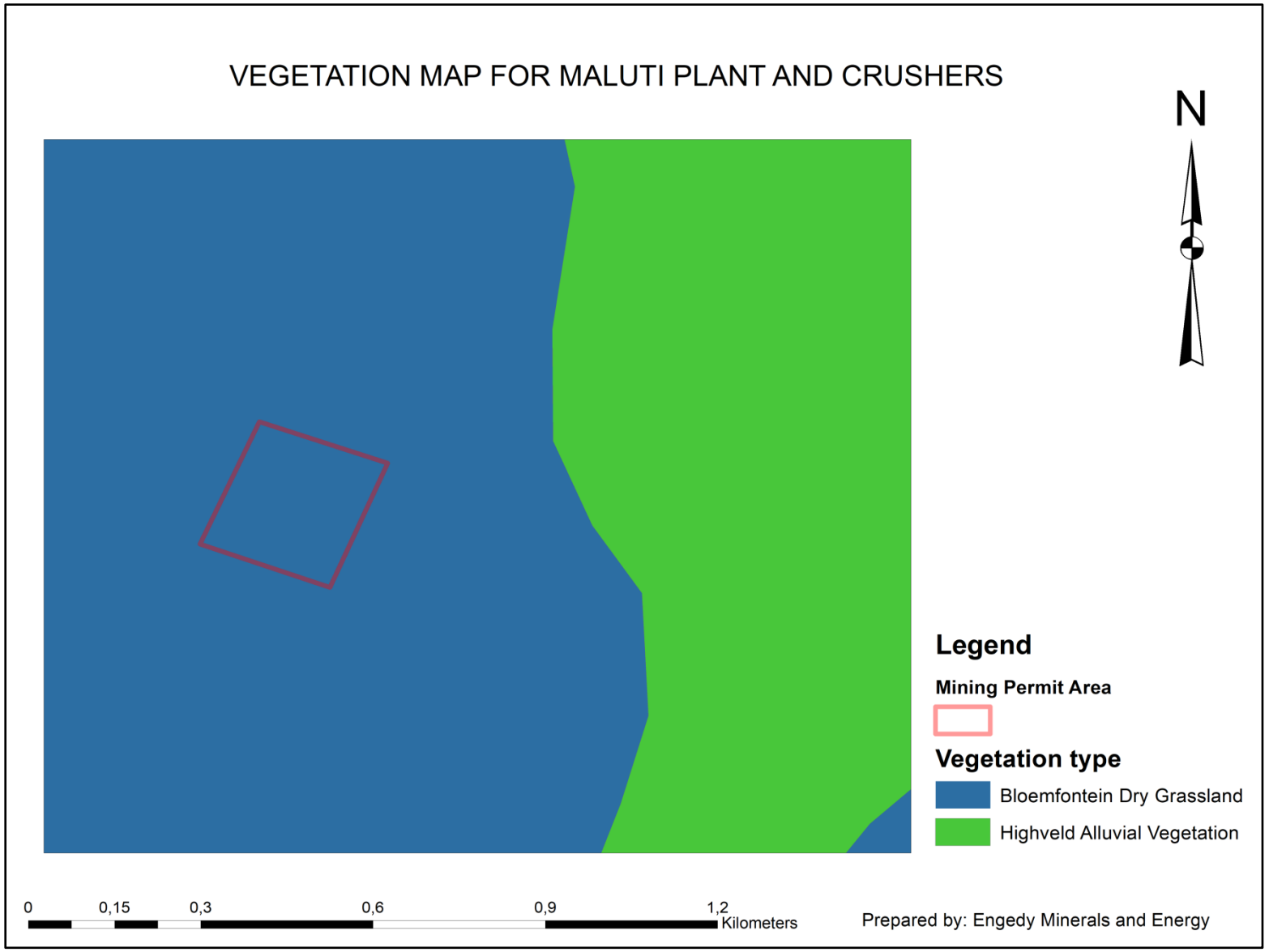
The Koonap Formation attains a maximum thickness of approximately 1300 m, the Middleton 1600 m and the Balfour 2000m. In the west, the Abrahamskraal and Teekloof Formations are up to 2500 m and 1400 m thick, respectively towards the end of the Cape Orogeny thermal dome uplift developed beneath almost the entire South African continent. Dolerite represents the roots of the volcanic system and is presumed to be of the same age as the extrusive lavas.

Extensive magnetic activity lead to dolerite dykes, inclined sheets and sills to intrude the sedimentary rocks of the Karoo Super group during the Jurassic period to the north of the compressional sphere of the Cape Fold Belt. The level of erosion that affected the Main Karoo basin has revealed the deep portions of the intrusive system, which displays a high degree of tectonic complexity. The Karoo intrusive can either occur as dykes, sills, or ring-complexes. The Karoo dolerite, which includes a wide range of petrological facies, consists of an interconnected network of dykes and sills and it is nearly impossible to single out any particular intrusive or tectonic event. It would appear that a very large number of fractures were intruded simultaneously by magma and that the dolerite intrusive network acted as a shallow stockwork-like reservoir.

### 2.4.1 Biological Environment

**Vegetation**

The site is situated at the grassland Biome which is represented for most of the site by Bloemfontein Dry grassland vegetation type and at the rocky ridge that enters the southern part of the site, Winburg Grassy Shruland (Mucina & Rutherford , 2006).


VEGETATION MAP FOR MALUTI PLANT AND CRUSHERS
N
Legend
Mining Permit Area
Vegetation type
Bloemfontein Dry Grassland
Highveld Alluvial Vegetation
0
0,15
0,3
0,6
0,9
1,2
Kilometers
Prepared by: Engedy Minerals and Energy

**Mammals**

The possible presence or absence of threatened mammal species and near threatened mammal species at the site was investigated. Large threatened species such as the black rhinoceros are obviously not present. No smaller mammals of particular high conservation significance are likely to be found on the site either (Ecological Assessment, 2013)

**Birds**

The possible presence or absence of threatened bird species and threatened bird species (globally and nationally) was investigated at the site. The site does not appear to form part of any habitat of particular important for any threatened bird species or nay bird species of particular conservation importance (Ecological Assessment, 2013)

**Amphibians**

No frog species that occurs in the Free State are red listed as threatened species or near threatened species at present. There appears to be no threat to any amphibian species of particular high conservation importance if the site is developed (Ecological Assessment, 2013).

**Conservation areas**

There are currently no formally protected areas within close proximity of the proposed mining site.

### 3.4.1 Surface water

Catchments

**Caledon River Sub-catchment**

The Welbedacht Dam is situated on the Caledon River and supplies water to urban users in Bloemfontein, Botshabelo, Dewetsdorp, and various other smaller users, as well as irrigators downstream of the Welbedacht Dam along the Caledon River. The irrigators downstream of the Welbedacht Dam have no claim to any water in Welbedacht Dam and only the inflow is released for irrigation purposes. The

Welbedacht WTW at the Welbedacht Dam supplies water via the Caledon-Bloemfontein pipeline to Bloemfontein, Botshabelo, and other minor consumers

**Modder River Sub-catchment**

The Krugersdrift Dam is located on the Modder River and supplies water for irrigation purposes to the Modder River Government Water Scheme. More than 50 weirs were constructed in the Modder River between the dam wall and the confluence with the Riet River. The Mockes Dam on the Modder River supplies water to Bloemfontein via the Maselspoort WTW. The Groothoek Dam is located on the Kgabanyane River, a tributary of the Modder River, and supplies water to Thaba Nchu. The Rustfontein Dam is located on the Modder River and forms the major storage reservoir in the Modder River. Water is released from the Rustfontein Dam to supplement the abstraction from the Mockes Dam and currently provides the major portion of water supplied to Bloemfontein at Maselspoort.

**Riet River Sub-catchment**

The Tierpoort Dam is situated on a tributary of the Riet River upstream of the Kalkfontein Dam and supplies water to the Tierpoort Irrigation Board through a network of unlined canals. The Kalkfontein Dam is on the Riet River and supplies water for irrigation through a network of canals and syphons to the Riet River Government Water Scheme. Urban water is also supplied to the Koffiefontein and Jacobsdal towns through the aforementioned canal system.

**Water Management Area**

Upper Orange Water Management Area.

**Rivers and dams**

Caledon River, Modder River, Riet River and Upper Orange River

### 4.4.1 Socio-economic setting

Socio-economic context Bloemfontein was, from inception, the administrative and commercial centre of the agricultural ‘isolated state’ that we described earlier. Today it

remains the major first order service centre in the south-centre of the region, and the first-order administrative centre for the province as a whole. It is the leading commercial centre for the central and southern Free State, while in the north this role has been assumed by Welkom and Kroonstad. Today the population of Greater Bloemfontein approaches half a million. The addition of Thaba Nchu and Botshabelo to form the Mangaung municipality gives a total of two thirds of a million. Greater Bloemfontein alone is 50 per cent bigger than Welkom, and roughly as big as Pietermaritzburg, Port Elizabeth, and East London. It claims to be 'South Africa's sixth city', and it is reasonable to place Bloemfontein at the head of Free State's urban hierarchy.

Prior to the extensive mining of gold in the Free State (which came much later than it did in the former Transvaal), all towns and cities in the Free State were essentially service centres to the surrounding rural areas. As noted previously, Bloemfontein was the most centrally located leader amongst these, and Kroonstad and Bethlehem were the primary service centres for the northern Free State, with their respective trade areas being roughly the north-west and north-east quadrants of the Free State respectively. Bloemfontein has been and continues to be central to middle- and upper-class interests in the Free State, both black and white, a legacy based largely on its traditional public service character.

As public and social services provision are increasingly dominated by Africans in Bloemfontein, the city is especially relevant to emerging African middle-class interests. Bloemfontein's employment profile compares most closely with that of Pietersburg/Polokwane or Potchefstroom, which have traditionally performed similar service functions. This differs radically from the historical and contemporary profiles of metropolitan areas such as Johannesburg, Durban, or Cape Town.

Bloemfontein and its peers have largely been service centres to their agricultural hinterlands, whereas the larger metropolitan centres have become industrial and post-industrial regions that are quite autonomous from their agricultural hinterlands.

Bloemfontein's historical role as a centre for the employment of (largely Afrikaans-speaking) civil servants and educators is added to that of farming area service centre,

which it also has in common with towns such as Pietersburg/Polokwane and Potchefstroom. But, in many respects, Bloemfontein has moved ahead. Naturally enough, it can no longer be understood solely in its historical terms, and the city's socio-economic profile is changing rapidly.

**Population (2011)**

| | |
|---|---|
| Total | 256,185 |
| Density | 1,100/km$^2$ |

**Race**

| Population group | Percentage |
|---|---|
| Black African | 56.1% |
| Coloured | 12.8% |
| Indian or Asian | 0.8% |
| White | 29.8% |
| Other | 0.5% |

**Language**

| First language | Percentage |
|---|---|
| Sesotho | 33.4% |
| Afrikaans | 42.5% |
| isiXhosa | 7.1% |
| English | 7.5% |
| Other | 9.5% |

**Gender composition**

| Gender | Population | Percentage |
|---|---|---|
| Female | 129 372 | 50.5% |
| Male | 126 813 | 49.5% |

**Age groups**

| Age Structure | |
|---|---|
| Population under 15 | 26.90% |
| Population 15 to 64 | 67.80% |
| Population over 65 | 5.30% |

**Education**

Education Level (Population Aged 15 Years and Above)

| | | |
|---|---|---|
| **No schooling** | 20 368 | 3.87% |
| **Some primary** | 64 657 | 12.27% |
| **Completed primary** | 26 242 | 4.98% |
| **Some secondary** | 200 132 | 37.99% |
| **Grade 12** | 148 399 | 28.17% |
| **Higher** | 67 007 | 12.72% |
| **Total** | 526 805 | 100.0% |

There are more employed people in Mangaung than those who are unemployed from the economically active groups, the challenge is that most people are employed in low skilled jobs because of amongst other things, their levels of education is that about 38.0% of the labour force of Mangaung has completed some secondary and 28.2% have completed matric and only 12.7% has post matric qualification.

**Poverty and inequality**

| Labour Market | |
|---|---|
| Unemployment rate (official) | 27.70% |
| Youth unemployment rate (official) 15-34 | 37.20% |

**Income**

| INCOME | PERCENTAGE |
|---|---|
| NO INCOME | 11,4% |
| R1- R4,800 | 4,6% |
| R4,801-R9,600 | 6,8% |
| R9,601-R19,600 | 17,2% |
| R19,601-R38,200 | 20,2% |
| R38,201-R76,400 | 14,1% |
| R76,401-R153,800 | 10,3% |
| R153,801-R307,600 | 8% |
| R614,400-R307,600 | 5% |
| R1,228,800-R2,45,600 | 0,4% |
| R2457,601+ | 0,4% |

**b) Description of the current land uses**

The current land-use is mining.

**c) Description of specific environmental features and infrastructure on the site**

Mining infrastructure. Vegetation also available for grazing.

**d) Environmental and current land use map**

(Show all environmental and current land use features)

Mining, near intensive agricultural land, which has been cultivated for decades.

# LAND USE MAP FOR MALUTI PLANT AND CRUSHERS


N

**COORDINATES**

| ID: | LONG | LAT |
|---|---|---|
| A: | 26.456914; | -29.117859 |
| B: | 26.456000; | -29.119771 |
| C: | 26.458048; | -29.120443 |
| D: | 26.458885; | -29.118493 |

REFERENCE

National Freeway; National Route
Arterial Route
Main Road
Secondary Road; Bench Mark
Other Road; Bridge
Track and Hiking Trail
Railway; Station or Siding
Other Railway; Tunnel
Embankment; Cutting
Power Line
Built-up Area (High, Low Density)
Buildings; Ruin
Post Office; Police Station; Store
Place of Worship; School; Hotel
Fence; Wall
Windpump; Monument
Communication Tower
Mine Dump; Excavation
Trigonometrical Station; Marine Beacon
Lighthouse and Marine Light
Cemetery; Grave

International Boundary and Beacon
Provincial Boundary
Protected Area
Perennial River
Perennial Water
Non-perennial River
Non-Perennial Water
Dry Water Course
Dry Pan
Marsh and Vlei
Pipeline (above ground)
Water Tower; Reservoir; Water Point
Coastal Rocks
Prominent Rock Outcrop
Erosion; Sand
Woodland
Cultivated Land
Orchard or Vineyard
Recreation Ground
Row of Trees

0 0,175 0,35 0,7 1,05 1,4 Kilometers

Prepared by: Engedy Minerals and Energy

iv. **Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of impacts, including the degree to which these impacts** (Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impact of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of these impacts. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources and can be avoided, managed or mitigated).

**Potential impact of each main activity in each phase, and corresponding significance assessment**

| NO | ACTIVITY | IMPACT | DURATION | INTENSITY | PROBABILITY | SIGNIFICANCE RATING | |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Loss of vegetation | 3 | 5 | 10 | 80 | High |
| | | Habitat Destruction | 3 | 5 | 10 | 80 | High |
| | | Visual scarring | 3 | 4 | 8 | 56 | Medium |
| | | Soil erosion | 3 | 4 | 6 | 42 | Low |
| 2 | Excavations | Dust emissions | 2 | 5 | 8 | 56 | Medium |
| | | Surface disturbances | 4 | 4 | 10 | 80 | high |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Drainage interruption | 4 | 4 | 10 | 80 | high |
| | | Slope instability | 4 | 3 | 3 | 42 | low |
| | | Noise | 2.5 | 5 | 10 | 75 | high |
| | | Visual Scarring | 3 | 4 | 8 | 56 | medium |
| | | Soil erosion | 3 | 4 | 6 | 42 | low |
| 4 | Stockpiles | Dust | 2 | 5 | 8 | 56 | medium |
| | | Surface disturbances | 3 | 5 | 10 | 80 | high |
| | | Drainage disruption | 2.5 | 5 | 10 | 75 | high |
| 4 | Loading, Hauling and transportation | Dust | 2 | 5 | 10 | 70 | medium |
| | | Increased risk of accidents | 2 | 4 | 4 | 16 | low |
| | | Noise | 2.5 | 5 | 10 | 75 | high |
| | | Soil | 3 | 3 | 6 | 36 | low |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | contamination from oil/fuel leaks | | | | | |

- **Potential cumulative impacts**

Since they are other mining company around, the cumulative impact will be noise and dust.

- **Potential impact on heritage resources**

No heritage sites may be present on the site, which may be disturbed and/or damaged during mining.

- **Potential impacts on communities, individuals or competing land uses in close proximity**

(If no such impacts are identified this must be specifically stated together with a clear explanation why this is not the case.)

Expectations could be created that numerous job and business opportunities will become available during mining. All Interested and Affected Parties (I&APs) need to be informed throughout the Mining.

- **Confirmation that the list of potential impacts has been compiled with the participation of the landowner and interested and affected parties**

The draft BAR and EMPr was made available to the interested and affected parties for comment and input. The list of potential impacts was included in the draft BAR and EMPr.

- **Confirmation of specialist report appended**

(Refer to guideline)
No specialist studies were conducted for this BAR and EMPr. The baseline information contained herein is based on a desktop study and one site visit.

v. **Methodology used in determining and ranking nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;** (Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process was determined in order to decide the extent to which they initial site layout needs revision).

**Criteria of assigning significance to potential impacts**

The significance of the impacts was determined through the consideration of the following criteria:

| | |
|---|---|
| Probability: | Provides a description of the likelihood/probability of the impact occurring |
| Extent: | Describes the spatial scale over which the impact will be experienced |
| Duration: | The period over which the impact will be experienced |
| Intensity: | The degree/order of magnitude/severity to which the impact affects the health and welfare of humans and the environment |
| Significance: | Overall significance of the impact on components of the affected environment and whether it is a negative or positive impact |

The impacts were individually described and assessed using the criteria drawn from the Environmental Impact Assessment (EIA) Regulations, published by the DEA in terms of the NEMA (Act 107 of 1998).

The significance of each impact is assessed using the following formula (before and after mitigation):

**Significance Point (SP) = (Probability + Extent + Duration) x Intensity**

The maximum value is 150 SP. The impact significance will then be rated as follows:

| | | |
|---|---|---|
| SP > 75 | Indicates **high** environmental significance | An impact that could influence the decision about whether or not to proceed with the project regardless of any possible mitigation. |
| SP 30 – 75 | Indicates **moderate** environmental significance | An impact or benefit which is sufficiently important to require management and which could have an influence on the decision unless it is mitigated. |
| SP < 30 | Indicates **low** environmental significance | Impacts with little real effect and which should not have an influence on or require modification of the project design. |
| + | Positive impact | An impact that is likely to result in positive consequences/effects. |

| **Probability (P)** | | |
|---|---|---|
| None (N) | 1 | The possibility of the impact occurring in none, due either to the circumstances, design or experience (0%). |
| Possible (P) | 2 | The possibility of the impact occurring is very low, due either to the circumstances, design or experience (25%). |

| | | |
|---|---|---|
| Likely (L) | 3 | There is a possibility that the impact will occur to the extent that provisions must therefore be made (50%). |
| Highly likely (H) | 4 | It is most likely that the impacts will occur at some stage of the development and plans must be drawn up before carrying out the activity (75%). |
| Definite (D) | 5 | The impact will take place regardless of any prevention plans, and only mitigation actions or contingency plans to contain the effect can be relied on (100%). |
| | | |
| **Extent (E)** | | |
| Footprint (F) | 1 | The impact area extends only as far as the activity which occurs within the total site area. |
| Site (S) | 2 | The impact could affect the whole site or a significant portion of the site. |
| Regional (R) | 3 | The impact could affect the area including the neighbouring farms, the transport route and/or the adjoining towns. |
| National (N) | 4 | The impact could have an effect that expands throughout the country. |
| International (I) | 5 | Where the impact has international ramifications that extend beyond the boundaries of the country. |

| | | |
|---|---|---|
| | | |
| **Duration (D)** | | |
| *The period over which the impact will be experienced* | | |
| Temporary (T) | 1 | 0 – 3 years (or confined to the construction period). |
| Short term (S) | 2 | 3 – 10 years (or confined to the construction and part of the operational period). |
| Medium term (M) | 3 | 10 – 15 years (or confined to the construction and whole operational period). |
| Long term (L) | 4 | For the whole life of mine (including closure and rehabilitation period). |
| Permanent (P) | 5 | Beyond the anticipated lifetime of the project. |
| | | |
| **Intensity (I)** | | |
| Insignificant (I) | 2 | Will have a no or very little impact on the health and welfare of humans and environment |
| Low (L) | 4 | Will have a slight impact on the health and welfare of humans and environment |

| | | |
|---|---|---|
| Moderate (M) | 6 | Will have a moderate impact on the health and welfare of humans and environment |
| High (H) | 8 | Will have a significant impact on the health and welfare of humans and the environment |
| Very high/ don't know (V) | 10 | Will have a severe impact on the health and welfare of humans and the environment |

vi. **Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;**

No alternatives were considered. The summary of identified positive and negative risks is as follows.

**Negative Impacts:**

- Visual Impacts
- Noise Impacts
- Air Quality Deterioration
- Disruption of surface drainage
- Destruction of flora and loss of habitat
- Loss of soil and agricultural potential
- Water pollution
- Erosion
- Safety and Security Impacts
- Land Degradation

**Positive impacts:**

- Creation of employment opportunities
- Training and skills development opportunities

**e) The possible mitigation measures that could be applied and the level of risk**

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).

**MANAGING SOIL IMPACTS**

These measures are targeted at managing soil erosion, soil contamination, compaction of soil and removal of topsoil

- The area that is stripped of vegetation should be kept to an absolute minimum
- Contractor shall at all times carefully consider what machinery is appropriate to the task while minimizing the extent of environmental damage and unnecessary movements should be prohibited
- The topsoil, including the existing grass cover is to be shallowly ripped (only the depth of the topsoil) before removal. This is to ensure that organic plant material, and the natural seed base is included in the stripping process. The soil is to be stored and the soil stockpiles shall not be higher than 2 m or stored for a period longer than one year. The slopes of soil stockpiles shall not be steeper than 1 vertical to 2.5 horizontal.
- Topsoil shall be stored separately from subsoil and other overburden material.
- No vehicles shall be allowed access onto the stockpiles after they have been placed.
- Stockpiles shall not be allowed to become contaminated with oil, diesel, petrol,

garbage or any other material, which may inhibit the later growth of vegetation.

- The contractor shall apply soil conservation measures to the stockpiles to prevent erosion.
- Ensure regular maintenance of equipment to prevent diesel and hydraulic spillages.
- Where possible ensure low work surface gradients so that run-off flows at a controlled rate so as to minimize channeling and soil erosion during high rainfall.
- At the end of operations, all disturbed areas shall be re-vegetated

**LOSS OF VEGETATION**

- No protected species must be removed without a permit. A final walkthrough must be done by an ecologist to ensure that the areas where vegetation is to be cleared do not have protected species.
- Clearance of vegetation should be restricted to the absolute minimum required to facilitate access and undertake proposed mining activities. Disturbance of topsoil and vegetation rootstock must be minimized as far as possible.
- Any declared category 1 invasive species identified should be cleared.
- Rehabilitation strategies following operational activities must ensure that appropriate indigenous plant species are used and should be done as per rehabilitation plan.

**DUST AND VEHICLE FUMES**

- Avoid unnecessary excessive vehicle movement.
- Limit vehicle speeds on unsurfaced roads.

- Rehabilitate disturbed areas with vegetation as soon as operation is completed.
- Maintain equipment and vehicles in good working order to avoid excessive emissions.
- Proposed mining working floors should be sprayed with water from time to time to reduce dust emission during operations.
- Use rubber curtains/other material to limit dust during screening should be considered.
- Spray roads, material stockpiles and screening areas with water if dust becomes problematic.
- No fires should be allowed on the proposed mining site.

**WASTE DISPOSAL**

- All personnel must be instructed to dispose of waste in a proper manner in the correct designated areas.
- Suitable receptacles shall be available at all times and conveniently placed for the disposal of waste.
- No waste shall under any circumstance be disposed of in the veld. No burning of waste is permitted on site and the proposed mining area should be protected from illegal dumping of waste.
- All used oils, grease or hydraulic fluids shall be placed in appropriate impervious containers and these receptacles will be removed from the site on a regular basis for disposal at a registered or licensed disposal facility or sent for recycling/reuse with a registered facility.
- Spills should be cleaned up immediately by removing the spillage together with the polluted soil and by disposing of them at a recognised facility. In areas where the

spills are some, an absorbent agent can be used and the area treated.

- Contaminated materials and residues from machinery maintenance and other sources contaminated with hazardous waste should be stored in proper containers that avoid seepage to ground.
- The reduce, reuse, recycle waste management philosophy will be used where possible.
- Only authorized registered waste disposal contractors should be hired for collection of waste for all waste streams.

**SOCIAL IMPACTS**

- Effective two-way public disclosure and public consultation should be implemented to allay community perceptions. There should be an opportunity provided for the resolution of grievances or complaints received and recorded from individuals in the community.
- Community should be adequately informed of activities being done at the proposed mining that are likely to affect them.
- Labour recruitment should occur in a manner that is objective, transparent, and wherever possible, provide opportunities for people from the local area.
- The activities of contractors, consultants, and company employees should be routinely reviewed to ensure good community relations are being maintained. The project proponent should use its influence as employer to encourage responsible behavior among employees.

**STABILITY OF EXCAVATIONS**

- Excavations shall take place only within the approved demarcated proposed

mining area and appropriate barriers should be put as necessary.

- The proposed mining operator shall ensure that a place of work, whether temporary or permanent in or near the excavation has a structure and solidity appropriate to its use is operated, supervised and maintained, so as to withstand the environmental forces anticipated and be safe.
- The proposed mining operator shall ensure that material is not placed, stacked or used at the proposed mining near the edge of any excavation, where it is likely to endanger people at work and equipment or where it is likely to cause collapse of the side of the excavation.
- Excavations should be routinely inspected. If cracks occur in any structure they need to be investigated to ascertain if there is a risk to safety
- Overburden rocks and coarse material shall be placed concurrently in the excavations or stored adjacent to the excavation, if practicable, to be used as backfill material once the mineral or gravel has been excavated.
- An appropriate drainage provisions must be constructed as necessary to accommodate the surface water movement. If the water table is reached during excavations appropriate pumping facilities should be provided.
- Excavated areas should be kept in a safe and stable manner. No unstable block should be present. Reshaping of the proposed mining may need to be done to ensure that this objective is reached. The profiling should be done to match the surrounding landscape
- The proposed mining should be finished in such a manner that it is self-draining
- Top soil should be put back on the surfaces and the areas re-vegetated.

**VISUAL IMPACTS**

- The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be

dumped into the excavation.

- Once excavation parts that can be filled have been refilled with overburden, rocks and coarse natural materials, the borrow pit shall be profiled with acceptable contours and erosion control measures, the topsoil previously stored shall be returned to its original depth over the area. The profiling shall be done to match the surrounding landscape as far as is reasonable possible.
- The area shall be fertilized if necessary 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, there may be need for the soil to be analyzed and any deleterious effects on the soil arising from the borrow pit, be corrected and the area be seeded with an indigenous vegetation seed mix that matches the surrounding flora.

**EQUIPMENT USED ON SITE**

- Only well-maintained vehicles and equipment should be operated onsite and all machinery should be serviced regularly during the proposed mining operation.
- The maintenance of vehicles and some equipment used for any purpose during the proposed mining operation will take place only in the maintenance workshops which are not located on the excavations. No vehicle may be extensively repaired in any place other than in the maintenance yard
- A maintenance schedule should be prepared in order to ensure that equipment is in is best form so as to no cause unnecessary pollution such as noise, emissions and makes effective use of energy.
- Equipment used in the proposed mining process must be adequately maintained so that during operations it does not spill oil, diesel, fuel, or hydraulic fluid.

- Machinery or equipment used on the proposed mining area must not constitute a pollution hazard. No equipment leaking oil should be used. Drip tray should be used to prevent pollution.

**NOISE**

- Construction activities required outside normal working hours must be approved by the Project Manager, and where necessary, advance warning provided to adjacent residents.
- Noise levels exceeding 85dB shall only be permitted where approved and with appropriate advanced warning to adjacent residents (minimum of 2 days) being provided.
- Noise that could cause a major disturbance should only be carried out during daylight hours and with advance warning provided as above.
- Adequate ear protection should be provided to employees in noisy areas.
- No amplified music shall be allowed at the site.
- Construction vehicles and plant to be in good working order.

**f) Motivation where no alternative sites were considered**

No location alternatives are applicable to this project since the stone aggregate, gravel and clay is contained in the proposed mining area. Locating the development to another area will result in the sand not being found and the economy and society not benefitting from future proposed possible mining activities. The proposed site for the proposed mining is located within an area which is already severely disturbed as a result of agricultural activities and previous mining practice compare to the breaking down of a new virgin ground.

**g) Statement motivating the alternative development location within the overall site**

(Provide a statement motivating the final site layout that is proposed.)

The mining of the site is motivated by the need to improve life of the community of Mangaung Metropolitan Municipality, which is currently faced with poverty due to high unemployment rate and through this project poverty will be alleviated. The proposed mining site is preferred as it is situated on the rightful spot for sand mining reflecting to the previous mining which was taking place thereby.

**h) Full description of the process undertaken to identify, assess and rank the impacts and risks of the activity will impose on the preferred site (in respect to the final site layout plan) through the life of the activity including:**

(i) a description of all the environmental issues and risks that were identified during the environmental impact assessment process and

(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

An activity mapping exercise was conducted for the proposed activity, then potential environmental impacts where identified. The DEA impact assessment matrix was used. The impact with medium to high significance requires mitigation/control

measures, the following are the possible impacts the project will have on the environment:

- Dust generated during excavation, loading, transportation and offloading of sand and dust generated by movement of vehicles from mining site to construction site causing air pollution.
- Noise generated by machinery during sand mining and vehicles while transporting sand from mining site to construction site.
- Vegetation destruction due to clearing of the site for mining purposes.
- Ecosystem disturbance due to vegetation clearing.
- Erosion causes by removal of vegetation and stripping of top soil to extract the sand.
- Visual impact due to mining activities, excavations will be enlarged and machinery around the site will disturb the natural visual landscape.
- Exposure of animals to open excavations filled with water resulting in drowning and death.
- Open excavations a danger to animals falling in and breaking limps.
- Improper disposal of waste resulting in land pollution.
- Fuel and oil leakages causing ground and surface water pollution.

**i) Assessment of each identified potentially significant impact and risk**

(This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons) and not only those that were raised by registered and affected parties).

| NAME OF ACTIVITY | POTENTIAL IMPACT | ASPECTS AFFECTED | PHASE In which impact is anticipated | SIGNIFICANCE | MITIGATION TYPE | SIGNIFICANCE |
|---|---|---|---|---|---|---|
| **E.g. For mining –** excavations, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and pitting and trenching, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, **etc.)** | (Including the potential impacts for cumulative impacts)<br><br>(E.g. dusts, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.) | | (e.g. Construction, commissioning, operational, decommissioning, closure, post-closure) | If not mitigated | (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.) | If mitigated |
| Site Establishment activities | Loss of vegetation | Visual | Pre-mining | Medium | Remedy through | Low |

| | | | | | | |
|---|---|---|---|---|---|---|
| (fencing, signage, access formation, etc) | | character, Land use | | | rehabilitation, Limit footprint | |
| | Habitat Destruction | Visual character | Pre-mining | Medium | Remedy through rehabilitation, Limit footprint | Low |
| | Visual scarring | Visual character | Pre-mining | Medium | Remedy through rehabilitation | Low |
| | Soil erosion | Visual character, Land use | Pre-mining | Medium | Remedy through rehabilitation, Limit footprint, Control through storm water control | Low |
| Excavation | Dust emissions | Air quality | Operational Phase | Medium | Control through dust control measures | Low |
| | Drainage disruption | Drainage | Operational Phase | Medium | Control through storm water controls | Low |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Slope instability | Topography | Operational Phase | Low | Control through slope management controls | Low |
| | Noise | Noise | Operational Phase | Low | Control through noise control measures | Low |
| | Visual Scarring | Visual Character | Operational Phase | Medium | Remedy through rehabilitation of already worked areas | Low |
| | Soil erosion | Land use | Operational Phase | Low | Remedy through the rehabilitation of already worked areas, Control through slope control, Stop through appropriate storage of topsoil | Low |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Destruction of heritage resource | Heritage issues | Operational Phase | Low | Avoidance | Low |
| Waste Disposal and Material storage | Soil contamination | Land degradation | Operational Phase | Low | Avoidance | Low |
| | Water pollution | Water | Operational Phase | Low | Avoidance | Low |
| | Increased risk of fire | Safety | Operational Phase | Low | Avoidance | Low |
| Material handling, hauling and transportation | Dust | Air quality | Operational Phase | Low | Control through dust control measures | Low |
| | Increased risk of accidents | Safety | Operational Phase | Low | Stop through site management protocols | Low |
| | Noise | Noise | Operational Phase | Low | Control through noise control measures | Low |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Soil contamination from oil/fuel leaks | Land degradation | Operational Phase | Low | Stop through operational control measures e.g. drip trays and use of well serviced machinery | Low |
| Removal of infrastructure & equipment and re- shaping of proposed mining | Noise | Noise | Decommissioning and closure | Low | Control through noise control measures | Low |
| | Dust | Air quality | Decommissioning and closure | Low | Control through dust Control measures | Low |
| | Soil contamination from oil/fuel | Land degradation | Decommissioning and closure | Low | Stop through operational Control measures, e.g. drip trays and use of well serviced machinery | Low |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Disruption of surface drainage | Water movement | Decommissioning and closure | Low | Control through storm water controls, remedy through rehabilitation | Low |
| Community and labour relations management | Community conflicts and tensions | Community relations | Operational | Low | Control through Site Management protocols | Low |
| | Increase risk of fire | Fire risk | Operational | Low | Control through Site Management protocols | Low |
| | Reduced security on area | Safety Issues | Operational | Low | Control through Site Management protocols | |
| | Improved employment<br>Improved skills | Community relations<br>Community relations | Operational | Low | Control through Site Management protocols | Low |

### j) Summary of specialist reports

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form)

| LIST OF STUDIES UNDERTAKEN | RECOMMENDATIONS OF SPECIALIST REPORTS | SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT<br>(Mark with an X where applicable) | REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED |
|---|---|---|---|
| No specialist reports were part of this BAR. | | | |
| | | | |
| | | | |
| | | | |
| | | | |

* Attach copies of Specialist Reports as appendices.

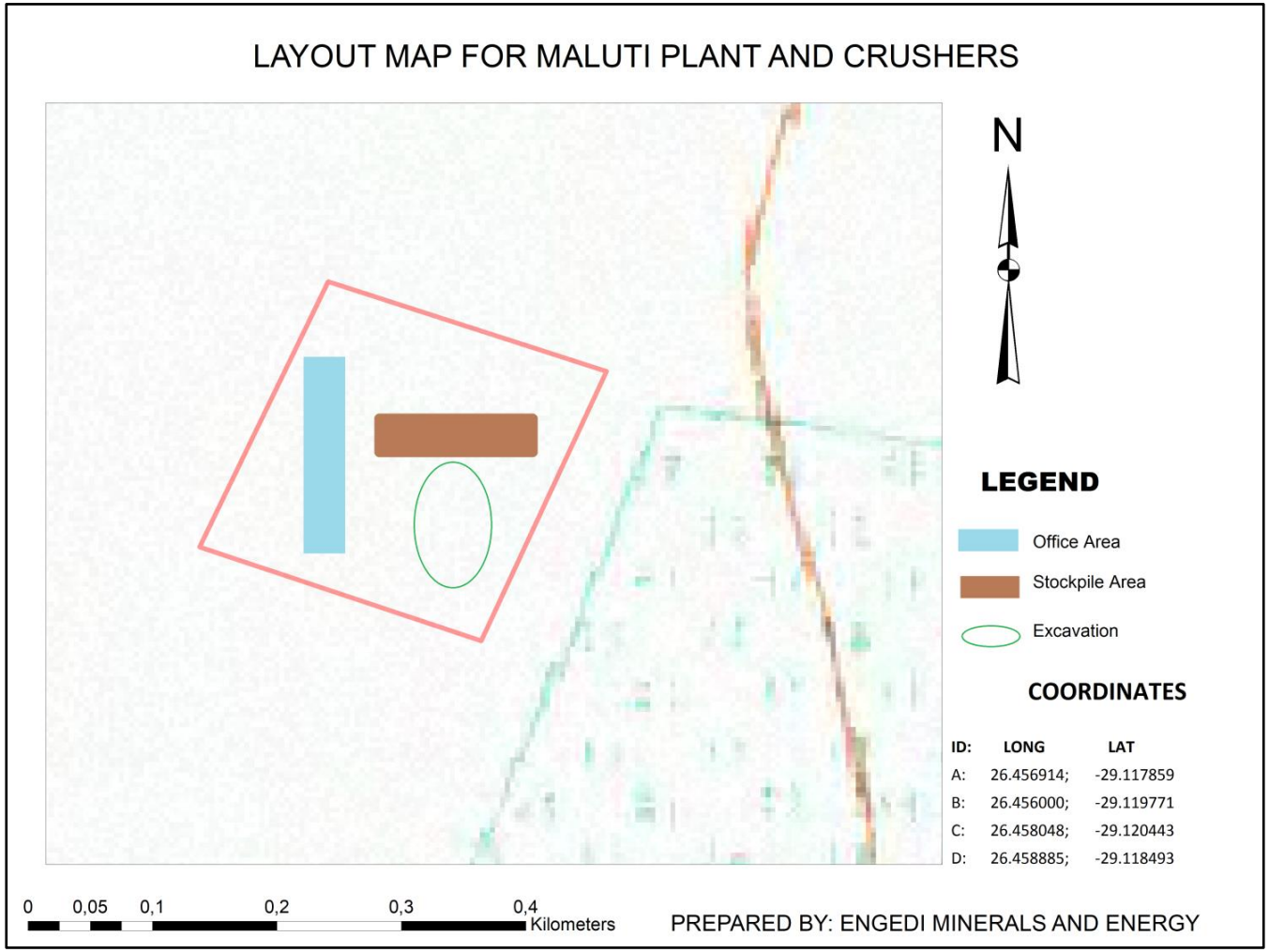
### k) Environmental impact statement

#### i. Summary of the key findings of the environmental impact assessment;

In general, it is recognized that the proposed mining activities has the potential to pose various risks to the environment as well as to the residents or businesses in the surrounding area. Therefore, it is important that these possible risks and key issues are identified during the draft phase of the BAR compilation. These impacts, issues and risks will be addressed in consultation with the I&APs, through an internal process based on similar developments.

## ii. Final Site Map

(Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers) **Attach as Appendix C.**



### iii. Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

No alternatives were considered. The summary of identified positive and negative risks is as follows.

**Negative Impacts:**

- Visual Impacts
- Noise Impacts
- Air Quality Deterioration
- Disruption of surface drainage
- Destruction of flora and loss of habitat
- Loss of soil and agricultural potential
- Water pollution
- Erosion
- Safety and Security Impacts
- Land Degradation

**Positive impacts:**

- Creation of employment opportunities
- Training and skills development opportunities

**l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;**

**Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation**

The objectives of impact management are to avoid and/or minimize negative impacts of a proposed development to ensure minimal impact on the environment.
The mitigation measures are detailed in the EMPr which must be provided to the contractor at tendering stage, implemented and monitored.

It is therefore recommended that an Environmental Control Officer be appointed to monitor and audit the project during mining activities to ensure adherence to the recommendations of the EMPr.

**m) Aspects for inclusion as conditions of Authorization**

Any aspects which must be made conditions of the Environmental Authorization

EMPr must be on site

- The contractor and key personnel must get an understanding of the EMPr.
- An Environmental Control Officer must be appointed to ensure that environmental controls are being implemented, and quarterly reports must be forwarded to the Competent Authority (DMR among others).
- The proponent and contractor must be made aware that they are responsible for rehabilitating the environment they damage to the pre-state of which they found it to be.
- Upon getting done with the mining activity, closure report must be submitted to the competent authority ensuring that all the disturbed environmental features are rehabilitated to the pre mining state.

**n) Description of any assumptions, uncertainties and gaps in knowledge**

(Which relate to the assessment and mitigation measures proposed)

No specialist were engaged hence some impacts could have been missed.

**o) Reasoned opinion as to whether the proposed activity should or should not be authorized**

i. **Reasons why the activity should be authorized or not.**

The project will have an advance community development and to fulfill the Integrated Development Plan and mandate of the Mangaung Metropolitan Municipality to provide services to the community in terms of job creation.

ii. **Conditions that must be included in the authorization**

EMPr must be on site;

- The contractor and key personnel must get an understanding of the EMPr
- An Environmental Control Officer must be appointed to ensure that environmental controls are being implemented, and quarterly reports must be forwarded to the Competent Authority.
- The proponent and contractor must be made aware that they are responsible for rehabilitating the environment they damage to the pre-state of which they found it to be.
- Upon getting done with the mining activity, closure report must be submitted to the competent authority.

**p) Period for which the Environmental Authorisation is required**

The Environmental Authorisation is required for the duration for which a mining permit is being applied for a period of 2 years.

q) **Undertaking**

Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic Assessment Report and the Environmental Management Programme report.

| **Herewith I, the person whose name and identity number is stated below, confirm that I am the person authorised to act as representative of the applicant in terms of the resolution submitted with the application, and confirm that the above report comprises BAR and EMPr compiled in accordance with the guideline on the Departments official website and the directive in terms of sections 29 and 39 (5) in that regard, and the applicant undertakes to execute the Basic Assessment Report and Environmental Management Programme as proposed.** | |
|---|---|
| **Full Names and Surname** | **TSHIMANGADZO MULAUDZI** |
| **Identity Number** | **8803265731082** |

**r) Financial provision**

State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation. The amount will be R 51 204.65

i. **Explain how the aforesaid amount was derived.**

The financial provisions were derived in order to ensure that the amount of money required for rehabilitation and remediation of environmental impacts and associated damage as well as close-out is provided for and adequately calculated. The money would cover decommissioning and final closure of the operation; and post closure management of residual and latent environmental impacts. The amount was based on an assessment of the expected operational activities that will take place, the level of disturbance damage expected, the sensitivity of the

area and the amount of work that is required to bring the site back to a self-sustaining ecosystem again. Consideration on how much it will cost to get labour, material and equipment used for the rehabilitation were also considered.

Calculation of the quantum of the financial provision required to manage and rehabilitate the environment has been worked out.

**CALCULATION OF THE QUANTUM**

| | | | |
|---|---|---|---|
| Applicant: | Maluti Plant and Crushers CC FS 10290 MP | Location: | Bloemfontein |
| Evaluators: | Engedi Minerals and Energy (Pty) Ltd | Date: | Aug-19 |

| No. | Description | Unit | 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 powerlines) | m3 | 0 | 16 | 1 | 1 | 0 |
| 2 (A) | Demolition of steel buildings and structures | m2 | 0 | 228 | 1 | 1 | 0 |
| 2(B) | Demolition of reinforced concrete buildings and structures | m2 | 0 | 336 | 1 | 1 | 0 |
| 3 | Rehabilitation of access roads | m2 | 40.00 | 41 | 1 | 1 | 1640 |
| 4 (A) | Demolition and rehabilitation of electrified railway lines | m | 0 | 395 | 1 | 1 | 0 |
| 4 (A) | Demolition and rehabilitation of non-electrified railway lines | m | 0 | 216 | 1 | 1 | 0 |
| 5 | Demolition of housing and/or administration facilities | m2 | 0 | 455 | 1 | 1 | 0 |
| 6 | Opencast rehabilitation including final voids and ramps | ha | 0.05 | 238697 | 1 | 1 | 11934.85 |
| 7 | Sealing of shafts adits and inclines | m3 | 0 | 122 | 1 | 1 | 0 |
| 8 (A) | Rehabilitation of overburden and spoils | ha | 0 | 159131 | 1 | 1 | 0 |
| 8 (B) | Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential) | ha | 0 | 198195 | 1 | 1 | 0 |
| 8 ( C ) | Rehabilitation of processing waste deposits and evaporation ponds (polluting potential) | ha | 0 | 575653 | 1 | 1 | 0 |
| 9 | Rehabilitation of subsided areas | ha | 0.03 | 133249 | 1 | 1 | 3997.47 |
| 10 | General surface rehabilitation | ha | 0.15 | 126059 | 1 | 1 | 18908.85 |
| 11 | River diversions | ha | 0 | 126059 | 1 | 1 | 0 |
| 12 | Fencing | m | 0 | 144 | 1 | 1 | 0 |
| 13 | Water management | ha | 0 | 47931 | 1 | 1 | 0 |
| 14 | 2 to 3 years of maintenance and aftercare | ha | 0.02 | 16776 | 1 | 1 | 335.52 |
| 15 (A) | Specialist study | Sum | 0 | | | 1 | 0 |
| 15 (B) | Specialist study | Sum | | | | 1 | 0 |
| | | | | | Sub Total 1 | | 36816.69 |
| 1 | Preliminary and General | | 4418.0028 | | weighting factor 2 1 | | 4418.0028 |
| 2 | Contingencies | | 3681.669 | | | | 3681.669 |
| | | | | | Subtotal 2 | | 44916.36 |
| | | | | | VAT (15%) | | 6288.29 |
| | | | | | **Grand Total** | **R** | **51 204.65** |

ii. **Confirm that this amount can be provided for from operating expenditure.** (Confirm that the amount is anticipated to be an operating cost and is provided for as such in the Financial and Technical Competence Report (Ftat) or Mining Work Programme as the case may be).

Financial provision has been made available through the company's cash reserves. The reserves provide for sufficient funds for premature and planned closure of the mining operation. The quantum for financial provision for rehabilitation will be re-assessed on an annual basis and arrangement to fund shortfalls will be made.

**s) Specific information required by the Competent Authority**

i. **Compliance with the provisions of sections 24(4)(a) and (b) read with section 24(3)(a) and (7) of the National Environmental Management Act (Act 107 of 1998). The EIA report must include the:**

1. **Impact on the socio-economic conditions of any directly affected person.** (Provide results of investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond mining on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an **Appendix.**

   Safety of people, even animals if the open excavations are not fenced off and guarded. If water accumulates after rain, there is a risk of drowning and death. The open excavations are also a risk to animals falling in and breaking limps. The high vehicle movement to and from the excavation to the stock piling site is a risk to accidents. Socio-economic impact will be due the job creation and revenue generation for the Mangaung Metropolitan Municipality Local Economic Development.

2. **Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.** (Provide the results of investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond mining on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(*i*)(vi) and (vii) of that Act, attach the investigation report as **Appendix 2.19.2** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6 and 2.12 herein).

   No historical or cultural sites where identified by the previous miners. In case any human remains are excavated during operation, work should be stopped and a report made to the police and SAHRA for removal of the human remains.

**t) Other matters required in terms of sections 24(4) (a) and (b) of the Act**

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as **Appendix B**).

# PART B
# ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

## 1.5 Draft environmental management programme

### a) Details of the EAP

(Confirm that the requirement for the provision of the details and expertise of the EAP are already included in PART A, section 1(a) herein as required).

Mulaudzi has been carrying out Environmental Impact Assessment Procedure since 2012, in 2012, he joined a large mining consulting company in Kimberly called Breeze Court Investments 47 (Pty) Ltd (Geologist and Mining Consulting firm). This is where Mr Mulaudzi acquired in-depth experience and know how in the mining consulting business by assisting the large to small scale mining companies to obtain prospecting right, mining rights, mining permits, technical co-operate permits, reconnaissance permits, exploration rights, production rights, integrated water use license, and environmental authorisation among other licenses.

Mulaudzi has five years working experience in environmental management, geology and public participation process.

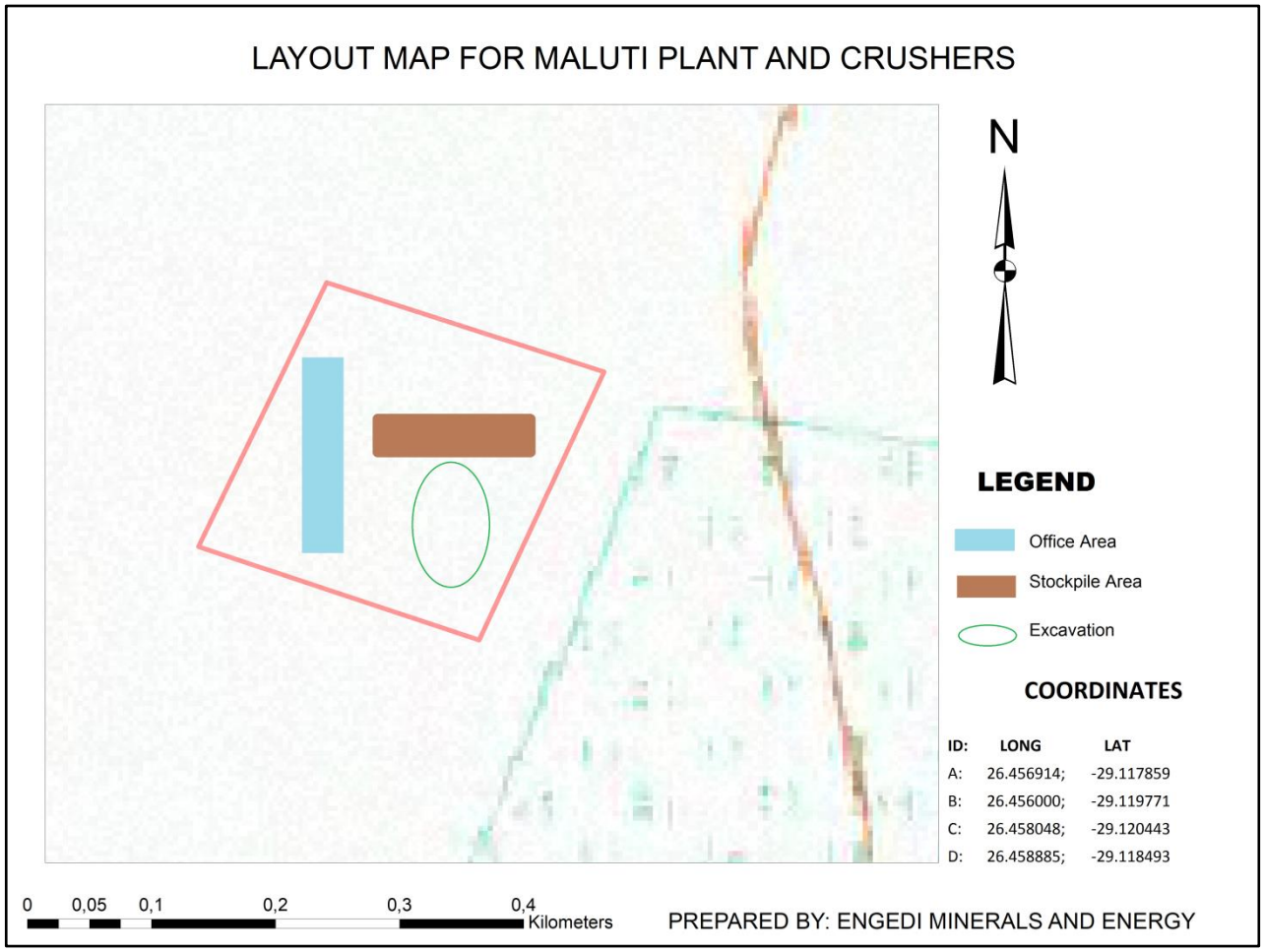
### b) Description of the Aspects of the Activity

(Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required).

I, Tshimangadzo Mulaudzi, hereby confirm that the requirements to describe the aspects of the activity that are covered by the draft environmental management programme are already included in PART A, section 1(h) herein.

## c) Composite Map

(Provide a map **(Attached as an Appendix)** at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers)



**d) Description of Impact management objectives including management statements**

i. **Determination of closure objectives.** (ensure that the closure objectives are informed by the type of environment described)

The following closure objectives will be applicable for rehabilitation:

- Return the disturbed area to an acceptable post mining state
- Ensure that all areas are stable, and there is no risk of erosion
- Prevent alien plant invasion on the site until the site is in a stable state
- Ensure that all areas are free draining and non-polluting

If the commitments in this EMPr are adhered to and rehabilitation is undertaken as described above, it is not anticipated that there will be any long-term management or maintenance required for areas disturbed during mining.

**ii. Volumes and rate of water use required for the application.**

About 20 cubic meter of water per annum will be used.

**iii. Has a water use license been applied for?**

The application will be lodged with the department of water affairs.

**iv. Impacts to be mitigated in their respective phases measures to rehabilitate the environment affected by the undertaking of any listed activity**

| ACTIVITIES | PHASE | SIZE AND SCALE of disturbance | MITIGATION MEASURES | COMPLIANCE WITH STANDARDS | TIME PERIOD FOR IMPLEMENTATION |
|---|---|---|---|---|---|
| **E.g. For mining –** excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and pitting and trenching, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, **etc…etc…etc)** | (Of operation in which activity will take place.<br><br>State; Planning and design, Pre-Construction, Construction, Operational, Rehabilitation, Closure, Post closure) | (volumes, tonnages and hectares or $m^2$) | (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants) | (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities) | Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required.<br><br>With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard Rehabilitation, therefore state either –<br><br>• Upon cessation of the individual activity<br><br>Or<br><br>• Upon cessation of mining as the case may be. |

| | | | | | |
|---|---|---|---|---|---|
| Site Establishment activities (fencing, signage, access formation, etc.) | Start-up | ± 0.01ha | Dust Suppression<br><br>Service equipment to reduce noise<br><br>No loud music. | Issues of compliance with standards will be incorporated into the day to day business activities at the proposed mining. The work methods used the monitoring and measures done and the review processes will be aimed at ensuring that legal<br><br>thresholds as set out in the environmental standards are complied with.<br><br>This will include compliance with standards as per COLTO 1998, the standards as per Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations, National Water Act regulations.<br><br>COLTO 1998 Refers to - Standard Specification for Road and Bridge Works for State Road Authorities by the | During start up, operational phase |

| | | | | | |
|---|---|---|---|---|---|
| | | | | South African Committee of Land Transport Officials. | |
| Excavation of material | Operational | ± 1 ha | Dust control measures<br><br>Worker to wear dust mask<br><br>Service equipment to reduce noise<br><br>No loud music. | Management of legal compliance will be incorporated into normal business activities. This means that particular responsibilities need to be clearly defined for the identification of relevant issues and delivery of compliance. This will help to ensure that adequate resources are available to support these activities. Environmental standards as set out in COLTO 1998, Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations | Operational Phase |

| | | | | | |
|---|---|---|---|---|---|
| Waste Disposal and Material storage | Operational | Undetermined | Dust control net or wetting of top to prevent the dust being blown away.<br><br>Service of vehicles to control noise &exhaust fumes | The waste management hierarchy and the proximity principle will be used in ensuring that the environmental standards as set out in COLTO 1998 and the National Environmental Management Waste Act regulation and National Water Act regulation, are complied with. | Operational Phase |
| Material handling, hauling and transportation | Operational | Undetermined | Dust control net or wetting of top to prevent the dust being blown away.<br><br>Service of vehicles to control noise &exhaust fumes<br><br>Speed control | Issues of compliance with standards will be incorporated into the day to day business activities at the proposed mining to ensure that legal thresholds as set out in the environmental standards are complied with. This will include compliance with standards as per COLTO 1998, the standards as per Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act | Operational phase |

| | | | | | |
|---|---|---|---|---|---|
| | | | | regulations, National Water Act regulations, Mine Health and Safety Act regulations. | |
| Removal of infrastructure & equipment | Decommissioning and closure phases | Affected areas. | Dust control measures<br><br>Worker to wear dust mask<br><br>Service equipment to reduce noise<br><br>No loud music | The recommendations will incorporate factors that include the elimination or the minimization of negative impacts in the work methodologies used during decommissioning so as to comply with the standards as per COLTO 1998, Mining and Petroleum<br><br>Resources Development Act regulations, Mine Health and Safety Act regulations and the National Environmental Management Act. | At decommissioning |

| | | | | | |
|---|---|---|---|---|---|
| Re-shaping of proposed mining | Decommissioning and closure | ± 0.04 ha | Dust control measures<br><br>Worker to wear dust mask<br><br>Service equipment to reduce noise<br><br>No loud music | Considerations with the elimination or at least the minimization of any future impacts from the proposed mining and the long term stability of the facility and any concerns in relation to the long term liability for the proposed mining and its aesthetics will be incorporated in order to ensure compliance with standards as set out in COLTO 1998, Mine Health and Safety Act regulations, National Environmental Management Act and National Water Act regulations. | Closure period |
| Community and labour relations management | Operational | N/A | Mining will comply with the employees standards for mining | Will comply with standards as per COLTO 1998, Basic Conditions of Employment Act regulations, Employment equity Act, Labour Relations Act and Skills Development Act | During Operational Phase |

| | | | | | |
|---|---|---|---|---|---|
| Re-vegetation of disturbed areas | Closure | ± 0.01 ha | Rehabilitation will be done concurrent to mining | The future impacts from the proposed mining and the long term stability of the area, any concerns in relation to the long term liability for the facility and its aesthetics will be taken into account to ensure compliance with the environmental standards as set out in COLTO 1998, the National Environmental Management Act, Conservation of Agricultural resources Act, National Environmental Management Biodiversity Act regulations. | During Operational Phase in sections where mining has been completed and during closure |

### e) Impact Management Outcomes

(A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph;

| ACTIVITY<br><br>(whether listed or not listed)<br><br>(E.g. Excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and pitting and trenching, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc.) | POTENTIAL IMPACT<br><br>(E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.) | ASPECTS AFFECTED | PHASE<br><br>In which impact is anticipated<br><br>(e.g. Construction, commissioning, operational, decommissioning, closure, post-closure) | MITIGATION TYPE<br><br>(modify, remedy, control, or stop) through<br><br>(E.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.) | STANDARD TO BE ACHIEVED<br><br>(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives etc.) |
|---|---|---|---|---|---|
| Site Establishment activities (fencing, signage, | Loss of vegetation | Visual character, land | Start-up | Remedy through rehabilitation<br><br>Limit footprint | Impact managed effectively, Rehabilitate to a self- |

| | | | | | |
|---|---|---|---|---|---|
| access formation, etc.) | | use | | | sustaining environment |
| | Habitat Destruction | Visual character, land use | Start up | Remedy through rehabilitation<br><br>Limit footprint | Impact reduced |
| | Visual scarring | Visual character | Start up and operational | Remedy through rehabilitation | Impact managed effectively |
| | Soil erosion | Visual character, land use | Start up and operational | Remedy through rehabilitation,<br><br>Storm water control. Limit footprint, Control through storm water control | Impact avoided |
| Excavation | Dust emissions | Air quality | Operational Phase | Control with dust control measures | Particulates reduced to acceptable levels |
| | Drainage disruption | Drainage | Operational Phase | Control with Storm water controls | Good surface water run-off established |
| | Slope instability | Topography | Operational Phase | Control with slope management controls | Stable surfaces established |
| | Noise | Noise | Operational Phase | Control with Noise control measures | Noise reduced to acceptable levels |

| | | | | | |
|---|---|---|---|---|---|
| | Visual Scarring | Visual Character | Operational Phase | Rehabilitation | Impact managed effectively, residual impact reduced |
| | Soil Land erosion | Land use | Operational Phase | Rehabilitation, use slope management control | Impact levels avoided |
| | Destruction of heritage | Heritage issues | Operational Phase | Avoidance | Impact Avoided |
| | | | | | |
| Waste Disposal and Material storage | Soil contamination | Land degradation | Operational Phase | Avoidance, Operational control measures | Impact Avoided |
| | Water pollution | Water | Operational Phase | Avoidance, Operational control measures | Impact Avoided |
| | Increased risk of fire | Safety | Operational Phase | Avoidance, Operational control measures | Impact avoided or managed to low levels |
| Material handling, hauling and transportation | Dust | Air quality | Operational Phase | Dust Control measures | Particulates reduced to acceptable levels |
| | Increased risk of | Safety | Operational | Site management protocols | Accidents avoided or |

| | | | | | |
|---|---|---|---|---|---|
| | accidents | | Phase | | reduced to low levels |
| | Noise | Noise | Operational Phase | Noise control measures | Noise reduced to acceptable levels |
| | Soil contamination from oil/fuel leaks | Land degradation | Operational Phase | Operational control measures | Impact managed to suitable soil fertility levels |
| Removal of infrastructure & equipment and re- shaping of proposed mining | Noise | Noise | Decommissioning and closure | Control with noise control measures | Noise levels reduced to acceptable levels |
| | Dust | Air quality | Decommissioning and closure | Control with dust control measures | Particulates reduced to acceptable levels |
| | Soil contamination from oil/fuel | Land degradation, water pollution | Decommissioning and closure | Control with operational control measures | Impact managed to suitable soil fertility levels, pollution of water avoided |
| | Disruption of surface drainage | Water movement | Decommissioning and closure | Control with storm water controls | Free drainage achieved |
| Community and labour relations management | Community conflicts and tensions | Community relations | Operational | Control using site management protocols | Reduction in complaints and incidences of conflict |

| | | | | | |
|---|---|---|---|---|---|
| | Increased risk of fire | Fire risk | Operational | Control using site management protocols | Fires avoided and risk reduced |
| | Reduced security on area | Safety Issues | Operational | Control using site management protocols | Improvement in security and elimination of theft incidences |
| | Improved employment | Community relations | Operational | Control using site management protocols | Increase in number of people employed |
| | Improved skills | Community relations | Operational | Control using site management protocols | Improvement in skills level |

## f) Impact Management Actions

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (c) and (d) will be achieved).

| **ACTIVITY** (whether listed or not listed) | **POTENTIAL IMPACT** | **MITIGATION TYPE** | **TIME PERIOD FOR IMPLEMENTATION** | **COMPLIANCE WITH STANDARDS** |
|---|---|---|---|---|
| (E.g. Excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and pitting and trenching, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc.) | (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.) | (modify, remedy, control, or stop) through<br><br>(E.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.) | Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required.<br><br>With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard Rehabilitation, therefore state either –<br><br>• Upon cessation of the individual activity | (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities). |

| | | | | |
|---|---|---|---|---|
| | | | Or<br><br>Upon cessation of mining, as the case may be. | |
| Site Establishment activities (fencing, signage, access formation, etc.) | Loss of vegetation | Remedy through rehabilitation | Start-up | Issues of compliance with standards will be incorporated into the day to day business activities at the proposed mining. The work methods used the monitoring and measures done and the review processes will be aimed at ensuring that legal thresholds as set out in the environmental standards are complied with. This will include compliance with standards as per COLTO 1998, the standards as per Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations, National Water Act |
| | Habitat Destruction | Limit footprint | Start-up | |
| | Visual scarring | Remedy through rehabilitation | Start up and operational | |

| | | | | |
|---|---|---|---|---|
| | Soil erosion | Limit footprint | Start up and operational | |
| Excavation | Visual scarring | Remedy through rehabilitation | Operational Phase | The work methods used, the monitoring and measurements done and the review processes will be aimed at ensuring that legal thresholds as set out in the environmental standards are complied with. This will include compliance with standards as per COLTO 1998, the standards as per Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations, and Conservation of Agricultural Resources Act. |
| | Destruction of flora and habitat | Remedy through rehabilitation | Operational Phase | |
| | Loss of agricultural potential | Soil conservation techniques, Limit footprint of the proposed mining | Operational Phase | |
| | Soil erosion | Remedy through rehabilitation,<br><br>Storm water control | Operational Phase | |
| | Dust emissions | Control with dust control measures | Operational Phase | |
| Waste Disposal and<br><br>Material storage | Dust | Control with dust control<br><br>measures | Operational Phase | This will be achieved by clearly outlining the environmental standards to be achieved and the thresholds which are not to be exceeded in the management system used at the site. This |

| | | | | |
|---|---|---|---|---|
| | | Control with blast control measures | | will include compliance with standards as per COLTO 1998, Explosive Act regulations, Mine Health and Safety Act Regulations and the Hazardous Substances Act |
| | Soil contamination | Avoidance, Operational control measures | Operational Phase | |
| Material handling, hauling and transportation | Water pollution | Avoidance, Operational control measures | Operational Phase | The waste management hierarchy and the proximity principle will be used in ensuring that the environmental standards as set out in COLTO 1998 and the National Environmental Management Waste Act regulation and National Water Act regulation, are complied with. |
| | Increased risk of fire | Avoidance, Operational control measures | Operational Phase | |
| | Dust | Control with dust Control measures | Operational Phase | |
| Removal of infrastructure & equipment and re-shaping of proposed mining | Increased risk of accidents | Site management protocols | Operational Phase | Issues of compliance with standards will be incorporated into the day to day business activities at the proposed mining to ensure that legal thresholds as set out in the |
| | Noise | Control with noise | Operational Phase | |

| | | | | |
|---|---|---|---|---|
| | | control measures | | environmental standards are complied with. |
| | Soil contamination from oil/fuel leaks | Control with operational control measures | Operational Phase | This will include compliance with standards as per COLTO 1998, the standards as per Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations, National Water Act regulations, Mine Health and Safety Act regulations |
| | Noise | Control with noise control measures | Decommissioning and closure | |
| Community and labour relations management | Dust | Control with dust control measures | Decommissioning and closure | The recommendations will incorporate factors that include the elimination or the minimization of negative impacts in the work methodologies used during decommissioning so as to comply with the standards as per COLTO 1998, Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations and the National Environmental Management Act. |
| | Soil contamination from oil/fuel | Control with operational control measures | Decommissioning and closure | |
| | Disruption of surface drainage | Control with storm water controls | Decommissioning and closure | |
| | Community conflicts and tensions | Control using site management protocols | Operational | |

**b. Financial Provision**

**1. Determination of the amount of Financial Provision.**

**a. Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation**

The DPR acknowledges that a proposed mining is a temporary land use which results in areas of land being temporarily disturbed. Whilst steps are taken throughout the project life cycle to reduce negative environmental impacts as they occur, the specific closure objectives are as follows:

- To create a post mining environment that eliminates unacceptable health hazards and ensures public safety.
- To leave the site in a stable, non-polluting and tidy condition with no remaining plant or infrastructure that is not required for post mining operational use.
- To minimize or eliminate the downstream environmental impacts on the ecosystem due to interruption of drainage once the proposed mining operations cease.
- To establish a stable post-mining land surface which has been rehabilitated that also supports vegetation growth, is erosion resistant and has long term sustainability.
- To reduce the need for long-term monitoring and maintenance by establishing.

**Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties.**

Yes it is confirmed.

**b. Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure.**

*Rehabilitation plan*

The exact location and extent of the mining activities, including the need for construction of new access tracks, will be determined once all available information has been evaluated. It is therefore not possible to include a rehabilitation plan showing the areas and aerial extent of the main mining activities, including the anticipated mining area at the time of closure. The extent of the proposed mining area is however shown in.

The following environmental controls will be implemented during mining to aid or reduce rehabilitation:

- The environment will be returned to its original state, as far as possible. No physical infrastructure will be left on the site.
- Vegetation cleared from each excavations development will be stored within / adjacent to the excavations site for final rehabilitation.
- Topsoil will be stripped within the excavations site, to a depth of 300mm, and placed separately within the excavations site. All topsoil removed will be appropriately protected from erosion for use during rehabilitation.
- Where vegetation has been removed, they shall be re-established systematically where they used to be.
- The area will be level and even, in a natural state containing no foreign debris or other materials and to ensure ecological, hydrological and topographical integrity.
- Mining activities will be restricted to the designated mining sites and agreed upon access tracks. No further disturbances will be permitted.
- Following rehabilitation the site will blend suitably with the surrounding environment.

*Rehabilitation of excavations*

- Progressive rehabilitation will be undertaken during mining (Concurrent rehabilitation). Each excavations and associated disturbed areas will be rehabilitated when excavations is completed at each excavations site.
- Once the excavations has been refilled with rocks and coarse natural materials and profiled with acceptable contours and erosion control measures, the topsoil will be replaced across the disturbed area and shaped to allow a free draining surface. No ponding on the disturbed area will be allowed.
- Cleared vegetation will be used as brush-cut packing on the disturbed areas after rehabilitation to prevent erosion while natural vegetation re-establishes. NO alien plant material will be used for this purpose.
- In cases where native vegetation has been removed or damaged and where re-vegetation is required, species endemic to the area will be re-established.
- An inspection will be held after rehabilitation to determine alien and invasive species growth and the necessary corrective action will be implemented.

*Closure objectives and their extent of alignment to the pre-mining environment*

The following closure objectives will be applicable for rehabilitation:

- Disturbed land will be rehabilitated to a stable and permanent form suitable for subsequent land use.
- There will be no adverse environmental effect outside the disturbed area and the affected area will be shaped to ensure effective drainage and prevent ponding on site.
- The disturbed area will not require any more maintenance than that in or on surrounding land after mining is completed.

If the commitments in this BAR are adhered to and rehabilitation is undertaken as described above, it is not anticipated that there will be any long-term management or maintenance required for areas disturbed during mining

**c. Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.**

The following closure objectives will be applicable for rehabilitation:

- Return the disturbed area to an acceptable post mining state.
- Ensure that all areas are stable and there is no risk of erosion,
- Prevent alien plant invasion on the site until the site is in a stable state, and
- Ensure that all areas are free draining and non-polluting.

The mining operations area is within the agricultural grazing land. The continuous rehabilitation program will attempt to restore the area to an acceptable standard as close to the baseline environmental state as possible to ensure safe use of the area for grazing purpose.

If the commitments in this EMPr are adhered to and rehabilitation is undertaken as described above, it is not anticipated that there will be any long-term management or maintenance required for areas disturbed during mining. Thus the rehabilitation plan is compatible with the closure objectives.

**d. Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with applicable guideline.**

**CALCULATION OF THE QUANTUM**

| | | | |
|---|---|---|---|
| Applicant: | Maluti Plant and Crushers CC FS 10290 MP | Location: | Bloemfontein |
| Evaluators: | Engedi Minerals and Energy (Pty) Ltd | Date: | Aug-19 |

| No. | Description | Unit | 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 powerlines) | m3 | 0 | 16 | 1 | 1 | 0 |
| 2 (A) | Demolition of steel buildings and structures | m2 | 0 | 228 | 1 | 1 | 0 |
| 2(B) | Demolition of reinforced concrete buildings and structures | m2 | 0 | 336 | 1 | 1 | 0 |
| 3 | Rehabilitation of access roads | m2 | 40.00 | 41 | 1 | 1 | 1640 |
| 4 (A) | Demolition and rehabilitation of electrified railway lines | m | 0 | 395 | 1 | 1 | 0 |
| 4 (A) | Demolition and rehabilitation of non-electrified railway lines | m | 0 | 216 | 1 | 1 | 0 |
| 5 | Demolition of housing and/or administration facilities | m2 | 0 | 455 | 1 | 1 | 0 |
| 6 | Opencast rehabilitation including final voids and ramps | ha | 0.05 | 238697 | 1 | 1 | 11934.85 |
| 7 | Sealing of shafts adits and inclines | m3 | 0 | 122 | 1 | 1 | 0 |
| 8 (A) | Rehabilitation of overburden and spoils | ha | 0 | 159131 | 1 | 1 | 0 |
| 8 (B) | Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential) | ha | 0 | 198195 | 1 | 1 | 0 |
| 8 ( C ) | Rehabilitation of processing waste deposits and evaporation ponds (polluting potential) | ha | 0 | 575653 | 1 | 1 | 0 |
| 9 | Rehabilitation of subsided areas | ha | 0.03 | 133249 | 1 | 1 | 3997.47 |
| 10 | General surface rehabilitation | ha | 0.15 | 126059 | 1 | 1 | 18908.85 |
| 11 | River diversions | ha | 0 | 126059 | 1 | 1 | 0 |
| 12 | Fencing | m | 0 | 144 | 1 | 1 | 0 |
| 13 | Water management | ha | 0 | 47931 | 1 | 1 | 0 |
| 14 | 2 to 3 years of maintenance and aftercare | ha | 0.02 | 16776 | 1 | 1 | 335.52 |
| 15 (A) | Specialist study | Sum | 0 | | | 1 | 0 |
| 15 (B) | Specialist study | Sum | | | | 1 | 0 |
| | | | | | Sub Total 1 | | 36816.69 |

| | | | | |
|---|---|---|---|---|
| 1 | Preliminary and General | 4418.0028 | weighting factor 2 1 | 4418.0028 |
| 2 | Contingencies | 3681.669 | | 3681.669 |
| | | | Subtotal 2 | 44916.36 |
| | | | VAT (15%) | 6288.29 |
| | | | Grand Total | R 51 204.65 |

**e. Confirm that the financial provision will be provided as determined.**

Yes it is confirmed.

**Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including**

g) **Monitoring of Impact Management Actions**
h) **Monitoring and reporting frequency**
i) **Responsible persons**
j) **Time period for implementing impact management actions**
k) **Mechanism for monitoring compliance**

| SOURCE ACTIVITY | IMPACTS REQUIRING MONITORING PROGRAMMES | FUNCTIONAL REQUIREMENTS FOR MONITORING | ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES) | MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS |
|---|---|---|---|---|
| Site Establishment activities (fencing, signage, access formation, etc.) | Loss of vegetation, Habitat destruction, Visual scarring, Soil erosion | Visual checks, monitoring incidences of non-compliance, recording of key parameters | Appointed Contractor | At start and as and when required. Record incidences of non-compliance monthly. |
| Excavation | Dust emissions, Drainage disruption, Slope instability, Visual Scarring, | visual checks, monitoring incidences of non-compliance, recording of | Appointed Contractor | At start and as and when required. Record incidences of non-compliance monthly. |

| | | | | |
|---|---|---|---|---|
| | Soil erosion, Destruction of heritage resource | key parameters | | |
| Waste Disposal and Material storage | Soil contamination, Water pollution, Increased risk of fire | Visual checks, monitoring incidences of non-compliance, recording of key parameters | Appointed Contractor | At start and as and when required. Record incidences of non-compliance monthly. |
| Material handling, hauling and transportation | Dust, Increased risk of accidents, Noise, Soil contamination | Visual checks, monitoring incidences of non-compliance, recording of key parameters | Appointed Contractor | At start and as and when required. Record incidences of non-compliance monthly. |
| Removal of infrastructure & equipment and re-shaping of proposed mining | Noise, Dust, Soil contamination, Disruption of surface drainage | Visual checks, monitoring incidences of non-compliance, recording of key parameters | Appointed Contractor | At start and as and when required. Record incidences of non-compliance monthly. |
| Community and labour relations management | Community conflicts and tensions, Increase risk of fire, Reduced security on area, Improved employment rates, Improved skills | Visual checks, monitoring incidences of non-compliance, recording of key parameters | Appointed Contractor | At start and as and when required. Record incidences of non-compliance monthly. |

**l) Indicate the frequency of the submission of the performance assessment/environmental audit report**

The BAR and EMPr will be audited by an independent party on an annual basis to determine the level of compliance. The results of this audit will be used to improve environmental management procedures, where required. The audit report will also be submitted to the Department of Mineral Resources (DMR) upon completion.

**m) Environmental Awareness Plan**

**1. Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.**

Induction (including environmental awareness) training will be conducted on all people involved in the mining programme, including truck drivers, mine managers crew and relevant technical services, prior to the commencement of any work; according to the relevant legislation, **Engedi Minerals & Energy (Pty) Ltd** Standard Operational Procedures (SOPs) and this EMP. **Engedi Minerals & Energy (Pty) Ltd** will do in-house training, should it be necessary to its personnel on site. The mining contractor will be responsible for training its mining crew and supervisor.

**2. Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.**

**2.1 Description of solutions to risks**

*(Describe the manner in which the risk must be dealt with in order to avoid pollution or degradation of the environment)*

It is essential that people involved in the mining programme know how to respond in the event of an environmental emergency situation in order to avoid significant environmental degradation or injury to human health. Ideally such incidents should not occur. If people involved in the mining programme implement all management measures outlined in this EMPr, the likelihood of such incidents occurring is greatly reduced. However, despite the best intentions and the best environmental management practices, it is impossible to ensure that no incidents will ever occur during mining

activities. Therefore, it is vital to ensure that all personnel are aware of the management measures to be undertaken in the event of an accident.

Two emergency incidents have been identified:

- Hydrocarbon spills.
- The outbreak of fire.

Emergency incident procedures are outlined below. An Environmental Officer will be appointed to the project to manage all environmental related aspects of the mining programme.

**Emergency planning**

- The site and all people involved in the mining programme are to be managed in strict accordance with the Occupational Health and Safety Act (Act No. 85 of 1993).
- Potentially hazardous areas are to be cordoned off and clearly marked at all times.
- No unauthorized firearms are permitted on site.
- Adequate emergency facilities (e.g. first aid kit) must be provided for the treatment of an emergency on site.
- Emergency contact numbers are to be displayed conspicuously.
- Necessary Personal Protective Equipment (PPE) and safety gear appropriate to the task being undertaken is to be provided to all personnel working on site (e.g. hard hats, safety boots, ear plugs, masks, etc.).
- All vehicles and equipment used on site must be operated by appropriately trained and/or licensed individuals in compliance with all safety measures.

**Management of fire risks**

- Each mining site will be cleared of vegetation.
- “No Smoking” signs must be prominently displayed.
- Fires will only be allowed within a facility especially constructed for the purpose of keeping warm and for cooking.

- No burning of refuse or vegetation is permitted.
- Fire equipment must be easily accessible.
- Fire equipment must be serviced, full and in good working order.

**Management of spills**

- Ensure that a proper spill-kit is available on site. The kit must include absorptive material that can handle all forms of hydrocarbon.
- Ensure that any hydrocarbon spills are cleaned up as soon as possible.
- At least one person on site must receive formal training in the use of the spill control kit.
- Equipment is to be required immediately upon developing leaks.
- A drip tray, a thin concrete slab or a PVC lining shall be used to prevent soil and water contamination.
- All spills on site must be reported to the Control Environmental Officer (CEO).
- Spread absorbent sand on areas where oil spills have occurred. Oil-contaminated soils are to be removed to a contained storage area and disposed of appropriately.
- Non-degradable waste must be collected and disposed of at a registered waste site.

**Incident reporting**

- The supervisor on site must take corrective action to mitigate an incident appropriate to the nature and scale of the incident, immediately after the occurrence of the incident.
- Residual environmental damage that remains after having taken corrective action must be rehabilitated.
- Change operating procedures where necessary to prevent recurrence of similar incident.
- All incidents must be recorded in an Environmental Incident Report, within 24 hours of the incident occurring. Additional documents, including photos must be appended to the incident report to provide a comprehensive record of the incident and the corrective and preventative action taken.

- All incidents will be investigated in collaboration with the Environmental Officer. The focus of these investigations shall not be to apportion blame to specific employees, but to ascertain the root cause of the incident and to prevent a recurrence of similar incidents.

### 2.2 Environmental awareness training

*(Describe the general environmental awareness training and training on dealing with emergency situations and remediation measures for such emergencies).*

A number of key elements must be addressed during an environmental awareness training session, since it is recognised that the majority of employees are generally not informed about the environment. The following key elements must be addressed:

- An explanation of the basic key concepts;
- The importance of the environment, including the management thereof;
- Examples of environmental degradation;
- The role that the employees have in protecting the environment;
- Examples of pollution;
- Simple, easy-to-follow rules to protect the environment; and
- South African laws which protect the environment.

All people involved in the mining programme must receive environmental awareness training, to ensure that they are aware of their responsibilities and are competent to carry out their work in an environmentally acceptable manner. The training must also contain all relevant sections of the EMPr and must be presented in a clear, understandable manner. Relevant sections of the EMPr include:

- Access, including use of roads, tracks, gates, etc.;
- Control measures required to manage excluded and exempted areas;
- The handling, storage and disposal of waste;
- Emergency response procedures;
- Control of alien and invasive plant species;

- Fire prevention;
- Sediment and erosion control;
- Control measures to be implemented with regards to the management of water, noise and dust; and
- Rehabilitation of excavations sites and access tracks.

This training may take the form of a PowerPoint presentation, information posters or pamphlets, and other easily accessible methods of information communication.

**n) Specific information required by the Competent Authority**

**(Among others, confirm that the financial provision will be reviewed annually).**

The BAR and EMPr will be audited by an independent party on an annual basis to determine the level of compliance. The results of this audit will be used to improve environmental management procedures, where required. The audit report will also be submitted to the Department of Mineral Resources (DMR) upon completion.

MALUTI PLANT AND CRUSHERS CC will undertake rehabilitation to minimize negative impacts on the environment.

## THE CV AND DECLARATION OF OATH OF THE EAP

### CURRICULUM VITAE

### OF

Tshimangadzo Mulaudzi

P.O Box 29567

Danhof

93120

Contacts: 0793626046 / 072 901 0990

E-mail: mulaudzit@engedime.com

| | |
|---|---|
| Date of Birth: 26 March 1988 | Nationality : South African |
| Languages : Speak and write (English and Tshivenda). | ID : 8803265731082<br>Gender : Male |
| Driver's license: Code 10 (C1) | Health status : Excellent |

**EDUCACTIONAL QUALIFICATION**

| | | |
|---|---|---|
| Institution | : | Litshovhu High School |
| Qualification | : | Grade 12 (Senior Certificate) |
| Major subject passed | : | Mathematics, Physical Science, Biology, Agric., English and Tshivenda all in Higher Grade. |
| Year | : | 2006 |
| Institution | : | University of Venda |
| Qualification | : | BSc (Honours). Mining and Environmental Geology |
| Subject passed | : | See attached Academic Record |
| Year | : | 2011 |

**SUMMARY**

I am a Candidate in a possession of a BSc (Hons) in Mining and Geology with vast variety of experience in Geological, Geochemical, Geophysical Exploration, and Managing of a Manufacturing team. Currently I am working as a Consultant Geologist at Breeze Court Investments 47 (Pty) Ltd and I have gained experience in Map Production (Using ArcGIS), Identification of Minerals, and Applications for (Prospecting Right, Mining Right, and Mining Permit on DMR Samradonline portal), Petroleum applications ( Compilation of EMP, EIA, Progress report, Environmental Performance Assessment, Closure application, and Mineral Laws Administration (knowledge of MPRDA, 2002, NWA, 1998, NEMA, 1998, NHRA, 1999, MHSA, 1996, Mining Charter, 2010 and Freedom Charter, 1955.).

I have also worked with the small scale miners in the region of Northern Cape, Free State and North West helping them with the application for Mining permit, prospecting right and also attend the site inspection with the officials from Department Mineral Resources to help the small scale miners to comply with the legislation of the department.

I served at the Makhado Municipality for two (2) years under Local Economic Development as an Intern (**In Mining, Environmental and Geology Sectors)** and was attending seminars on Local Economic Development issues, interacting with the stake holders and helping the Small Micro Medium Enterprises (SMME's) to get funds from the sponsors.

**EMPLOYMEMT HISTORY**

| | | |
|---|---|---|
| Job title | : | Trainee Mine Geologist |
| Name of organization | : | Agnes gold mine |
| Period | : | June 2010 – June 2011 (1 year) |
| Experiences and skills | : | Face mapping, stope observing, continuous sampling, Geological data capturing, Report writing and Geological mapping. |
| Job title | : | Chief production, quality, and safety officer |
| Name of Organization | : | Tshedza concrete art |
| Period | : | January 2012 – January 2013 (1 year, 1 month) |

| | | |
|---|---|---|
| Experiences and skills working | : | Managing high quality production and enforcing safe Environment for workers |
| Job title | : | LED Intern (in Mining, Environmental and Geology) |
| Name of Organization | : | Makhado Local Municipality (Limpopo) |
| Period | : | February 2013 – December 2014 (11 Months) |
| Experiences and skills | : | To formulate and implement measures and procedures to Facilitate for the development of SMME's. Implement Measures, processes, and procedures to attract the Investors, Facilitate and implement job creation projects and initiatives. Formulate, review and update LED plans in alignment with the Province and District Municipality. Facilitate and create Partnership with regard to service provider, trade exhibitions, Corporate and SMME's. |
| Job title | : | Consultant Environmental Geologist and GIS specialist |
| Name of organization | : | Breeze court investment (Pty) Ltd Geol & Min Consultants |
| Period | : | January 2014 – January 2015 |
| Experiences and skills | : | Map Production (Using ArcGis), Identification of Minerals, and Applications for (Prospecting Right, Mining Right, and Mining Permit on DMR Samradonline portal), Technical Cooperation Permit, Reconnaissance Permit, Exploration Right, Production right (Petroleum applications) Compilation of EMP, EIA, Environmental Authorisation, Progress report, Environmental Performance Assessment, Closure application, and Mineral Laws Administration (Broad knowledge of MPRDA, 2002), Assisting small scale miners in the region of Northern Cape, North West, and Free State with application for Mining permit and Prospecting right, help them with compliance in terms of the MPRDA, 2002. Also do the site inspection with the officials from Department of Mineral Resources, and help the miners and management to comply with the statutory while operating and always work in a safe working |

conditions and enforce also that the act of one employee must be safer towards another employee to achieve zero harm.

Job title : Consultant Environmental Geologist and GIS specialist

Name of organization : Engedi Minerals and Energy (Pty) Ltd

Period : February 2015 – Present

Experiences and skills : Map Production (Using ArcGIS), Identification of Minerals, and Applications for (Prospecting Right, Mining Right, and Mining Permit on DMR Samradonline portal), Technical Cooperation Permit, Reconnaissance Permit, Exploration Right, Production right (Petroleum applications) Compilation of EMP, EIA, Environmental Authorisation, Progress report, Environmental Performance Assessment, Closure application, and Mineral Laws Administration (Broad knowledge of MPRDA, 2002), Assisting small scale miners in the region of Northern Cape, North West, and Free State with application for Mining permit and Prospecting right, help them with compliance in terms of the MPRDA, 2002. Also do the site inspection with the officials from Department of Mineral Resources, and help the miners and management to comply with the statutory while operating and always work in a safe working conditions and enforce also that the act of one employee must be safer towards another employee to achieve zero harm.

**Knowledge of Legislations and Acts**

Constitution of the Republic of South Africa No.108 of 1996

Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

Mineral and Petroleum Resources Development Act Amendments bill 15 of 2013

Mineral and Petroleum Resources Development Act Regulations

National Water Act, 1998 (Act 36 of 1998)

Mine Health and Safety Act, 1996 (Act 29 of 1996)

National Heritage Resources Act, 1999 (Act 25 of 1999)

National and Environmental Management Act, 1998 (Act 107 of 1998)

Public Finance Management Act, 1999 (Act 1 of 1999) and Act 29 of 1999 as Amended

2014 Environmental Impact Assessment Regulations

Mining Charter, 2010

Freedom Charter, 1955

Municipal System Act, 2000 (Act 32 of 2000)

Municipal Structure Act, 1998 (Act 117 of 1998) and as amended in Act 20 of 2002.

## COMPETENCIES

Ability to relate with people,

Ability to work independently and as a team,
Determination to succeed,

Strong leadership skills,

Proactive, resourceful, well organized and able to meet deadlines, and

Ability to communicate effectively

## EXTRAMURAL ACTIVITIES AND INTERESTS

I love reading newspapers, business literatures, watching discovery channels, News, writing and Public speaking, these help me share my ideas and opinion and to get my message across, and I love learning new things every day and I am eager to learn

## REFERENCES

| | | |
|---|---|---|
| Name | : | Mr. P. Makoela |
| Name of organization | : | Agnes gold mine (Pty) Ltd |
| Position | : | Head of department of geology section |
| Contacts | : | 087 351 8304 (W), 076 311 7791 (C) |
| | | |
| Name | : | Mr. R.P. Mamphaga |
| Name of organization | : | Tshedza concrete art (Pty) Ltd |
| Position | : | Managing director |

| | | |
|---|---|---|
| Contacts | : | 011 024 1167 (W), 082 857 3204 (C) |
| | | |
| Name | : | Mr. P. Netshivhuyu |
| Name of organization | : | Makhado Local Municipality |
| Position | : | Supervisor |
| Contacts | : | 072 718 3220(C) |
| | | |
| Name | : | Mr. A.J. Davids |
| Name of organization | : | Breeze Court Investments (Pty) Ltd |
| Position | : | Consultant Environmental Geologist |
| Contacts | : | 082 707 3239 (C) |

15 Barnes Street, Westdene,
Langebaan Building
Bloemfontein, South Africa
9301

P.O.Box 29567
Danhof
9310

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Reg. No. 2015/153624/07

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mulaudzit@engedime.com
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04th of February 2019

**UNDERTAKING AND DECLARATION UNDER OATH AS ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)**

As refer to the subject of the matter above;

I am hereby to confirm that all the information contained in this report is true and correct And hereby declared that I, **Mr Tshimangadzo Mulaudzi,** of Identity number: **8803265731082,** I am an Environmental Geologist Consultants at Engedi Minerals and Energy (Pty) Ltd (Reg. No, 2015/153624/07), I am an Environmental Assessment Practitioner (EAP) registered with the SACNASP as Professional Natural Scientist (Pr.Nat.Sci -114578) and I am capable to compile Environmental reports in support of permits and rights application with Department of Mineral Resource (DMR) and Environmental authorisation with the Department of Environmental Affairs (DEA) and any relevant department including Department of Water and Sanitation amongst others.

This was done and signed at Bloemfontein on the 1st of February 2019

Yours sincerely

Mr T. Mulaudzi (Pr. Nat. Sci)
Engedi Minerals and Energy (Pty) Ltd (Consultant)

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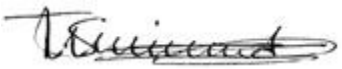
**UNDERTAKING**

The EAP herewith confirms

| | |
|---|---|
| The correctness of the information provided in the reports | **X** |
| The inclusion of comments and inputs from stakeholders and I&APs; | **X** |
| The inclusion of inputs and recommendations from specialist reports where relevant; and | |
| That the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein. | **X** |



**Signature of the environmental assessment practitioner:**

Engedi Minerals and Energy (Pty) Ltd

**Name of company:**

29 AUGUST 2019

**Date:**

**-END-**