ENVIRONMENTAL IMPACT ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR THE APPLICATION OF A MINING RIGHT SITUATED ON PORTION 2 OF THE FARM BOESMANSKOP 115 AND A PORTION OF THE REMAINDER OF THE FARM WATERLAAGTE 1210 IN THE MAGISTERIAL DISTRICT OF BLOEMFONTEIN

FOR

MALUTI PLANT AND CRUSHERS CC

DMR REF. NO. FS 10072 MR

Compiled by: Engedi Minerals and Energy

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mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

ENVIRONMENTAL IMPACTASSESSMENT REPORT AND
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT 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
TEL NO: 072 641 4448
FAX NO: 086 556 2568
POSTAL ADDRESS: P O Box 4212, Bloemfontein, 9300
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FILE REFERENCE NUMBER SAMRAD: FS 30/5/1/2/2/ 10072 MR

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1. IMPORTANTNOTICE

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

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms 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 authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the 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 Authorisation 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.

2. OBJECTIVE OF THE ENVIRONMENTAL IMPACT ASSESSMENTPROCESS

The objective of the environmental impact assessment process is to, through a consultative process—

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

(b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;

(c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;

(d) determine the—-

  (i) Nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and

  (ii) Degree to which these impacts— (aa) can be reversed; (bb) may cause irreplaceable loss of resources, and (cc) can be avoided, managed or mitigated;

(e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;

(f) identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;

(g) identify suitable measures to manage, avoid or mitigate identified impacts; and

(h) Identify residual risks that need to be managed and monitored.

PROJECT DETAILS

Name of Project:	Portion 2 of the Farm Boesmanskop 115 and a Portion of the Remainder of the Farm Waterlaagte 1210
Reference :	FS 10057 MR
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
E-mail:	malutiplanthire@telkom.net

Environmental Consultant (EAP): Tshimangadzo Mulaudzi

Responsible Person:	Tshimangadzo Mulaudzi
Physical Address:	15 Barnes Street, Langebaan building, Bloemfontein9301
Postal Address:	P.O. Box 22732, Extonweg , 9313
Telephone:	079 362 6046
Facsimile:	086 5562568
E-mail:	info@engedime.com
Expertise of EAP:	Refer to Part A (3) (a) (ii) on the expertise of EAP

PART A

SCOPE OF ASSSSMENT AND ENVIRONMENTAL IMPACT ASSESSMENTREPORT

3. **CONTACT PERSON AND CORRESPONDENCE ADDRESS**

a) Details of

i. Details of the Environmental Assessment Practitioner (EAP)

Name of The Practitioner: Tshimangadzo

Mulaudzi Tel No.: 079 362 6046

Fax No. : 086 556 2568

E-mail address: mulaudzit@engedime.com

ii. Expertise of the EAP

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

Tshimangadzo hold an Honours Degree in Crushing 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, 3 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 has been carrying out Environmental Impact Assessment Procedure since 2012, managing a construction company called Tshedza Concrete Art in Limpopo Province, Makhado town.

In 2014, he joined a large crushing consulting company in Kimberly called Breeze Court Investments 47 (Pty) Ltd (Geologist and Crushing Consulting firm). This is where Mr Mulaudzi acquired in-depth experience and know how in the crushing consulting business by assisting the large to small scale crushing companies to obtain borrow pitting, crushing permits, technical co-operate permits, reconnaissance permits, exploration rights, production rights, integrated water use license, and environmental authorisation among other licenses.

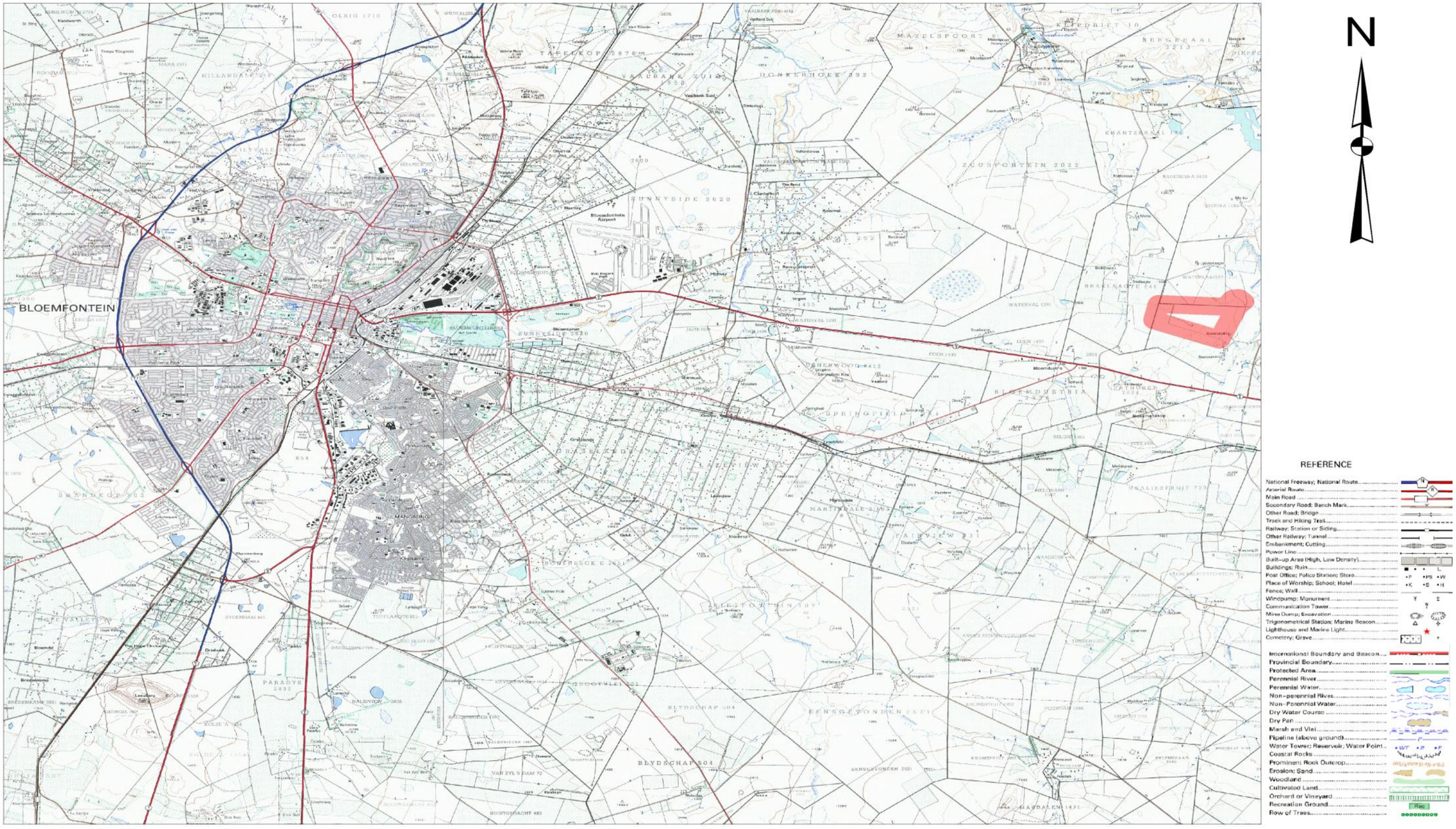
Tshimangadzo has five years working experience in environmental management, geology and public participation process.

b) Description of the property

Farm Name:	Portion 2 of the Farm Boesmanskop 115 and a Portion of the Remainder of the Farm Waterlaagte 1210
Application area (Ha)	176.43 Ha
Magisterial district:	Bloemfontein
Distance and direction from nearest town	± 24 km east of Bloemfontein.
21 digit Surveyor General Code for each farm portion	F00300000000011500002 F00300000000121000000

c) **Locality map**
(show nearest town, scale not smaller than 1:250000).

Locality Map of Portion 2 of the Farm Boesmanskop 115 and a Portion of the Remainder of the Farm Waterlaagte 1210



0 1,75 3,5 7 10,5 14 Kilometers

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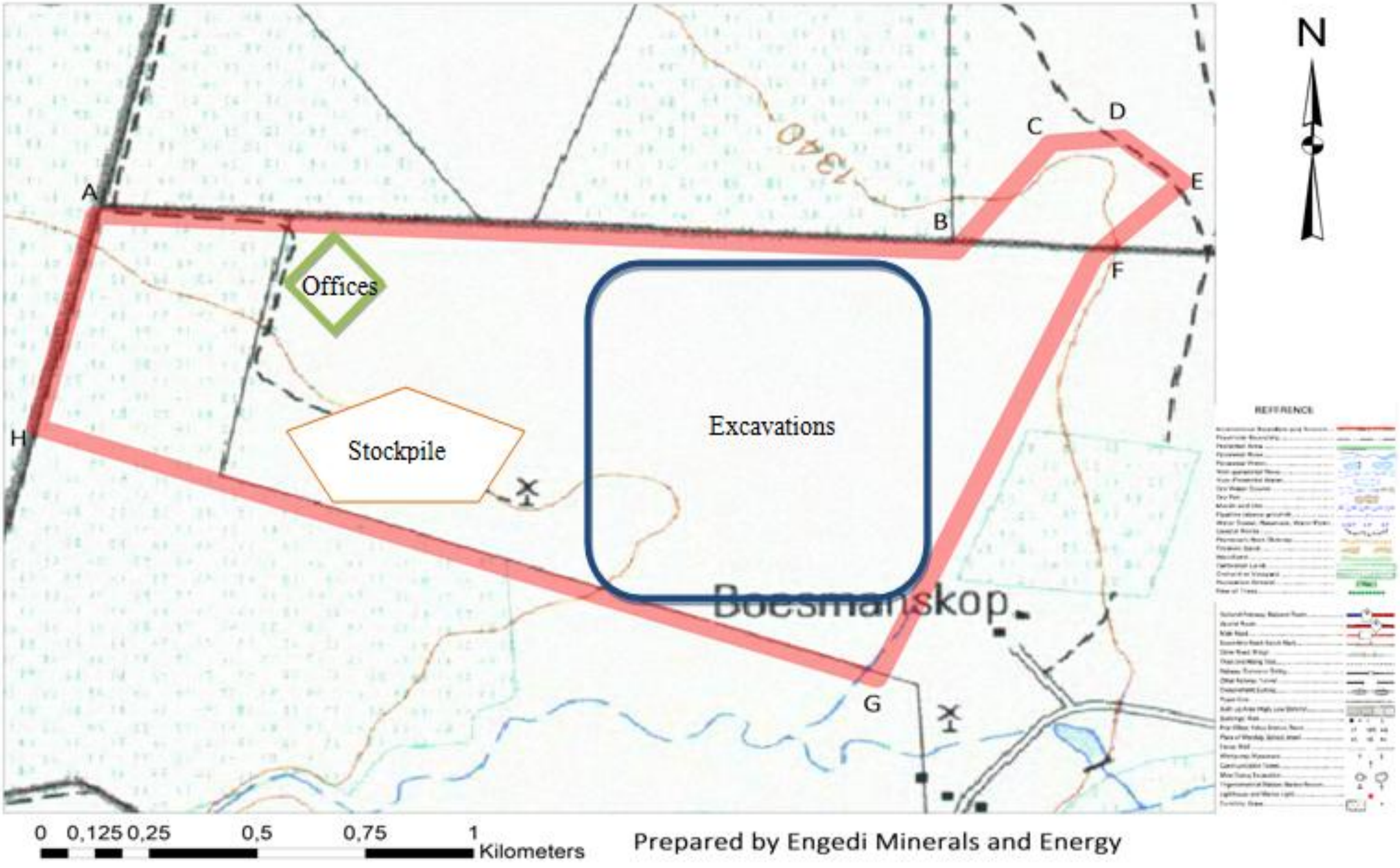
d) Description of the scope of the proposed overall activity

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

Layout Map of Portion 2 of the Farm Boesmanskop 115 and a Portion of the Remainder of the Farm Waterlaagte 1210



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i) Listed and specified activities

NAME OF ACTIVITY (All activities including activities not listed) **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc.)**	**Aerial extent of the Activity** **Ha or m²**	**LISTED ACTIVITY** **Mark with an X where applicable or affected.**	**APPLICABLE LISTING NOTICE** **(*GNR 327, GNR 325 or GNR 324)/ NOT LISTED***
Existing Screening and Crushing plant, Jaw crusher, Cone Crusher, conveyors, Transformer room- Electricity	0.05 Ha	X	Listing Notice 2, Activity 17
Stock piles and dumps Run of mine stockpiles Overburden dump	0.04 Ha	X	Listing Notice 2 Activity No. 17
Loading, hauling, and transport	.	X	Listing Notice 2 Activity No. 17
Access road	0.04 Ha	X	Listing Notice 2 Activity No. 17
Slime dam Pollution control dam	0.02 Ha	X	Listing Notice 2 Activity No. 17
Two Underground Diesel storage (37 m^3 in volume)	0.002 Ha	X	Listing Notice 2 Activity No. 17
Offices (mobile office complex), Ablution facility, Workshop area, Boiler shop, and Storage house (tyre, oil, Paint, Flammable, and used oil)	0.08 Ha	X	Listing Notice 2 Activity No. 17

Package sewage treatment system		X	Listing Notice 2 Activity No. 17
Portable water tank (Jojo tanks), Process water tank, water browser for dust suppression		X	Listing Notice 2 Activity No. 17
Washing processing plant		X	Listing Notice 2 Activity No. 17
Security .		X	Listing Notice 2 Activity No. 17

ii) Description of the activities to be undertaken

(Describe Methodology or technology to be employed, including the type of commodity to be mined and for a linear activity, a description of the route of the activity)

Mining Right

Open cast/roll over mining will be used to access Stone Aggregate, Gravel and Clay. Trucks will be used to transport Stone Aggregate, Gravel and Clay to the plant and market. All available topsoil from position of the first excavation area will be removed and stored separately in a demarcated area for the final rehabilitation.

Backfilling and rehabilitation:

The Stone Aggregate, Gravel and Clay will be sifted at the grizzly screen, waste after the minerals have been recovered will be put back into open excavations. During this process of backfilling, variation in the dumping sequence of materials will be followed to obtain better compaction and stability of the reclaimed overburden. This will ensure that the voids surrounding the coarse materials will be filled up with finer sediments. Compaction will be achieved through heavy vehicles during the backing stage.

The topsoil of all excavations will be stockpiled on a demarcated area. The excavated material from pits will be screened inside or close to the excavation area. Topsoil will be replaced once the ground has been levelled during rehabilitation stage.

The following equipment will be used: pumping machine, front end-loader, dumper and 1xChieftan screening/crushing plant

Maluti Plant and Crushers CC is graduating their mining permit

e) Policy and Legislative Context

APPLICABLE LEGISLATIONAND GUIDELINES USED TO COMPILE THE REPORT (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 COMPLYWITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT. (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 198, as amended	Section 24	In terms of the National Environmental Management Act, an application for an Environmental Authorisation has been applied for.
Regulation 326. National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations, 2017	Regulation 23	In terms of the NEMA EIA Regulations an Environmental Impact Assessment Report (EIAr) and Environmental Management Programme (EMPr) were prepared to submit to the competent uthority.

Regulation 325. National Environmental Management Act (Act No. 107 of 1998): Listing notice 2: List of activities and competent authorities identified in terms of sections 24(2) and 24D	Regulation 23	In terms of NEMA EIA Regulations R.325, Listing notice 2, the activity triggers regulation 23 which refers to a mining right application and therefore needs an Environmental Authorizations to proceed as well as follow procedures as prescribed in regulation 23 of R.326 (EIA Regulations, 2017).
Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	Section 22	In terms of the MPRDA, any person who wishes to apply for a mining right must lodge the application in the prescribed manner.
Mineral and Petroleum Resources Development Amendment Act (Act No. 49 of 2008)	Section 22	In terms of the MPRDA, any person who wishes to apply for a mining right must simultaneously apply for an environmental authorisation and must lodge the application to requirements contemplated by competent authority.
Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	Section 22	In terms of the MPRDA, any person who wishes to apply for borrow pitting must lodge the application in the prescribed manner.
Mineral and Petroleum Resources Development Amendment Act (Act No. 49 of 2008)	Section 18	In terms of the MPRDA, any person who wishes to apply for a borrow pitting must simultaneously apply for an environmental authorisation and must lodge the application to requirements contemplated by competent authority.

f) 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 in the sense that it is going to assist the local mining community in terms of poverty alleviation through job creation, black economic empowerment in terms of the mining charter which will contribute to the Nations visions of job creation. This development is also paramount important for local and international markets were it will contribute positively to the economy.

g) Motivation for the preferred development footprint within the approved site

The study area has been transformed to some degree. Alternative land uses for the site would include grazing, farming activities. However, the study area is Stone aggregate, Gravel and Clay rich which will be utilised to improve social and economic environments. Through implementing good practice, environmental management measures and mitigation measures, it will ensure that both human and environment benefit from the development.

No location alternatives are applicable to this project since the Stone aggregate, Gravel and Clay are contained in the proposed mining area. Locating the development in another area will result in the Stone aggregate, Gravel and Clay possibly not being found and the economy and society not benefitting from future proposed mining activities.

h) Full description of the process followed to reach the proposed development footprint within the approved site including

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.

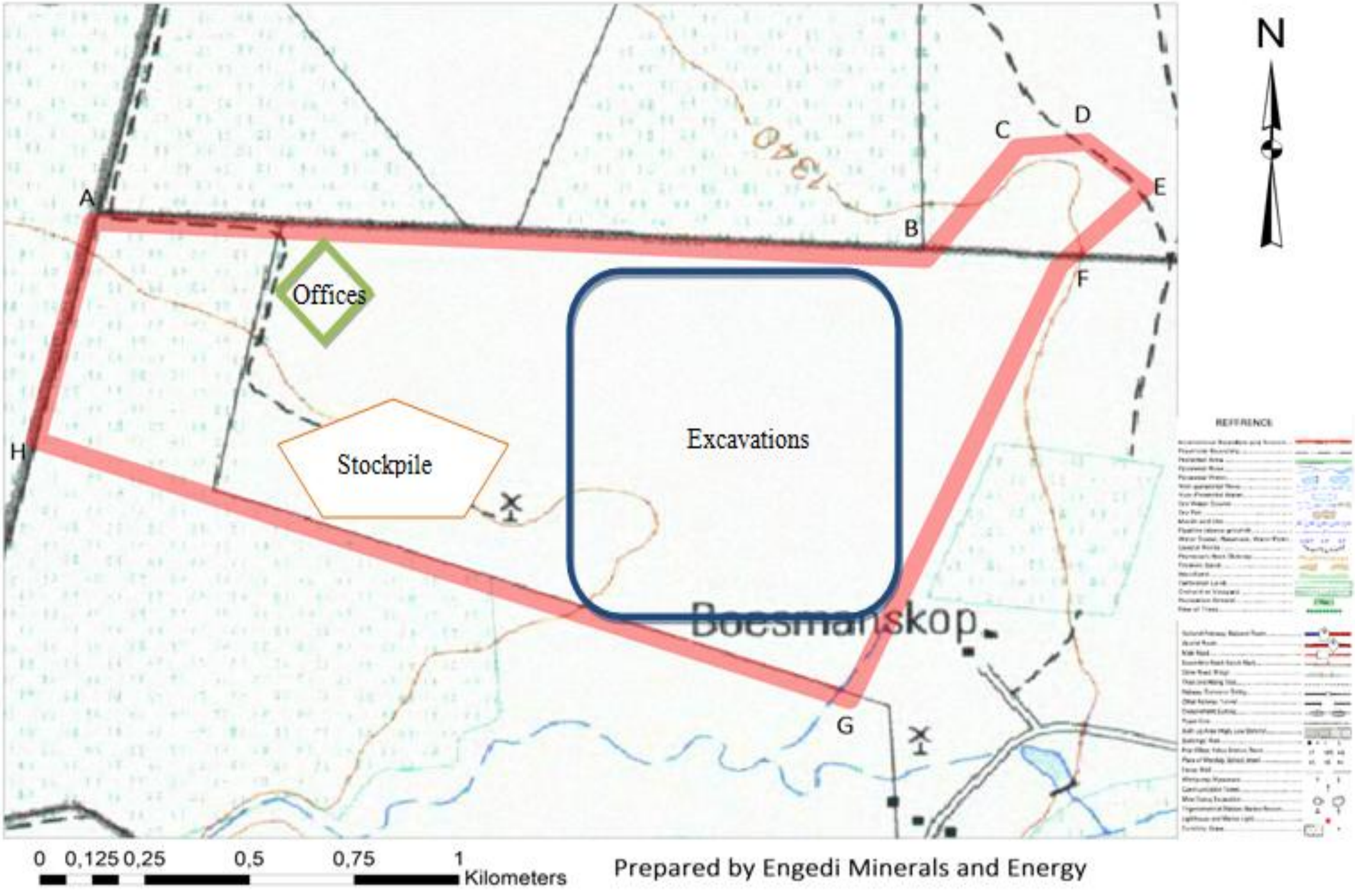
i. Details of the development footprint alternatives considered

With reference to the site plan provided as Appendix 4 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; the technology to be used in the activity;
(d) the operational aspects of the activity; and
(e) The option of not implementing the activity.

(f)

Layout Map of Portion 2 of the Farm Boesmanskop 115 and a Portion of the Remainder of the Farm Waterlaagte 1210



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The map above shows location proposed activities, type of activities and design or layout of activities.

d) The main activities of the proposed mining activity will entail opencast mining.

e) A front end loader will be used to load material from the opencast into dumping trucks, which will then be transported to the seizing plant.

The historic land use is one of agriculture and cattle farming, where land use is for cultivation and some portions have natural vegetations. The mining option will result in the continuation of such land use after rehabilitation. The continuing operation of the existing farming activities (crop production and grazing) without the construction of the proposed mining operation will have very little to no environmental impact. Not only will the surety of water apply to other users in the scheme be increased, a portion of land deemed as having high agricultural potential will remain intact.

Although it could probably remain economically viable, the continuation of agriculture will not provide the level of economic growth to the area that mining would offer. After mine closure and rehabilitation of mined area, the land capability may return to grazing, allowing the continuance of certain agricultural practices. The mine will also promote sustainable local economic development, to give communities the skills required to remain economically viable and successful after mine closure.

If the project were not to proceed, the additional economic activity, skills development and available jobs would not be created, the Stone aggregate, Gravel and Clay reserves would remain unutilized, the current land uses and economic activities would continue as at present, with little or no economic growth developing in the region. There are currently no foreseeable significant environmental impacts that will outweigh the economic benefits that would be generated by the project; however this will be further assessed during the EIA.

If mining activity were not to proceed with the proposed project, mining of these Stone aggregate, Gravel and Clay will not necessarily be avoided, as another application in terms of the MPRDA (Act no. 28 of 2002) can be made by another company. Unless the government declares the area –off limits to mining, mining houses will continue to attempt to mine the commodities.

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 attended 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.

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 EIA as stipulated in Sections 56 - 59 of the NEMA (Act no. 107 of 1998) as well as in Section 22 of the MPRDA (Act no. 28 of2002).

As stipulated in the MPRDA (Act no. 28 of 2002) and in Regulation 49(1) (f) (MPRDA Regulation GN R527), I&APs need to be notified and consulted with, as part of an application for mining rights.

a) Identification of Interested and Affected Parties

The following categories of stakeholders will be identified: the landowners of Portion 2 of the Farm Boesmanskop 115 and a Portion of the Remainder of the Farm Waterlaagte 1210 (the area included in the Mining Right Application i.e. the site).

In addition other potential stakeholders will be identified and invited to register themselves as I&APs. This invitation will also be extended to the public by means of site notices and newspaper notices.

Landowners & lawful occupiers of the site

The title deed owners of the application area will be listed in the table below. According to the title deed ownership records, the landowner of the application area is the municipality.

Farm name	Portion (if applicable)	Extent (ha)	Owner	Title deed number
Boesmanskop 115	02	171,387		
Waterlaagte 1210	00	525,743		

The landowner of the application area will be informed of the proposed mining activities and the process to follow.

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

The public participation report is attached as appendix**.**

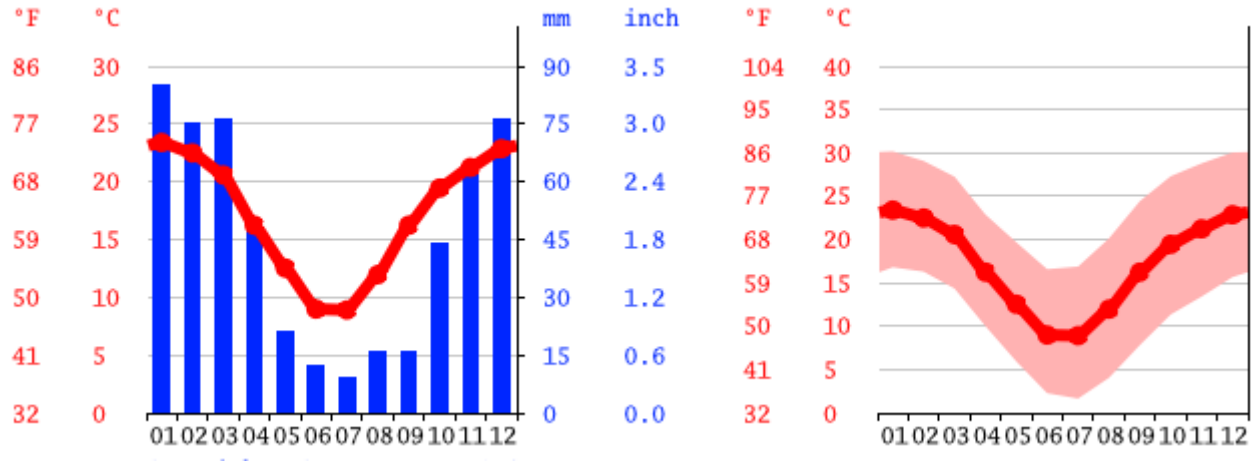
iv) The Environmental Attributes Associated With The Development Footprint Alternatives.

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

Baseline Environment

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 17.1 °C. In a year, the rainfall is 545 mm.



Topography

Bloemfontein is located in central South Africa on the southern edge of the Highveld at an elevation of 1,400 metres (4,600 ft), bordering on the semi-arid region of the Karoo. The area is generally flat with occasional hills (koppies in Afrikaans) and the general vegetation is Highveld grassland.

Geology and Soils

The area is underlain by sedimentary rocks of the Adelaide Sub-group of the Beaufort Group of the Karoo Sequence. These sedimentary rocks consist of fine grained grey sandstone and coarse arkose, alternating with green and maroon-colored mudstone beds. Occasional pebble washes occur in some of the coarse grained beds.

Surface water

Water Management Area

The land use in the Upper Orange Water Management Area.

Rivers

Upper Orange WMA, or Upper Orange Water Management Area (coded: 13), Includes the following major rivers: the Modder River, Riet River, Caledon River and Orange River, and covers the following Dams:

- Armenia Dam Leeu River
- Egmont Dam Witspruit
- Gariep Dam Orange River

Air quality

The ambient air quality in the area of the site is expected to be acceptable. There are however a num ber sources of air pollution close to the site including mining activities, agricultural activities, vehicle entrained dust and fires. The residences within and near the site are considered sensitive air quality receptors.

Noise

The ambient noise condition in the area of the site is expected to be quiet and representative of a rural noise district. The noise sensitive sites may be the residences within and near the site.

Traffic

The proposed activity will be small in operation so no major extra influences are expected to be caused by the trucks from the mine.

Biological Environment

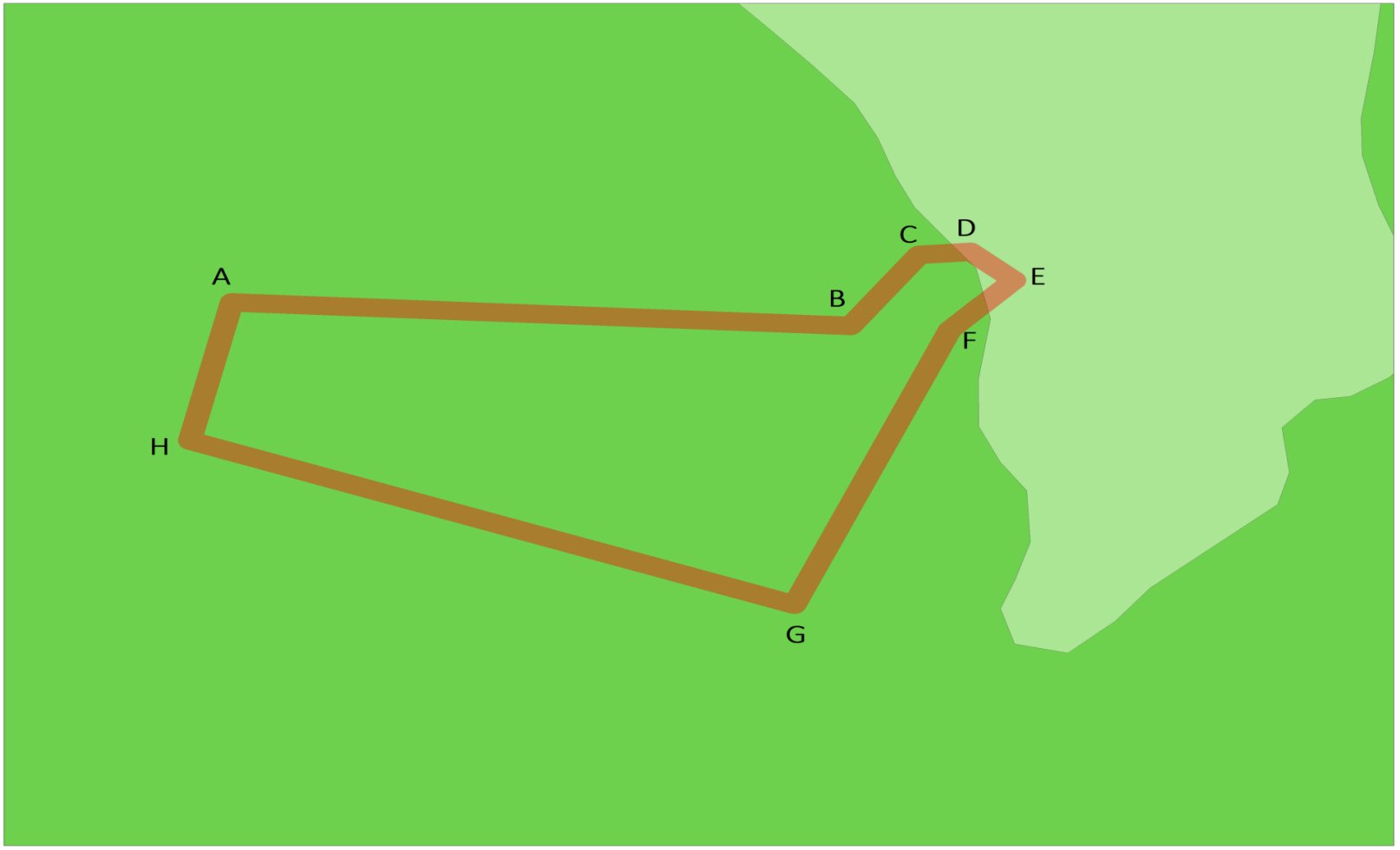
Vegetation

More recently Mucina et al. (2005) in their vegetation map of South Africa, Lesotho and Swaziland have placed Bloemfontein in the Dry Highveld Grassland Bioregion. This bioregion has three vegetation types, namely Bloemfontein Dry Grassland, Winburg Grassy Shrubland and Bloemfontein Karroid Shrubland (Mucina et al. 2005). The mining area falls within the Bloemfontein Dry Grassland part of this bioregion. This is grassland dominated by Themeda triandra and Eragrostis species with a few Sweet Thorn Acacia karroo trees occurring on deep dark clayey soils along water courses (Low and Rebelo, 1996). There is a presence of karoo elements to the west of Bloemfontein. Low and Rebelo (1996) and Malan (1997) suggest that this is more likely to be outliers of karoo vegetation, rather than a sign of karoo vegetation encroachment. Fuls (1993) also concluded that the karoo vegetation does not spread to the east as predicted by Acocks (1953) and Acocks (1988).

The following description of the plant communities is based on the phytosociological study of open spaces in Bloemfontein by Dingaan (1999). All the vegetation has been affected by human activities to a smaller or larger extent therefore it is not natural in the strict sense of the word. Rather, the word “natural” should be seen in a relative sense. Four broad plant community types were recognized,

i. Grassland communities on clayey
ii. Grassland communities on sandy soils
iii. Grassland communities on rocky outcrops
iv. Tree and shrub communities
v. Riparian and wetland communities

Vegetation Map of Portion 2 of the Farm Boesmanskop 115 and a Portion of the Remainder of the Farm Waterlaagte 121(



Fauna

Mammals

The Grassland is home to many large land mammals, including elephants, giraffes, zebras, rhinoceroses, buffalo, lions, leopards, and cheetahs.

Grassland biome supports a large variety of plant and animal life due to its variable climate conditions based on altitude. This region contains main 14 vegetation types and is habitat to large herds of antelope and many smaller animals. Ten bird species are exclusively restricted to grasslands.

Flagship species of the grassland biome

- *Star flower*
- *Giant bullfrog*
- *Blue Crane (National Bird)*
- *Redwing Francolin*
- *Black Wildebeest*

Birds

Can expect good birds such as Goliath Heron, Black-crowned Night-Heron, Giant Kingfisher, Tawny-flanked Prinia, African Jacana, Black Crake, Thick-billed Weaver, Squacco Heron and Great Crested Grebe. African Black Duck is resident on the river and the full suite of highveld ducks and geese, including Hottentot Teal, can be ticked during a summer visit. African Rail is regularly recorded and the Vaal Park wetland, between the suburb of Vaal Park and the river, has turned up surprises like African Crake, Lesser Moorhen, Dwarf Bittern and Little Bittern. There are at least two breeding pairs of African Fish-Eagle and even a record of Osprey on this stretch of river.

Conservation areas

There are no protected areas at the mining site.

Socio-Economic setting

Population

Total	Density
556 000	2 400/km^2

Race

POPULATION GROUP	PERCENTAGE
Black African	56.1%
Coloured	12.8%
Indian or Asian	0.8%
White	29.8%
Other	0.5%

Gender composition

GENDER	POPULATION	PERCENTAGE
Female	62 482	52.55%
Male	56 425	47.45%

Age groups

	PERCENTAGE
Population under 15	29.7%
Population 15 to 64	65.0%
Population over 65	5.3%

Education

EDUCATION (AGED 20 +)	
No schooling	5.2%
Higher education	32.8%
Matric	13.3%

Employment

	2018/19	2017/18	2016/17	2015/16	2014/15
EMPLOYMENT					
Employment Costs (R'000)	2 044 842	1 855 761	1 605 678	1 427 115	1 261 395
Remuneration of councillors (R'000)	64 434	62 271	56 029	52 422	49 594
Total Employee Positions	6 942	7 025	7 860	8 613	7 803
Total Vacant Employee Positions	3 462	3 336	3 394	4 315	3 905
Total Vacancy Percentage	48.87%	47.49%	43.18%	50.10%	50.4 %

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Cultural and Heritage Resources

It is important to do a heritage impact assessment before any mining activity takes place. Anyone who intends to undertake a development must notify the heritage resource authority (refer to SAHRA and the NHRA (Act no. 25 of 1999)). A Heritage Impact Assessment is not limited to artefacts, historical buildings and graves; it is far more encompassing and includes intangible and invisible resources such as places, oral traditions and rituals.

The following terminology is used when referring to cultural, historic and archaeological heritage:

Stone Age: The Stone Age began with the appearance of early humans. The Stone Age people were hunter-gatherers. Stone tools and rock art are found throughout South Africa. The Stone Age can be divided into the Early Stone Age (2 000 000 – 150 000 Before Present); the Middle Stone Age (150 000 – 30 000 Before Present) and the Late Stone Age (30 000 until ca. AD 200).

Iron Age: This period covers the last 2000 years. Farming communities moved down from the eastern parts of Africa into the southern parts of Africa. These people settled permanently, practised agriculture and had domesticated animals. They introduced metal and mining to southern Africa.

Historical period: This period falls into the last 300 years with the arrival of white settlers on the continent. These settlers moved into the interior of southern Africa to, among others, settle, farm and mine.

A heritage resource can be described as any place or object of cultural significance, i.e. aesthetic, architectural, historic, scientific, social, spiritual, linguistic or technological value or significance.

No archaeological or historic sites or structures could be identified on 1:50 000 topographical maps and Google Earth.

Most of the original vegetation of the proposed mining area has been replaced by mining activities and grazing fields; this could be a reason why no archaeological and historical sites or structures could be identified from the maps or images. Various archaeological and historical sites and San rock art have been identified in the larger region of this proposed mining area (Bergh 1998). Mason (1962) refers to a number of settlements during the Prehistory of the Transvaal, whilst Maggs (1979) also comments on the Iron Age.

- **Description of the current land uses**

Agriculture, community services, finance, trade, transport, manufacturing

- **Description of specific environmental features and infrastructure on the site**

Mining and agriculture. Vegetation is also available for grazing.

- **Environmental and current land use map.**
  (Show all environmental and current land use features)

Layout Map of Portion 2 of the Farm Boesmanskop 115 and a Portion of the Remainder of the Farm Waterlaagte 1210

Prepared by Engedi Minerals and Energy

v) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the 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 impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the 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).

ASPECT	POTENTIAL IMPACT
Soil	• Compaction – from movement of heavy machinery • Contamination – from diesel, oil, grease, etc. used for the mining and from maintenance of machinery conducted on site • Contamination – from domestic waste. • Loss of topsoil – when the mining site is cleared of vegetation, topsoil may be lost • Erosion – from the clearing of mining sites and movement along access tracks
Land use	• The land use will temporarily change to mining • Mining may interfere with any land uses currently taking place on the site
Biodiversity (fauna and flora)	• The fauna and flora could be negatively affected by the establishment of the mining sites and access tracks • Alien and invasive species could be introduced through the disturbance
Surface- and groundwater	• Contamination – from diesel, oil, grease, etc. used for the drilling machinery and from maintenance of machinery conducted on site • Contamination – from domestic waste, sewerage, drilling core and contaminated soil • Mining requires a large amount of water which may be sourced on site, which may result in the reduction of water available to other users
Heritage sites	• Heritage sites may be present on the site, which may be disturbed and/or damaged during mining
Dust	• Dust from mining activities may coat vegetation making it unsafe for livestock grazing
Noise	• Noise from the mining activities could disturb residents within the site

vi) Methodology used in determining the significance of Environmental impacts

(Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process were determined in order to decide the extent to which the initial site layout needs revision).

The significance of the impacts will be 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 will be individually described and assessed using the criteria drawn from the 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 – 18 months (or confined to the construction period).
Short term (S)	2	18 – 36 months (or confined to the construction and part of the operational period).
Medium term (M)	3	36 – 48 months (or confined to the construction and whole operational period).
Long term (L)	5	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

vii) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected

(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties)

Description	Occurring phase
Creation of new employment opportunities	
Employment creation during the life of mining activities may be greatly beneficial to a number of households within the surrounding area. It is however anticipated that a contractor operation is the preference and therefore job opportunities might be very limited.	Construction and Operational phases
Transfer of skills to local people	
In order to promote preferential recruitment for local people, it would be necessary to assess the skills available locally and to ensure that these skills match the local positions at the operation. From the data collected to date, it is apparent that there is significant potential for skills transfer given education levels in the area.	Construction and Operational phases
Support of local suppliers and contractors	
During both the construction and operational phases of the operations, it is expected that a wide variety and generally substantial quantities of goods and services will be required by the mine and their contractors. It is recommended that whenever possible, local contractors should be utilized to provide goods and services to the mine.	Construction and Operational phases

viii) 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).

Aspect	Potential impact	MITIGATION MEASURES
Soil	Compaction – from movement of heavy machinery	• Existing roads and tracks will be used as far as possible. • New access tracks will be kept to a minimum. • Rehabilitation of disturbed areas will take place.
	Loss of topsoil – when the mining site is cleared of vegetation, topsoil may be lost	• Any removed topsoil will be kept to one side and protected from being blown away or being eroded. • Rehabilitation of mining and disturbed areas will take place.
	Erosion – from the clearing of drill sites and movement along access tracks	• Sediment and erosion controls will be designed to prevent runoff from the mining sites into the rivers and any wetland areas. • Appropriate water management, sediment and erosion control measures will be designed for roads and tracks that may be constructed. • Rehabilitation of mining and disturbed areas will take place.
	• Contamination – from diesel, oil, grease, etc. used for the mining machinery and from maintenance of machinery conducted on site • Contamination – from domestic waste, sewerage and mining core	• Topsoil must not be contaminated with oil, grease, diesel, etc. which may inhibit the later growth of vegetation. • Mining sumps and containment measures will be designed to contain all mining fluid. • Mining sumps will be constructed sufficiently large to retain all slurry produced during mining. • All chemicals, fuels and oils to be stored on site will be appropriately stored in sealed containers and placed on a lined area. • Inspect equipment daily for leaks. Machinery and equipment will only be maintained over a drip tray, a thin concrete slab or a PVC lining to prevent soil and water contamination. No vehicle will be extensively repaired on site.

		• All equipment and vehicles must be adequately maintained so that during operations it does not spill oil, diesel, fuel, etc. • Any contaminated soil will be collected into non-permeable bags and disposed of at an approved landfill site. • A chemical toilet will be used on site and will be used in such a way as to prevent water pollution. Full or leaking toilets must be reported to the supervisor for corrective action or replacement. • All mining core will be removed from the mining sites or place in a specified area as per request or permission from the land owner. • Rehabilitation of mining and disturbed areas will take place.
Land use	Mining may interfere with any land uses currently taking place on the site	• Only one quarry site will be operational at any time. • The area to be disturbed will be kept to a minimum (not exceeding 20mx20m). • No mining site will be established within 50m of any agricultural land unless consent is received from the land owner. • Rehabilitation of mining and disturbed areas will take place.
Biodiversity (fauna and flora)	The fauna and flora could be negatively affected by the establishment of the mining sites and access tracks	• Mining and access tracks will be located in areas that will result in minimal ground disturbance. • A field survey will be undertaken before mining commences at each mining site to confirm that no threatened species or ecologically sensitive areas are present in sections to be cleared. • Permission will be obtained from the landowner before trees are felled, should it be necessary. • All trees protected in terms of the National Forests Act, 1998, will be protected – will not be cut, disturbed, damaged, removed, etc.

	Alien and invasive species could be introduced through the disturbance	• Rehabilitation of mining and disturbed areas will take place. • Machinery will be cleared of mud and seeds prior to relocation to the next site to prevent the spread of alien invasive species. • An inspection on whether there is evidence of alien and invasive species as a result of mining activities will be undertaken and removed if required.
Surface- and groundwater	• Contamination – from diesel, oil, grease, etc. used for the mining machinery and from maintenance of machinery conducted on site • Contamination – from domestic waste, sewerage, mining and contaminated soil • Water discharge during mining	• No mining will be established within 100m of any watercourse or wetland. • Mining sumps and containment measures will be designed to contain all mining fluid. • Mining sumps will be constructed sufficiently large to retain all slurry produced during mining. • All chemicals, fuels and oils to be stored on site will be appropriately stored in sealed containers and placed on a lined area. • All waste will be collected, separated and stored properly in containers with lids and removed to an approved landfill. • Inspect equipment daily for leaks. Machinery and equipment will only be maintained over a drip tray, a thin concrete slab or a PVC lining to prevent soil and water contamination. No vehicle will be extensively repaired on site. • All equipment and vehicles must be adequately maintained so that during operations it does not spill oil, diesel, fuel, etc. • Any contaminated soil will be collected into non-permeable bags and disposed of at an approved landfill site. • A chemical toilet will be used on site and will be used in such a way as to prevent water pollution. Full or leaking toilets must be reported to the

		supervisor for corrective action or replacement. • All mining will be drilled and constructed in such a way as to prevent ingress of water into the hole. • Any completed mining that is not required for groundwater monitoring will be rehabilitated to prevent groundwater contamination. • Rehabilitation of disturbed areas will take place.
	Drinking water	• Drinking water will be supplied in plastic containers to be stored on site.
Heritage sites	Heritage sites may be present on the site, which may be disturbed and/or damaged during mining	• Potential heritage sites will be identified during the planning of borehole locations and demarcated. • Access to these sites will then be limited and all workers will be notified to keep at least 100m away from these sites.
Air quality (dust)	The air quality will not be disturbed, however, a minimal dust problem may be experienced, especially in the mining area during mining	• All mining rigs will be fitted with appropriate dust suppression equipment like water sprays, where possible. • Speed limits on gravel roads will be limited to 40km/hr to minimise dust generation. • Dust will be effectively controlled in all disturbed areas through water spraying. • Excavation, handling and transportation of erodible materials should be avoided during periods of excessive wind. • If necessary, other appropriate dust suppression techniques will be administered. For example chemicals, wind fencing, covering of surfaces and vegetation of open areas.
Noise	Noise from the mining activities could disturb residents within the site	• Modern, low noise emission vehicles and equipment will be favoured. • All equipment on site will be maintained in good working order. • Mining will be restricted to day light hours. • Speed limits on gravel roads will be limited to 40km/h to minimise noise generation.

Socio-economic	Expectations could be created that numerous job and business opportunities will become available during mining	• Due to the nature of mining, employment opportunities will be minimal. The mining crew is small (4-6 people) with specialised skills. Where possible, local people will however be employed during the project.

ix) Motivation where no alternative sites were considered

No location alternatives are applicable to this project since the sand is contained in the proposed mining area. Locating the development to another area will result in the ore possibly not being found and the economy and society not benefitting from future proposed mining and 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

x) Statement motivating the alternative development location Within the overall site. (Provide a statement motivating the final site layout that is proposed)

The proposed site for the mining activities is located within an area which is already severely disturbed as a result of mining activities. However, whenever mining activities are located within sensitive areas (i.e. wetlands, rivers, streams as well as their buffers), utmost caution will be taken to have as little impact as possible to the environment.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity (Including

i. a description of all 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;

j) An assessment of each identified potentially significant impact and risk, including-

The following sections present the outcome of the significance rating exercise. The results suggest that almost none of the key issues identified as part of the EIR process had a high negative environmental significance. Instead the overall score indicate a low environmental significance score.

INITIAL CLEARANCE AND SITE PREPARATION PHASE

Direct impacts: During this phase minor negative impacts are foreseen over the short term. The latter refers to a period of weeks. The site preparation may result in the loss or fragmentation of indigenous natural fauna and flora, loss or fragmentation of habitats, soil erosion, hydrology, and temporary noise disturbance, generation of waste, visual intrusions, increase in heavy vehicle traffic, and risk to safety of livestock and farm infrastructure, and increased risk of veld fires. The above mentioned impacts are discussed in more detail below:

Loss or fragmentation of indigenous natural fauna and flora – Grassland

The Southern parts of the province are mainly grassland. Sometimes farmers burn the grass in winter so that it will grow better in summer. Some trees also grow in the grassland, especially near rivers. The karee tree sometimes grows near river valleys in the Free State. The grassland are good for cattle farming. Large areas of grassland have been ploughed up and used for planting such as mealies and sunflowers. Trees and grass shall not be removed or damaged without prior approval and permits.

Loss or fragmentation of indigenous natural fauna and flora	**Pre-mitigation impact rating**	**Post mitigation impact rating**
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Definite (4)	Definite (4)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)
Cumulative impact	Negligible cumulative impacts (1),	
Significance	Negative low (26)	Negative low (12)

Can impacts be mitigated?	If the development is approved, contractors must ensure that no mammalian species are disturbed, trapped, hunted or killed. If the development is approved, every effort should be made to confine the footprint to the blocks allocated for the development and have the least possible edge effects on the surrounding area. The EMPr also provides numerous mitigation measures – refer to section (f) of the EMPr. The potential impacts associated with damage to and loss of farmland should be effectively mitigated. The aspects that should be covered include: • The site should be fencedoff prior to commencement of construction activities; • The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be confined to the fenced off area and minimised where possible; • An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase; All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase; The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. Specifications for the rehabilitation are provided throughout the EMPr – section (f) of the EMPr.

	The implementation of the Rehabilitation Programme should be monitored by the ECO. Thorn trees shall not be removed or damaged without prior approval and permits.

•Loss or fragmentation of habitats – Given the low probability of resident threatened species occurring at the footprint site, the low probability of any significant conservation corridor or buffer zone at the footprint site.

•

Loss or fragmentation of habitats	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Definite (4)	Definite (4)
Duration	Medium term (2)	Medium term (2)
Magnitude	Low (1)	Low (1)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	Negligible cumulative impacts (1)	
Significance	Negative low (12)	Negative low (12)
Can impacts be mitigated?	Exotic and invasive plant species should not be allowed to establish, if the development is approved. Where exotic and invasive plant species are found at the site continuous eradication should take place. If the development is approved, every effort should be made to confine the footprint to the blocks allocated for development – section (f) of the EMPr also provides numerous mitigation measures related to fauna and flora.	

•Loss of topsoil – Topsoil may be lost due to poor topsoil management (burial, erosion, etc.) during construction related soil profile disturbance (leveling, excavations, disposal of spoils from excavations etc.) The effect will be the loss of soil fertility on disturbed areas after rehabilitation.

•

Loss of topsoil	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Geographical extent	Site (1)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Medium (2)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Marginal (2)	Marginal (2)
Cumulative impact	Negligible cumulative impact (1).	
Significance	Negative low (20)	Negative low (18)

Can impacts be mitigated?	The following mitigation or management measures are provided: • If an activity will mechanically disturb below surface in any way, then any available topsoil should first be stripped from the entire surface and stockpiled for re-spreading during rehabilitation. • Topsoil stockpiles must be conserved against losses through erosion by establishing vegetation cover on them. • Dispose of all subsurface spoils from excavations where they will not impact on undisturbed land. • During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface. • Erosion must be controlled where necessary on top soiled areas. Establish an effective record keeping system for each area where soil is disturbed for constructional purposes. These records should be included in environmental performance reports, and should include all the records below. • Record the GPS coordinates of each area. • Record the date of topsoil stripping. • Record the GPS coordinates of where the topsoil is stockpiled. • Record the date of cessation of constructional (or operational) activities at the particular site. • Photograph the area on cessation of constructional activities. • Record date and depth of re-spreading of topsoil.

	Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time. Section (f) of the EMPr also provide mitigation measures related to topsoil management.

Soil erosion – Soil erosion due to alteration of the land surface run-off characteristics. Alteration of run-off characteristics may be caused by construction related land surface disturbance, vegetation removal and the establishment of roads. Erosion will cause loss and deterioration of soil resources. The erosion risk is low due to the low slope gradients and low to moderate erosion levels of the soils.

Soil erosion	**Pre-mitigation impact rating**	**Post mitigation impact rating**
Status (positive or negative)	Negative	Negative
Geographical extent	Site (1)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Medium (2)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Marginal (2)	Marginal (2)
Cumulative impact	Negligible cumulative impact (1).	
Significance	Negative low (20)	Negative low (18)
Can impacts be mitigated?	The following mitigation or management measures are provided: Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion. Include periodical site inspection in environmental performance reporting that inspects the effectiveness of the run-off control system and specifically records the occurrence any erosion on site or downstream — refer to section (f) of the EMPr..	

•Temporary noise disturbance - Preparation activities will result in the generation of noise over a period of months. Sources of noise are likely to include vehicles, the use of machinery such as back actors and people working on the site. The noise impact is unlikely to be significant; but activities should be limited to normal working days and hours (6:00 – 18:00).

Temporary noise disturbance	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Definite (4)	Probable (3)
Duration	Short term (1)	Short term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	The impact would result in negligible to no cumulative effects (1).	
Significance	Negative low (20)	Negative low (9)
Can impacts be mitigated?	Yes, management actions related to noise pollution are included in section (f) of the EMPr.	

•Generation of waste - general waste, construction waste, sewage and grey water - The workers on site are likely to generate general waste such as food wastes, packaging, bottles, etc. Construction waste is likely to consist of packaging, scrap metals, waste cement, etc If any). The applicant will need to ensure that general and construction waste is appropriately disposed of i.e. taken to the nearest licensed landfill. Sufficient ablution facilities will have to be provided, in the form of portable/VIP toilets. No pit latrines, French drain systems or soak away systems shall be allowed.

Generation of waste	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local/district (2)	Local/district (2)

Probability	Definite (4)	Definite (4)
Duration	Short term (1)	Short term (1)
Magnitude	Low (1)	Low (1)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Medium cumulative impact (3) - An additional demand for landfill space could result in significant cumulative impacts if services become unstable or unavailable, which in turn would negatively impact on the local community.	
Significance	Negative medium (13)	Negative low (13)
Can impacts be mitigated?	Yes, it is therefore important that all management actions and mitigation measures included in section (f) of the EMPr. are implemented.	

Impacts on heritage objects – No sites, features or objects of cultural significance were found in the study area, and that there would be no impact as a result of the proposed development. It is however noted that, in terms of the National Heritage Resource Act no 25 of 1999. Heritage resources including archaeological and paleontological sites over 100 years old, graves older than 60 years, structure older than 60 years are protected. They will not be disturbed without a permit from the relevant heritage resource Authority, which means that before such sites are disturbed by development it is incumbent on the developer to ensure that a heritage impact assessment is done and the Provincial Heritage Resources Authority and SAHRA will be contacted immediately and work will stop

Impacts on heritage objects	**Pre-mitigation impact rating**	**Post mitigation impact rating**
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Possible (2)	Possible (2)
Duration	Short term (1)	Short term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Irreversible (4)	Irreversible (4)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	Low cumulative impact (2). Should these impacts occur, there may be a cumulative impact on the preservation of heritage objects in the area.	
Significance	Negative low (24)	Negative low (12)
Can impacts be mitigated?	If archaeological sites or graves are exposed during construction work, it should immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made. Also refer to section (f) of the EMPr.	

Indirect impacts: The nuisance aspects generally associated with the installation of infrastructure or ground preparation will also be applicable to this development, which relates primarily to the increase in vehicle traffic associated with mining practices, the influx of job seekers to the area, risk to safety, livestock and farm infrastructure, and increased risk of veld fires.

Increase in vehicle traffic – The movement of heavy vehicles during the clearance of vegetation and topsoil has the potential to damage local farm roads and create dust and safety impacts for other road users in the area. Access will be obtained from an existing secondary gravel road. While the volume of traffic along this road is low, the movement of heavy vehicles along this road is likely to damage the road surface and impact on other road users. The contractor should be required to ensure that damage to the road is repaired periodically. The movement of additional heavy vehicle traffic is unlikely to increase significantly to the current traffic load on the road. The impact on the road is therefore likely to below.

Increase in vehicle traffic	**Pre-mitigation impact rating**	**Post mitigation impact rating**
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Probable (3)	Probable (3)
Duration	Short term (1)	Short term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Medium cumulative impact (3). If damage to roads is	
	not repaired then this will affect the farming activities in the area and result in higher maintenance costs for vehicles of local farmers and other road users. The costs will be borne by road users who were no responsible for the damage.	

Significance	Negative low (22)	Negative low (11)
Can impacts be mitigated?	The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include: • The contractor must ensure that damage caused by construction related traffic to the gravel access road is repaired and maintained. The costs associated with the repair must be borne by the contractor; • Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers; • All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits of 40 km/h. Also refer section (f) of the EMPr. For mitigation measures related to traffic.	

• Risk to safety, livestock and farm infrastructure - The presence on and movement of workers on and off the site poses a potential safety threat to local famer's and farm workers in the vicinity of the site threat. In addition, farm infrastructure, such as fences and gates, may be damaged and stock losses may also result from gates being left open and/or fences being damaged or stock theft linked either directly or indirectly to the presence of farm workers on the site.

Risk to safety, livestock and farm infrastructure	**Pre-mitigation impact rating**	**Post mitigation impact rating**
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Probable (3)	Probable (3)
Duration	Short term (1)	Short term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Negligible cumulative effects (1), provided losses are compensated for.	
Significance	Negative low (22)	Negative low (11)
Can impacts be mitigated?	Key mitigation measures include: Maluti should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences; The construction area should be fenced off prior to the commencement of the construction phase. The movement of construction workers on the site should be confined to the fenced off area; Contractors appointed by Maluti should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties;	

- Maluti should hold contractors liable for compensating farmers in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors and neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities (see below);
- The Environmental Management Programme (EMPr) should outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested;
- Contractors appointed by Maluti must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.
- Contractors appointed by Maluti must ensure that construction workers who are found guilty of trespassing, stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation;
- The housing of construction workers on the site should be strictly limited to security personnel (if any).

• Increased risk of veld fires - The presence of construction workers and construction-related activities on the site poses an increased risk of grass fires that could in turn pose a threat to livestock, crops, wildlife and farmsteads in the area. In the process, farm infrastructure may also be damaged or destroyed and human lives threatened. The potential risk of veld fires was heightened by the windy conditions in the area, especially during the dry, windy winter months from May to October. In terms of potential mitigation measures, a fire-break should be constructed around the perimeter of

the site prior to the commencement of the construction phase. In addition, fire-fighting equipment should be provided on site during the construction phase.

Increased risk of veld fires	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Region (3)	Local (2)
Probability	Probable (3)	Probable (3)
Duration	Medium term (2)	Short term (1)
Magnitude	High (3)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Negligible cumulative effects (1), provided losses are compensated for.	
Significance	Negative medium (33)	Negative low (9)
Can impacts be mitigated?	The mitigation measures include: • A fire-break should be constructed around the perimeter of the site prior to the commencement of the construction phase; • Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas; • Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy winter	

	months; • Contractor to provide adequate fire fighting equipment on-site, including a fire fighting vehicle; • Contractor to provide fire-fighting training to selected construction staff; • No construction staff, with the exception of security staff, to be accommodated on site over night; • As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire fighting costs borne by farmers and local authorities.

OPERATIONAL PHASE

Direct impacts: During the operational phase the study area will serve as an crushing area and the impacts are generally associated with soil erosion, change in land use, impacts associated with the, increase in storm water runoff, increased consumption of water, visual intrusion, the generation of general waste, leakage of hazardous materials, and the change in the sense of place. The operational phase will also have a direct positive impact through the provision of permanent employment opportunities and facilitating a positive economic growth. The abovementioned impacts are discussed in more detail below:

• Soil erosion – The largest risk factor for soil erosion will be during the operational phase when the mining activity ensues and soil is left bare until rehabilitation is initiated. The erosion will be localized within the site. This will ultimately lead to the irretrievable commitment of this resource. The measurable effect of reducing erosion by utilizing mitigation measures may reduce possible dust emissions significantly.

Soil erosion	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local/Regional (2)	Local/Regional (2)
Probability	Definite (4)	Unlikely (1)
Duration	Long term (3)	Long term (3)
Magnitude	High (3)	Medium (2)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)
Cumulative impact	Medium cumulative impact (3). Should these impacts occur, there will be a cumulative impact on the air and water resources in the study area in terms of pollution.	
Can impacts be mitigated?	Yes, to avoid soil erosion it will be a good practice to not remove all the vegetation at once but to only clear the area as it becomes necessary and to implement concurrent rehabilitation. Also refer to section (f) of the EMPr.	

Change in land-use – The use of the area for the operation of the crushing activity will result in the area not being used for cultivation anymore. The impact on farm income due to the loss of agriculture will be more than offset by the income from Maluti Plant and Crushers CC

Change in land use	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Definite (4)	Definite (4)
Duration	medium term (2)	medium term (2)
Magnitude	Low (1)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	Negligible cumulative impacts (1). Only 0.20Ha per year will be excavated. The rest of the farm will stay intact and undergo concurrent rehabilitation.	
Significance	Negative low (10)	Negative low (10)
Can impacts be mitigated?	The proponent should establish a Rehabilitation Fund to be used to rehabilitate the area once the proposed facility has been decommissioned. The fund should be funded by revenue generated during the operational phase of the project. The motivation for the establishment of a Rehabilitation Fund is based on the experience in the mining sector where many mines on closure have not set aside sufficient funds for closure and decommissioning. Also refer to section (f) of the EMPr.	

Generation of alternative land use income – Income generated through the alluvial diamond and diamond general mine will provide the farming enterprise with increased cash flow and rural livelihood, and thereby improves the financial sustainability of farming onsite.

Generation of alternative land use income	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Positive	Positive
Geographical extent	Site (1)	Site (1)
Probability	Definite (4)	Definite (4)
Duration	Long term (3)	Long term (3)
Magnitude	Medium (2)	Medium (2)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resources (1)	No loss of resources (1)
Cumulative impact	Low cumulative impact (2).	
Significance	Positive Low (24)	Positive Low (24)
Can impacts be mitigated?	No mitigation required.	

• Increase in storm water runoff – The development will potentially result in an increase in storm water run-off that needs to be managed to prevent soil erosion, especially where vegetation will be cleared. Not all the vegetation should be removed at once. Only the specific trench being excavated at the specific time should be cleared.

Increase in storm water runoff	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Probable (3)	Unlikely (1)
Duration	Long term (3)	Long term (3)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	Medium cumulative impact (3) - Should these impacts occur, there will be a cumulative impacts on the wider area.	
Significance	Negative medium (30)	Negative low (13)
Can impacts be mitigated?	Yes. It is therefore important that all management actions and mitigation measures included in section (f) of the EMPr. are implemented to ensure that these impacts do not occur	

Increased consumption of water - Approximately 10 000 – 16 000 of water per hour will be required for the washing of the gravel in the rotary 16 feet pan. The water will be sourced from groundwater sources.

Increased consumption of water	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Region (3)	Region (3)

Probability	Definite (4)	Definite (4)
Duration	Long term (3)	Long term (3)
Magnitude	Medium (2)	Medium (2)
Reversibility	Irreversible (4)	Irreversible (4)
Irreplaceable loss of resources	Marginal loss of resources (2)	Marginal loss of resources (2)
Cumulative impact	High cumulative impacts (4) - An additional demand on water sources could result in a significant cumulative impact with regards to the availability of water.	
Significance	Negative medium (40)	Negative medium (40)
Can impacts be mitigated?	Yes, management actions and mitigation measures related to the use of water are included in section (f) of the EMPr.	

Generation of waste – Approximately 6-10 Workers will be present on site from 6:00 – 18:00, Monday to Friday. Sources of general waste will be waste food, packaging, paper, etc. General waste will be stored on the site and removed on a weekly basis by a contractor.

Generation of waste	**Pre-mitigation impact rating**	**Post mitigation impact rating**
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Definite (4)	Definite (4)
Duration	Long term (3)	Long term (3)
Magnitude	Low (1)	Low (1)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)

Cumulative impact	Medium cumulative impact (3) - An additional demand for landfill space could result in significant cumulative impacts with regards to the availability of landfill space.	
Significance	Negative low (15)	Negative low (15)
Can impacts be mitigated?	Yes, management actions related to waste management are included in section (f) of the EMPr.	

• Leakage of hazardous materials - The proposed mining activity will make use of machinery that uses fuel and oil. Leakage of these oils and fuel can contaminate water supplies and must be prevented by constructing oil and diesel permeable bunds to ensure that any spills are suitably attenuated and not released into the environment.

Leakage of hazardous materials	**Pre-mitigation impact rating**	**Post mitigation impact rating**
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Possible (2)	Unlikely (1)
Duration	Long term (3)	Long term (3)
Magnitude	High (3)	Medium (2)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	The impact would result in negligible to no cumulative effects (1)	
Significance	Negative medium (36)	Negative low (22)
Can impacts be mitigated?	Yes. It is therefore important that all management actions and mitigation measures included in the section (f) of EMPr are implemented to ensure that these impacts do not occur.	

• Noise disturbance - Mining activities will result in the generation of noise over a

period of 3-5 years. Sources of noise are likely to include vehicles, the use of machinery such as back actors, rotary pans and people working on the site, as well as occasional blasting. The noise impact is unlikely to be significant as the closest homestead is more than 1km from the site; but mining activities should be limited to normal working days and hours (6:00 –18:00).

Temporary noise disturbance	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Definite (4)	Probable (3)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	The impact would result in negligible to no cumulative effects (1).	
Significance	Negative low (22)	Negative low (10)
Can impacts be mitigated?	Yes, management actions related to noise pollution are included in section (f) of the EMPr.	

Indirect impacts: The operational phase will have an indirect negative impact through the change in the sense of place and an indirect positive impact through the provision of additional electrical infrastructure.

Potential impact on tourism – The tourism sector is regarded as an important economic sector in the Free State Province and Mangaung Metropolitan Municipality. The tourism potential of the area is linked to the area's natural resources, including the relatively undisturbed scenery and landscape. The impact of the proposed crush Stone aggregate, Gravel and Clay on the areas sense of place with mitigation is likely to be low. The impact of the proposed mine on the tourism potential of the area and Mangaung LM and NWP is therefore likely to be low.

Potential impacts on tourism	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Possible (2)	Possible (2)
Duration	Medium term (2)	Medium term (2)
Magnitude	Low (1)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	N/a	N/a
Cumulative impact	N/a	
Significance	Negative low (6)	Negative low (6)
Can impacts be mitigated?	No mitigation required	

DECOMMISIONING PHASE (MINE CLOSURE AND REHABILITATION)

Direct impacts: Typically, the major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live. If infrastructures are removed after a 3/5 year period, the site will be returned to its natural state.

- Rehabilitation of the physical environment – The physical environment will benefit from the closure of the crushing since the site will be restored to its natural state as far as possible

Rehabilitation of the physical environment	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Positive	Positive
Extent	Site (1)	Site (1)
Probability	Possible (2)	Probable (3)

Duration	Long term (3)	Long term (3)
Magnitude	Low (1)	Medium (2)
Reversibility	N/A	N/A
Irreplaceable loss of resources	N/A	N/A
Cumulative impact	The impact would result in negligible to no cumulative effects (1)	
Significance	Negative low (7)	Negative low (16)
Can impacts be mitigated?	No mitigation measures required.	

• Loss of employment - Given the relatively large number of people employed during the operational phase, the decommissioning of the facility has the potential to have a negative social impact on the local community.

Loss of employment	**Pre-mitigation impact rating**	**Post mitigation impact rating**
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Possible (2)	Possible (2)
Duration	Medium term (2)	Short term (1)
Magnitude	High (3)	Medium (2)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	The impact would result in negligible to no cumulative effects (1)	
Significance	Negative medium (30)	Negative low (18)

Can impacts be mitigated?	The following mitigation measures are recommended: • All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning; • Maluti should establish an Environmental RehabilitationTrust Fund to cover the costs of decommissioning and rehabilitation of disturbed areas.

Indirect impacts: No indirect impacts are anticipated from the decommissioning phase of the proposed development.

Process for the identification of key issues

The methodology for the identification of key issues aims, as far as possible, to provide a user-friendly analysis of information to allow for easy interpretation.

- Checklist: The checklist consists of a list of structured questions related to the environmental parameters and specific human actions. They assist in ordering thinking, data collection, presentation and alert against the omission of possible impacts.
- Matrix: The matrix analysis provides a holistic indication of the relationship and interaction between the various activities, development phases and the impact thereof on the environment. The method aims at providing a first order cause and effect relationship between the environment and the proposed activity. The matrix is designed to indicate the relationship between the different stressors and receptors which leads to specific impacts. The matrix also indicates the specialist studies, which will be submitted as part of the Environmental Impact Report in order to address the potentially most significant impacts.

Checklist analysis

The site visit was conducted to ensure a proper analysis of the site specific characteristics of the study area. The table below provides a checklist, which is designed to stimulate thought regarding possible consequences of specific actions and so assist scoping of key issues. It consists of a list of structured questions related to the environmental parameters and specific human

actions. They assist in ordering thinking, data collection, presentation and alert against the omission of possible impacts. The table highlights certain issues, which are further analyzed in matrix format.

Table: Environmental checklist

QUESTION	YES	NO	Un-sure	Description
1. Are any of the following located on the site earmarked for the development?				
I. A river, stream, dam or wetland		☐		None
II. A conservation or open space area		☐		None.
III. An area that is of cultural importance		☐		The initial site investigation concluded that there are no obvious heritage resources located on the site earmarked for development.
IV. Site of geological significance		☐		None.
V. Areas of outstanding natural beauty		☐		None.
VI. Highly productive agricultural land		☐		None.
VII. Floodplain		☐		None.
VIII. Indigenous forest		☐		None.
IX. Grass land		☐		None.
X. Bird nesting sites		☐		None.

XI. Red data species		□		None.
XII. Tourist resort		□		None.
2. Will the project potentially result in potential?				
I. Removal of people		□		None.
II. Visual Impacts	□			The visual impact will be managed
III. Noise pollution		□		The noise impact is unlikely to be significant.
IV. Construction of an access road		□		None. Access will be obtained from existing gravel road
V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air.		□		None.
VI. Accumulation of large workforce (>50 manual workers) into the site.		□		Approximately 15 employment opportunities will be created during the construction and operational phase of the project.
VII. Utilization of significant volumes of local raw materials such as water, wood etc.	□			10 - 18ft washing pans which utilize approximately 10 000 –16 000 L per pan/per hour each from which 40% is re-used.
VIII. Job creation		□		Approximately 15 employment opportunities will be created during the construction and operational phase of the project.
IX. Traffic generation		□		None.

X. Soil erosion		□		Only areas earmarked for crushing will be cleared. The crushing will be phased and the topsoil stockpiled separately. Concurrent rehabilitation will take place. The soil also has a low erosion potential.
XI. Installation of additional bulk telecommunication transmission lines or facilities		□		None.
3. Is the proposed project located near the following				
I. A river, stream, dam or wetland		□		None
II. A conservation or open space area		□		None.
III. An area that is of cultural importance		□		None.
IV. A site of geological significance		□		None.
V. An area of outstanding natural beauty		□		None.
VI. Highly productive agricultural land		□		None.
VII. A tourist resort		□		None.
VIII. A formal or informal settlement		□		None.

Matrix analysis

The matrix describes the relevant listed activities, the aspects of the development that will apply to the specific listed activity, a description of the environmental issues and potential impacts, and the significance and magnitude of the potential impacts. The matrix also highlights areas of particular concern for more in depth assessment during the EIR process. Each cell is evaluated individually in terms of the nature of the impact, duration and its significance – should no mitigation measures be applied. This is important since many impacts would not be considered insignificant if proper mitigation measures were implemented. The matrix also provides an indication if mitigation measures are available.

In order to conceptualize the different impacts the matrix, specify the following:

Stressor: Indicates the aspect of the proposed activity, which initiates and cause impacts on elements of the environment.

Receptor: Highlights the recipient and most important components of the environment affected by the stressor.

Impacts: Indicates the net result of the cause-effect between the stressor and receptor.

Mitigation: Impacts need to be mitigated to minimise the effect on the environment.

Matrix Analysis

LISTED ACTIVITY(The Stresso r)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS		SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS			MITIGATION OF POTENTIAL IMPACTS	SPECIALIST STUDIES / INFORMATION
		Receptors	Impact description	Minor	Major	Duratio n	Possible Mitigation	
CONSTRUCTION PHASE								
Listing Notice 2 GNR325, Activity17: "Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including— (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource ; or (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting,	Development of infrastructure	Fauna & Flora	• Loss or fragmentation of indigenous natural vegetation. • Loss of sensitive species. • Loss or fragmentation of habitats.		-	S	Yes	-
		Air	Air pollution due to the increase of traffic of construction vehicles.					

beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies."					-		S	Yes	-
			Soil	• Soil degradation, including erosion. • Loss of topsoil. • Disturbance of soils and existing land use (soil compaction).		-	S	Yes	-
			Geology	It is not foreseen that the removal of indigenous vegetation will impact on the geology or vice versa.		-	S	Yes	-
			Existing services infrastructure	• Generation of waste that need to be accommodated at a licensed landfill site. • Generation of sewage that needs to be accommodated by the local sewage plant.		-	S	Yes	-
			Ground water	Pollution due to construction vehicles.	-		S	Yes	-
			Surface water	• Increase in storm water run-off. • Pollution of water sources due to soil erosion. • Destruction of watercourses (pans/dams/streams).		-	S	Yes	-
			Local unemployment rate	• Job creation. • Business opportunities. • Skills development.		+	S	Yes	-
			Visual landscape	Potential visual impact on residents of farmsteads and motorists in close proximity to proposed facility.	-		S	Yes	-

			Traffic volumes	Increase in construction vehicles.	-		S	Yes	-
			Health & Safety	• Air/dust pollution. • Road safety. • Increased risk of veldfires.		-	S	Yes	-
			Geology	It is not foreseen that the removal of indigenous vegetation will impact on the geology or vice versa.	N/A	N/A	N/A	N/A	-
			Existing services infrastructure	• Generation of waste that need to be accommodated at a licensed landfill site. • Generation of sewage that need to be accommodated by the local sewage plant.	-		S	Yes	-
			Ground water	Pollution due to construction vehicles.	-		S	Yes	-
			Surface water	• Increase in storm water run-off. • Pollution of water sources due to soil erosion. • Destruction of watercourses (pans/dams/streams).	-		S	Yes	-
		SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	• Job creation. • Skills development.		+	S	N/A	-
			Visual landscape	Potential visual impact on residents of farmsteads and motorists in close proximity to proposed facility due to dust.	-		S	Yes	-
			Traffic volumes	Increase in construction vehicles.	-		S	Yes	-
			Health & Safety	Air/dust pollution. Road safety.		-	S	Yes	-
			Noise levels	The generation of noise as a result of construction vehicles, and people working on the site.	-		S	Yes	-
			Tourism industry	Since there are no tourism facilities in close proximity to the site, the proposed activity will not have an impact on tourism in the	N/A	N/A	N/A	N/A	-

				area.					
			Heritage resources	• Removal or destruction of archaeological and/or paleontological sites. • Removal or destruction of buildings, structures, places and equipment of cultural significance. • Removal or destruction of graves, cemeteries and burial grounds.	N/A	N/A	N/A	N/A	-
OPERATIONAL PHASE									
Listing Notice 2 GNR 325,Activity17:– Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including— (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource; or (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;	The key components of the proposed project are described below: • Supporting Infrastructure - A control facility with basic services such as water and electricity will be constructed on the site and will have an approximate footprint 50m² or less. Other supporting infrastructure includes a site office and workshop area.		(Avi) Fauna & Flora	• Fragmentation of habitats. • Establishment and spread of declared weeds and alien invader plants (operations).	-		L	Yes	-
			Air quality	Air pollution due to the crushing activity, crusher plant and transport of the gravel to the designated areas.	N/A	N/A	N / A	N/A	-
			Soil	• Soil degradation, including erosion. • Disturbance of soils and existing land use (soil compaction). • Loss of agricultural potential (low significance relative to agricultural potential of the site).		-	L	Yes	-

but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.									
	• Roads – Access will be obtained from a local gravel road off the N8. All site roads will require a width of approximately10m. • Fencing - For health, safety and security reasons, the facility will be required to be fenced off from the surrounding farm.		Geology	• Collapsible soil. • Seepage (shallow water table). • Active soil (high soil heave). • Erodible soil. • The presence of undermined ground. • Instability due to soluble rock. • Steep slopes or areas of unstable natural slopes. • Areas subject to seismic activity. • Areas subject to flooding.		-	S	Yes	-
			Existing services infrastructure	• Generation of waste that need to be accommodated at a licensed landfill site. • Generation of sewage that need to be accommodated by the municipal sewerage system and the local sewage plant. • Increased consumption of water. Approximately 10 000 – 22 500 per pan per hour		-	L	Yes	-
			Ground water	Leakage of hazardous materials. The machinery on site requires oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies.	-		L	Yes	-

			Surface water	• Increase in storm water runoff. The development will potentially result in an increase in storm water run-off that needs to be managed to prevent soil erosion. • Destruction of watercourses (pans/dams/streams).		-	L	Yes	-
				Leakage of hazardous materials. The machinery on site requires oils and fuel to function. Leakage of these oils and fuel scan contaminate water supplies.					
		SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	Job creation. Security guards will be required for 24 hours every day of the week and general laborers will also be required Skills development.		+	L	Yes	-
			Visual landscape	Change in land-use/sense of place. The site is characterized by open veldt with a rural agricultural sense of place. The use of the area for the crushing activity will result in the area not being used for livestock grazing anymore until rehabilitated.		-	L	Yes	-
			Traffic volumes	Increase in vehicles collecting gravel for distribution.	-		S	Yes	-
			Health & Safety	Air/dust pollution Road safety.	N/A	N/A	N/A	N/A	-
			Noise levels	The proposed development will result in noise pollution during the operational phase.	-	-	S	Yes	-
			Tourism industry	Since there are no tourism facilities in close proximity to the site, the decommissioning activities will not have an impact on tourism in the area.	N/A	N/A	N/A	N/A	-
			Heritage resources	It is not foreseen that the proposed activity will impact on heritage resources or vice versa.	N/A	N/A	N/A	N/A	-
DECOMMISSIONING PHASE									

-	Mine closure During the mine closure the Mine and its associated infrastructure will be dismantled. Rehabilitation of biophysical environment The biophysical environment will be rehabilitated.	BIOPHYSICAL ENVIRONMENT	(Avi) Fauna & Flora	Re-vegetation of exposed soil surfaces to ensure no erosion in these areas.	+		L	Yes	-
			Air quality	Air pollution due to the increase of traffic of construction vehicles.	-		S	Yes	-
			Soil	• Backfilling of all voids • Placing of topsoil on backfill	+		L	Yes	-
			Geology	It is not foreseen that the decommissioning phase will impact on the geology of the site or vice versa.	N/A	N/A	N/A	N/A	-
			Existing services infrastructure	• Generation of waste that need to be accommodated at the local landfill site. • Generation of sewage that need to be accommodated by the municipal sewerage system and the local sewage plant. • Increase in construction vehicles.	-		S	Yes	-
			Ground water	Pollution due to construction vehicles.	-		S	Yes	-
			Surface water	• Increase in storm water run- off. • Pollution of water sources due to soil erosion. • Destruction of watercourses (pans/dams/streams).	-		S	Yes	-
	SOCIAL/ECONOMIC	ENVIRONMENT	Local unemployment rate	Loss of employment.		-	L	Yes	-

			Visual landscape	Potential visual impact on visual receptors in close proximity to proposed facility.	-		S	Yes	-
			Traffic volumes	Increase in construction vehicles.	-		S	Yes	-
			Health & Safety	• Air/dust pollution. • Road safety. • Increased crime levels. The presence of mine workers on the site may increase security risks associated with an increase in crime levels as a result of influx of people in the rural area.	-			Yes	-
			Noise levels	The generation of noise as a result of construction vehicles, the use of machinery and people working on the site.	-		S	Yes	-
			Tourism industry	Since there are no tourism facilities in close proximity to the site, the decommissioning activities will not have an impact on tourism in the area.	N/A	N/A	N/A	N/A	-
			Heritage resources	It is not foreseen that the decommissioning phase will impact on any heritage resources.	N/A	N/A	N/A	N/A	-

(N/A) No impact (+) Positive Impact (-) Negative Impact (S) Short Term (M) Medium Term (L) Long Term

k) Summary of specialist reports.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS
Heritage Impact Assessment	SAHRA has been consulted on the Scoping phase. No comments received.	X	

I) Environmental impact statement

Summary of the key findings of the environmental impact assessment;

This section provides a summary of the assessment and conclusion drawn from the proposed crushing area. In doing so, it draws on the information gathered as part of the environmental impact assessment process and the knowledge gained by the environmental consultant during the course of the process and presents an informed opinion on the environmental impacts associated with the proposed project. The following conclusions can be drawn for the proposed crushing activity:

Potential impacts on biodiversity: There are biodiversity features (aquatic ecosystems) in the form of small non-perennial pan is found on site, which can be adequately mitigated by means of a Water Use License Application if they plan to crush in on near the pans, otherwise no impacts to the pans are expected.

Potential impacts on land use: The farm is currently utilized as low potential cattle grazing and crop production. The activity which will be subject to concurrent rehabilitation will not have any significant impact on the land use nor will it change the sense of place of the area.

Potential social impacts: The presence of construction workers poses a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks.

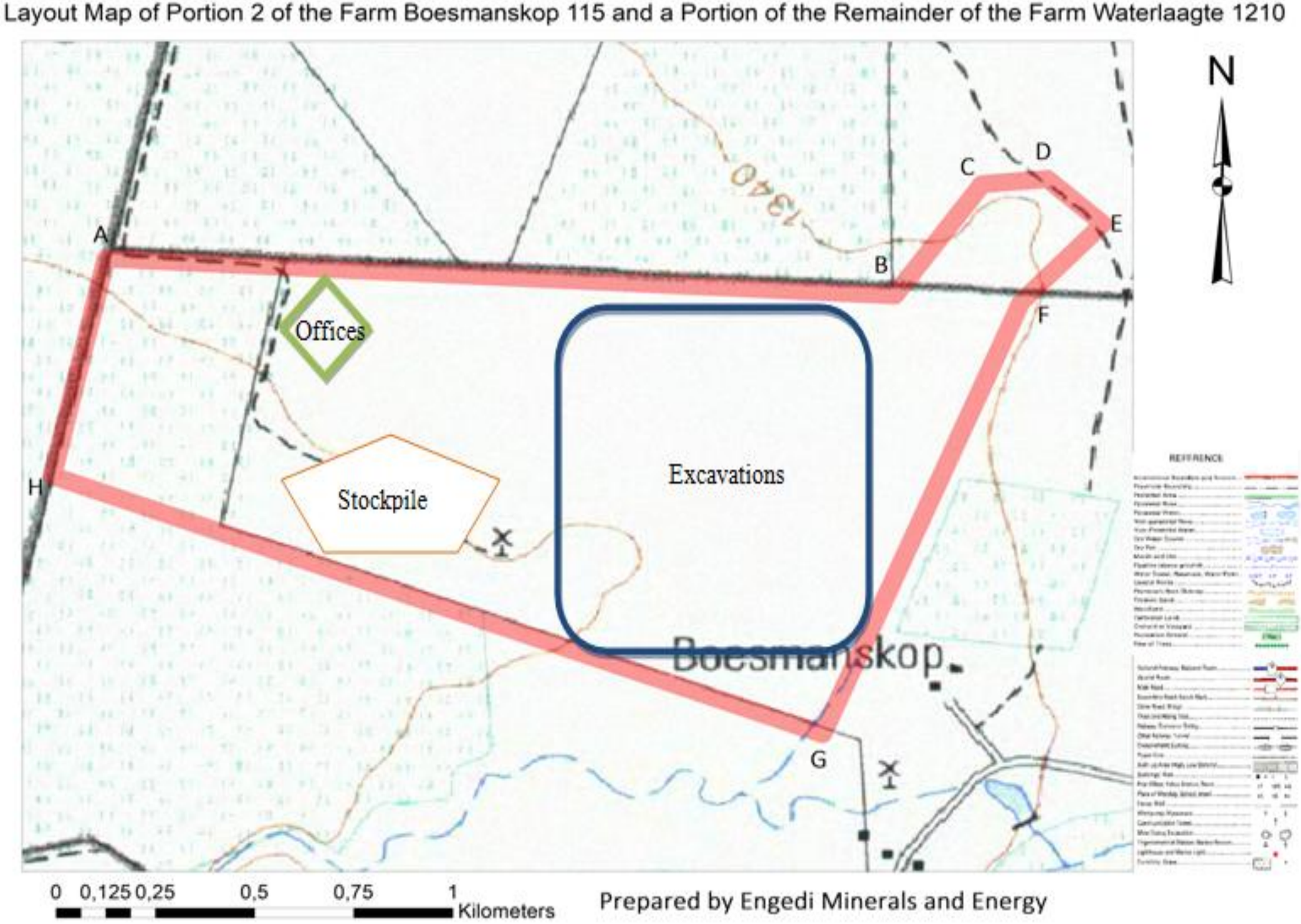
Potential negative impacts: (noise, dust, soil degradation, storm water, traffic, health and safety) associated with the operation of the facility are expected to be low-medium impact, of medium terms and site specific. These can be mitigated or negated through the implementation of practical and appropriate mitigation measures.

Positive impacts: The crushing of Stone aggregate, Gravel and Clay will have socio-economic benefit to the area.

All possible negative impacts and risks that have been identified in this report can be effectively mitigated and managed by implementing the migratory measures as set out in the Environmental Management Programme (EMPr) attached in Part B. It is therefore recommended that the environmental authorisation for borrow pit be granted.

(i) 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.



(ii) Summary of the positive and negative implications and risks of the proposed activity and identified alternatives;

There are regional socio economic benefits due to the Stone aggregate, Gravel and Clay being crushed in the Free State Province and greater knowledge is gained on the mineralogy of South Africa. All possible negative impacts and risks that have been identified in this report can be effectively mitigated and managed by implementing the mitigation measures as set in the Environmental Management Programme (EMPr) attached in Part B. No significantly social or environmental impacts are anticipated.

m) 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.

Management objectives include: Ensure that mining activity does not cause pollution to the environment or harm to persons. Minimise production of waste.

All mining activities must be conducted in a manner that minimizes noise impact, litter, environmental degradation and health hazards i.e. injuries. The mine must be kept neat and tidy during waste handling to prevent unsightliness and accidents. Expected outcomes include: Minimum impacts on the environment as a result of Stone aggregate, Gravel and Clay crushing. Compliance with legislative requirements mine is neat and tidy and well managed

n) Final proposed alternatives

(Provide an explanation for the final layout of the infrastructure and activities on the overall site as shown on the final site map together with the reasons why they are the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment)

None were proposed since crushing/mining of particular minerals occurs at specific areas.

o) Aspects for inclusion as conditions of Authorisation

Any aspects which have not formed part of the EMPr that must be made conditions of the Environmental Authorisation

The operational activities and relevant rehabilitation of disturbed areas should be monitored against the improved EMPr and all other relevant environmental legislation.

A copy of the EM should be made available onsite at all times. Implementation of the proposed mitigation measures set out in the EMPr.

p) Description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;

The uncertainties in results are mostly related to the availability of information, time available to gather the relevant information as well as the sometimes subjective nature of the assessment methodology. In terms of addressing the key issues the EAP is satisfied that there are no major gaps in knowledge and that the specialist reports provide sufficient information to conduct the significant rating and provide the environmental authority with sufficient information to make an informed decision.

q) A reasoned opinion as to whether the proposed activity should or should not be authorized

Reasons why the activity should be authorized or not;

It is the opinion of the EAP that the activity may be authorized.

.

Based on the outcomes of other Stone aggregate, Gravel and Clay mines in the area, the possibility to encounter further Stone aggregate, Gravel and Clay Reserves were identified.

The proposed crushing area is targeted as, historically, several Stone aggregate, Gravel and Clay occurrences are known in the area, and a number of these have been exploited in the past. There are also various Stone aggregate, Gravel and Clay operations within the vicinity of exploration area.

No other properties have been secured by the applicant and the site is therefore regarded as the preferred site, and alternatives are not considered.

The option of not approving the activities will result in significant loss to valuable Stone aggregate, Gravel and Clay being exploited. And all economic benefits will be lost.

xi) Any conditions that must be included in the authorisation

(1) Specific conditions to be included into the compilation and approval of EMPr

The operational activities and relevant rehabilitation of disturbed areas should be monitored against the improved EMPr and all other relevant environmental legislation.

A copy of the EMP should be made available onsite at all times. Implementation of the proposed mitigation measures set out in the EMPr.

The EMPr should binding on all managers and contractors operating/utilizing the site.

(2) Rehabilitation requirements

All the excavated areas and where the crushing equipment must rehabilitated to finality and to the satisfaction of the DMR. No area should be left rehabilitated unless it's agreed with the land owner such agreement is submitted to the DMR.

r) The period for which the Environmental Authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalized;

The environmental authorization is required for 30 years.

s) Financial Provision

State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation. **R 62 178.97**

Applicant: **MALUTI PLANT AND CRUSHERS CC- FS 10072 MR** **Location:** **Bloemfontein**
Evaluator(s) **Engedi Minerals and Energy (Pty) Ltd** **Date:** **May-22**

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	19	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	271	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	400	1	1	0
3	Rehabilitation of access roads	m2	5,00	49	1	1	245
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	471	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	3	257	1	1	771
5	Demolition of housing and/or administration facilities	m2	0	542	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	0,01	284292	1	1	2842,92
7	Sealing of shafts adits and inclines	m3	0	146	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0,01	189528	1	1	1895,28
8 (B)	Rehabilitation of processing waste deposits and evaporatic ponds (non-polluting potential)	ha	0,01	236054	1	1	2360,54
8 (C)	Rehabilitation of processing waste deposits and evaporatic ponds (polluting potential)	ha	0	685612	1	1	0
9	Rehabilitation of subsided areas	ha	0,1	158701	1	1	15870,1
10	General surface rehabilitation	ha	0,1	150138	1	1	15013,8
11	River diversions	ha	0	150138	1	1	0
12	Fencing	m	0	171	1	1	0
13	Water management	ha	0,1	57087	1	1	5708,7
14	2 to 3 years of maintenance and aftercare	ha	0	19980	1	1	0
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
					Sub Total 1		44707,34

1	Preliminary and General	5364,8808	weighting factor 2 1	5364,8808
2	Contingencies	4470,734		4470,734
			Subtotal 2	54542,95
			VAT (15%)	7636,01
			Grand Total	**R 62 178,97**

Explain how the aforesaid amount was derived.

The closure cost estimate provided above is aligned with the Guideline Document for the Evaluation of Quantum of Closure related Financial Provision Provided by a Mine , by the DMR (January, 2005). The amount was calculated by Engedi Minerals and Energy (Pty) Ltd.

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 Mining work programme, Financial and Technical Competence Report or Crushing Work Programme as the case may be).

The financial provision will be provided for in the form of a bank guarantee.

t) Deviations from the approved scoping report and plan of study

Deviations from the methodology used in determining the significance of potential environmental impacts and risks.
(Provide a list of activities in respect of which the approved scoping report was deviated from, the reference in this report identifying where the deviation was made, and a brief description of the extent of the deviation).

No deviation from scoping in this report.

Motivation for the deviation
N/A

u) Other Information required by the competent Authority

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 the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or Stone aggregate, Gravel and Clay crushing 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 **Appendix 2.19.1** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).

The crushing of Stone aggregate, Gravel and Clay will not impact directly on any socio-economic aspects. Indirect socio-economic benefits are expected to be associated with the creation of employment.

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 Stone aggregate, Gravel and Clay crushing 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.and2.12.herein).

Crushing of Stone aggregate, Gravel and Clay will not impact on any heritage estate referred to in section 3(2) of the National Heritage Resources Act. It is noted that, in terms of the National Heritage Resource Act no 25 of 199. Heritage resources including archaeological and paleontological sites over 100 years old, graves older than 60 years, structure older than 60 years are protected. They will not be disturbed without a permit from the relevant heritage

resource Authority, which means that before such sites are disturbed by development it is incumbent on the developer to ensure that heritage impact assessment is done and the Provincial Heritage Resources Authority and SAHRA will be contacted immediately and work will stop.

v) 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 as 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 4)**.

No any other area can be chosen than this one since it is situated where there are Stone aggregate, Gravel and Clay.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. **DRAFT ENVIRONMENTAL MANAGEMENTPROGRAMME.**

   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).

   Confirmed

   b) **Description of the Aspects of the Activity,**

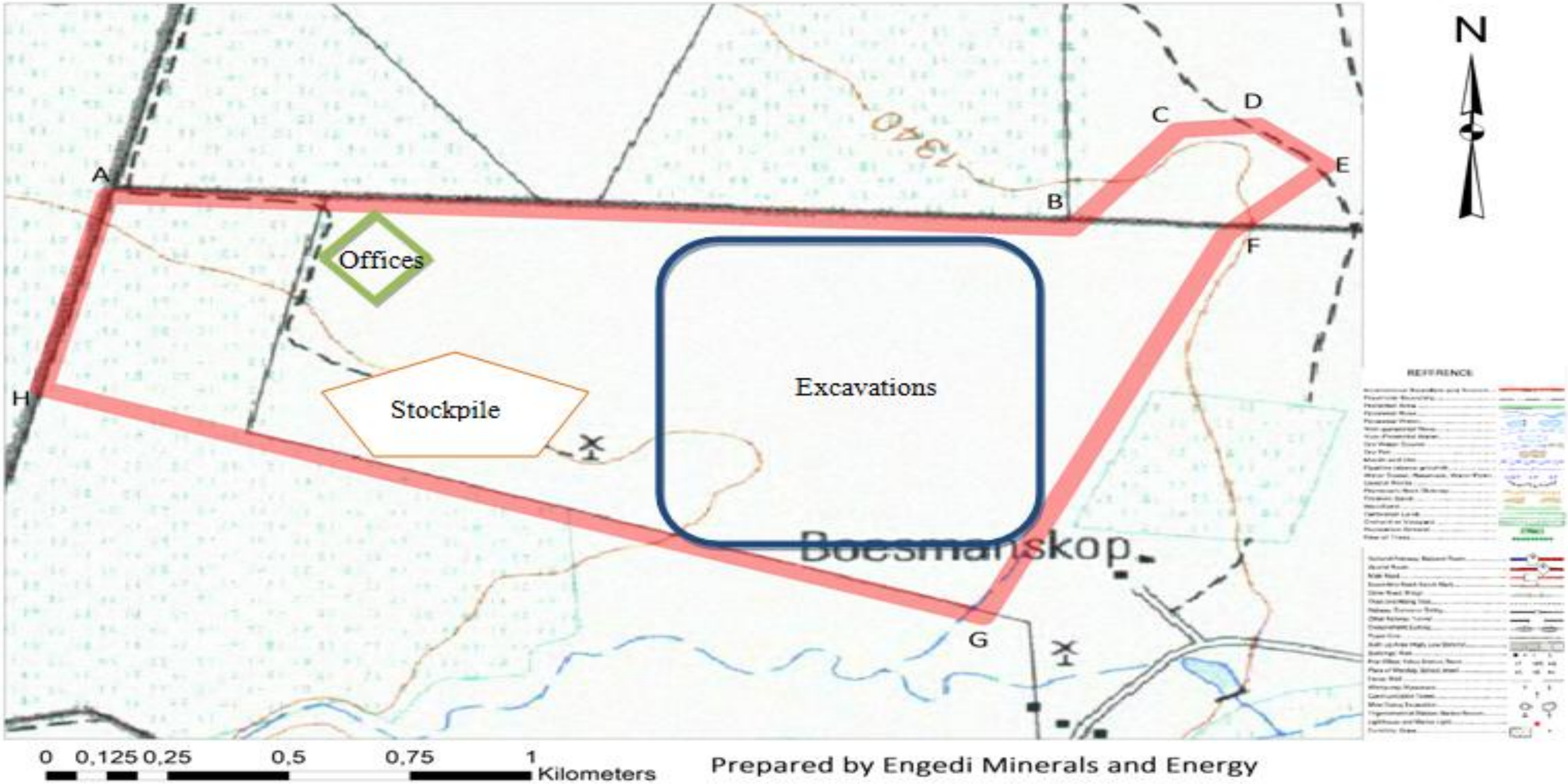
   (Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required).

   Confirmed

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)

Layout Map of Portion 2 of the Farm Boesmanskop 115 and a Portion of the Remainder of the Farm Waterlaagte 1210



Prepared by Engedi Minerals and Energy

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 in 2.4 herein) The closure objectives for crush Stone aggregate, Gravel and Clay crushing will aim at ensuring that the residual post-closure negating environmental impacts be minimized and kept at an acceptable level to relevant parties. In order to achieve such closure objectives the following measures must be implemented;

All crushing related infrastructure, foundations and concrete areas will be decommissioned, removed from the site and appropriately disposed off to a relevant registered facility. Reclaimable structures such as metal, electrical installations or equipment will be sold for re-use or as scrap.

All disturbed areas within the site not already vegetated will be re-vegetated with appropriate indigenous vegetation type, ecologically adopted species appropriate to the area and the final land-use as soon as possible after operation ceases. Progress of vegetation re- establishment, stability and erosion will be monitored and in the event of adverse trends of erosion been identified, corrective measures will be implemented. In the case where the vegetation natural grows after rehabilitation no indigenous re-vegetation will be necessary.

Vegetation monitoring will consider, inter lia, the establishment of perennial ground cover and infestation by alien invasive species. The encroachment of indigenous vegetation into the area will be used as an indication of a stable, self-sustaining vegetation cover with little risk of retrogressing to a situation where land and water pollution may occur.

ii) The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity.

Any water that will be used in the process of crushing activities and get polluted will be re-used in the process or cleaned before its pumped back to the source. No polluted water will be disposed off to the water stream prior to cleaning or recycling.

All the polluted soil by hydrocarbon spills will be rehabilitated by a chemical in the soil rehabilitation farm or be disposed off through a registered facility by a contractor (i.e Oilkol or inter-waste).

iii) **Potential risk of Acid Mine Drainage**. (Indicate whether or not the mining can result in acid mine drainage).

The crushing activity at hand is highly unlikely to result in Acid Mine Drainage since Stone aggregate, Gravel and Clay crushing uses minimal or no chemicals during the processing of aggregate of various sizes and other related activities.

iv) Steps taken to investigate, assess, and evaluate the impact of acid mine drainage.

The crushing activity at hand is highly unlikely to result in Acid Mine Drainage since Stone aggregate, Gravel and Clay crushing uses minimal or no chemicals during the processing of aggregate of various sizes and other related activities

v) Engineering or mine design solutions to be implemented to avoid or remedy acid mine drainage.

Not applicable

vi) Measures that will be put in place to remedy any residual or cumulative impact that may result from acid mine drainage.

Not applicable

vii) Volumes and rate of water use required for the mining, trenching or bulk sampling operation.

10 000 to 16 000 L day for the rotary pans. The water used will be from a borehole.

viii) Has a water use licence has been applied for?

No, the water use licence has not been applied for yet. The licence will be applied for with the Department of Water and Sanitation.

e) Impacts and risks to be avoided, managed and mitigated in their respective phases and measures to rehabilitate the environment affected by the undertaking of any listed activity

NAME OF ACTIVITY **(E.g. For prospecting –** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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)**	**POTENTIAL IMPACT** (Including the potential impacts for cumulative impacts) (E.g. dusts, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc…etc…etc…)	**ASPECTS AFFECTED**	**PHASEIn which impact is anticipated** (e.g. Construction, commissioning , operational, decommissioni n g, closure, post-closure)	**SIGNIFICANCE If not mitigated**	**MITIGATION TYPE** (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…etc…etc)	**SIGNIFICANCE If mitigated**
Site Establishment activities (fencing, signage, access formation, etc)	Loss of vegetation	Visual character, Land use	Pre-mining	Medium	Remedy through rehabilitation, Limit footprint	Low
	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
Clearance of area for mining	Visual scarring	Visual Character	Operation al Phase	Medium	Remedy through rehabilitation	Low
	Destruction of flora and habitat	Visual Character, Land use	Operation al Phase	Medium	Remedy through rehabilitation, Limit footprint and removal of vegetation	Low

	Loss of agricultural	Land use management	Operational Phase	Low	Control through soil conservation techniques	Low
	potential				Limit footprint of the proposed prospecting as far possible to limit loss of agricultural land	
	Soil erosion	Land use	Operational Phase	Medium	Control through soil conservation techniques, Stop through appropriate storage of topsoil	Low
Crushing	Noise and vibration s	Noise	Operational Phase	Medium	Control through blast control measures	Low
	Dust	Air quality	Operational Phase	Low	Control through dust control measures	Low
	Fly rock	Safety	Operational Phase	Low	Control through blast control measures	Low
Waste Disposal and Material storage	Soil contamination	Land degradation	Operational Phase	Low	Avoidance	Low
	Water pollution	Water	Operation al 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 stormwater 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 Improved skills	Community relations Community relations	Operational	Low	Control through Site Management protocols	Low

f) Impact Management Outcomes

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

ACTIVITY whether listed or not listed. **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, powerlines, conveyors, etc…etc…etc.)**.	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(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. etc)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation..**	**STANDARD TO BE ACHIEVED** **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**
Clearance of vegetation	Loss or fragmentation of habitats	(Avi) Fauna & flora	construction and operation phase	Existing vegetation 1. Vegetation removal must be limited to the mining area. 2. Vegetation to be removed as it becomes necessary rather than removal of all vegetation throughout the site in one-step. 3. No vegetation to be used for firewood. 4. Exotic and invasive plant species should not be allowed to establish, if the development is approved. 5. Thorn trees shall not be removed or damaged without prior approval and permits. Rehabilitation 6. All damaged areas shall be rehabilitated upon completion of the contract. 7. Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to construction. 8. All natural areas impacted during construction/mining must be rehabilitated with locally indigenous grasses typical of the representative botanical unit. 9. Rehabilitation must take place in a phased approach as soon as possible. 10. Rehabilitation process must make use of species indigenous to the area. Seeds from surrounding seed banks can be used for re-seeding. 11. Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas. 12. Planting of indigenous tree species in areas not to be cultivated or built on must been encouraged. Demarcation of mining area 13. All plants not interfering with mining operations shall be left undisturbed clearly marked and	Minimization of impacts to acceptable limits

				indicated on the site plan. 14. The mining area must be well demarcated and no construction/mining activities must be allowed outside of this demarcated footprint. 15. Vegetation removal must be phased in order to reduce impact of construction/mining. 16. Site office and lay down areas must be clearly demarcated and no encroachment must occur beyond demarcated areas. 17. Strict and regular auditing of the mining process to ensure containment of the mining and lay down areas. 18. Soils must be kept free of petrochemical solutions that may be kept on site during construction/mining. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora. Utilization of resources 19. Gathering of firewood, fruit, muti plants, or any other natural material onsite or in areas adjacent to the site is prohibited unless with prior approval of the ECO. Exotic vegetation 20. Alien vegetation on the site will need to be controlled. 21. The Contractor should be responsible for implementing a programme of weed control (particularly in areas where soil has been disturbed); and grassing of any remaining stockpiles to prevent weed invasion. 22. The spread of exotic species occurring throughout the site should be controlled. Herbicides 23. Herbicide use shall only be allowed according to contract specifications. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally friendly herbicides shall be used. 24. The use of pesticides and herbicides on the site must be discouraged as these impact on important pollinator species of indigenous vegetation. (Avi) Fauna 25. Rehabilitation to be undertaken as soon as possible after the mining activities have been completed. 26. No trapping or snaring to fauna on the construction/mining site should be allowed. 27. No faunal species must be disturbed, trapped, hunted or killed by maintenance staff during any routine maintenance at the development. 28. No impacts on bats are expected since mining will be taking place	

				during the day and not at night, also no cave like structures are found on site.	
excavations and crushing	Loss of topsoil	Soil	construction and operation phase	1. The Contractor should, prior to the commencement of earthworks determine the average depth of topsoil, and agree on this with the ECO. The full depth of topsoil should be stripped from areas affected by construction and related activities prior to the commencement of major earthworks. This should include the building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas. 2. Care must be taken not to mix topsoil and subsoil during stripping. 3. The topsoil must be conserved on site in and around the excavation area. 4. Subsoil and overburden in the mining area should be stockpiled separately to be returned for backfilling in the correct soil horizon order. 5. If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or geo fabric, depending on the duration of the project. Stockpiles may further be protected by the construction of berms or low brick walls around their bases. 6. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding. 7. Where contamination of soil is expected, analysis must be done prior to disposal of soil to determine the appropriate disposal route. Proof from an approved waste disposal site where contaminated soils are dumped if and when a spillage/leakage occurs should be attained and given to the project manager. Establish an effective record keeping system for each area where soil is disturbed for mining purposes. These records should be included in environmental performance reports, and should include all the records below. •Record the GPS coordinates of each area. •Record the date of topsoil stripping. •Record the GPS coordinates of where the topsoil is stockpiled. •Record the date of cessation mining activities at the particular site. •Photograph the area on cessation of mining activities. •Record date and depth of re-spreading of topsoil. •Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time.	Minimization of impacts to acceptable limits

	Erosion	Air Soil Water	construction and operation phase	1. An effective system of run-off control should be implemented, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion. 2. Periodical site inspection should be included in environmental	Minimization of impacts to acceptable limits
				performance reporting that inspects the effectiveness of the run-off control system and specifically records the occurrence of any erosion on site or downstream. 3. Wind screening and storm water control should be undertaken to prevent soil loss from the site. 4. The use of silt fences and sand bags must be implemented in areas that are susceptible to erosion. 5. Other erosion control measures that can be implemented are as follows: o Brush packing with cleared vegetation o Mulch or chip packing o Planting of vegetation o Hydro seeding/hand sowing 6. Sensitive areas need to be identified prior to construction/mining so that the necessary precautions can be implemented. 7. All erosion control mechanisms need to be regularly maintained. 8. Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces. 9. Retention of vegetation where possible to avoid soil erosion. 10. Vegetation clearance should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time. 11. Re-vegetation of disturbed surfaces should occur immediately after construction/mining activities are completed. This should be done through seeding with indigenous grasses. 12. No impediment to the natural water flow other than approved erosion control works is permitted. 13. To prevent storm water damage, the increase in storm-water run-off resulting from construction/mining activities must be estimated and the drainage system assessed accordingly. 14. Stockpiles not used in three (3) months after stripping must be seeded or backfilled to prevent dust and erosion.	

	Air Pollution	Air	construction and operation phase	Dust control 1. Wheel washing and damping down of un-surfaced and un-vegetated areas. 2. Retention of vegetation where possible will reduce dust travel. 3. Clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas. 4. Damping down of all exposed soil surfaces with a water or sprinklers when necessary to reduce dust. 5. The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to the neighbouring communities. 6. A speed limit of 30km/h must not be exceeded onsite. 7. Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the Contractor. 8. Any dirt roads that are utilised by the workers must be regularly	Minimisation of impacts to acceptable limits
				maintained to ensure that dust levels are controlled. Odour control 9. Regular servicing of vehicles in order to limit gaseous emissions. 10. Regular servicing of onsite toilets to avoid potential odours. Rehabilitation 11. The Contractor should commence rehabilitation of exposed soil surfaces as soon as practical after completion of earthworks. Fire prevention 12. No open fires shall be allowed on site under any circumstance. All cooking shall be done in demarcated areas that are safe and cannot cause runaway fires. 13. The Contractor shall have operational fire-fighting equipment available on site at all times. The level of firefighting equipment must be assessed and evaluated through a typical risk assessment process.	

g) 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) **(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…etc…etc)**	**POTENTIALIMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc…etc…etc…)**	**MITIGATION TYPE** **(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…etc…etc…)**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard Rehabilitation, therefore state either– • Upon cessation of the individual activity Or Upon cessation of crushing, bulk sampling or alluvial diamond crushing as the case may be.	**COMPLIANCE WITH STANDARDS** (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).
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 crushing. 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 Crushing 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	
Crushing	Drainage disruption	Control with Storm water controls	Operational Phase	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
	Slope instability	Control with slope management controls	Operational Phase	
	Noise	Control with Noise control measures	Operational Phase	
	Visual Scarring	Rehabilitation	Operational Phase	
	Soil erosion	Rehabilitation, use slope	Operational Phase	

		management control		in COLTO 1998, Crushing and Petroleum Resources Development Act regulations, Mine Health and Safety Ac
	Destruction of heritage resource	Avoidance	Operational Phase	
	Noise and vibrations	Control with blast control measures	Operational Phase	
Waste Disposal and Material storage	Dust	Control with dust contro measures Control wit blast control 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 will include compliance with standards as per COLTO 1998, Explosive Act regulations, Mine Health and Safety Act Regulations and the Hazardous Substances Act
	Fly rock	Control with blast control measures	Operational Phase	
	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 crushing	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 crushing 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 Crushing 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	Operational Phase	
	Soil contamination from oil/fuel leaks	Control with operational control measures	Operational Phase	
	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, Crushing 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	
Site Establishment activities (fencing, signage, access formation, etc.)	Increased risk of fire	Control using site management protocols	Operational	The future impacts from the proposed crushing 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
	Reduced security on area	Control site management protocols	Operational	
	Improved employment	Control site management protocols	Operational	

	Improved skills	Controls site management protocols	Operational	the environmental standards as set out in COLTO 1998, the National Environmental Management Act, Conservation of Agricultural resources Act and National Environmental
	Loss of vegetation	Remedy through rehabilitation	Start-up	Management Biodiversity Act regulations

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

h) **Monitoring of Impact Management Actions**
i) **Monitoring and reporting frequency**
j) **Responsible persons**
k) **Time period for implementing impact management actions**
l) **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
Clearance of vegetation	Loss or fragmentation of habitats	•Conduct regular internal audits •Conduct regular external audits	•Environmental Manager •Suitable qualified environmental auditor	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required
Crushing of Stone aggregate, Gravel and Clay – excavations	Loss of topsoil Erosion Air Pollution Noise Impact on potential cultural and heritage artifacts	•Conduct regular internal audits •Conduct regular external audits	•Environmental Manager •Suitable qualified environmental auditor	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required
Waste management	Pollution	•Conduct regular internal audits •Conduct regular external audits	•Environmental Manager •Suitable qualified environmental auditor	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required
Water use and quality	Water pollution	•Conduct regular internal audits •Conduct regular external audits	•Environmental Manager •Suitable qualified environmental auditor	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required

m) Indicate the frequency of the submission of the performance assessment report.

The performance assessment report will be compiled by a relevant specialist and be submitted bi-annually to the DMR.

n) 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**.

The following environmental plan will be implemented during crushing on site;

Employees (full-time and contractors) will be given induction courses which include environmental aspects such hydrocarbon spills handling, veld fires, water pollution, handling of fauna and flora species especially the protected ones and procedures to be followed during an environmental accident occurrence.

All the trainings will be held on the daily basis during the toolbox talks of employees at the beginning of each shift.

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

Maluti Plant and Crushers CC will implement the necessary incident report and reporting procedure in order to identify risks timorously and implement actions to avoid or minimize environmental risks on site.

o) Specific information required by the Competent Authority (Among others, confirm that the financial provision will be reviewed annually).

No specific information has been detailed and required by the competent authority

CLOSURE OBJECTIVES

a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under Regulation22 (2) (d) as described in 2.4 herein.

 Final landforms must be resilient to perturbation and also be self-sustaining to obviate/limit further/ongoing interventions and maintenance by Maluti Plant and Crushers the remaining impacts be of an acceptable nature with minimal deterioration over time. the final outcome of the mine

site rehabilitation would be productive systems, where required sustaining either cattle or wildlife. Environmental and human quality of life, including health and safety requirements in general, would not be compromised; and Closure is achieved in an efficient and cost-effective manner as possible and with minimum socioeconomic changes.

The above goal is underpinned by more specific objectives listed below.

1. **Upfront planning/development**

To provide overall guidance and direction to closure planning and/or the implementation of progressive closure measures over the remaining over the crushing life.

2. **Physical stability**

To ensure that surface infrastructure and crushing residue and/or disturbances that are present at processing plant decommissioning will be removed and/or stabilized in a manner that these will not compromise post-closure land use and be sustainable long-term landforms.

Closure, removal and disposal of all surface infrastructures that has no beneficial post-closure use

Shaping and vegetating the remaining earth embankments, etc. to stabilise slopes and integrate with surrounding topography

3. Environmental quality

To ensure that local environmental quality is not adversely affected by possible physical effects arising from crushing operations and the crushing site after closure. This will be achieved by:

 Avoiding and/or limiting the following during crushing operations which could result in adverse effects that could not be readily addressed and/or mitigated at mine closure

- Dust fall-out areas surrounding the crushing site.
- Wash-off and/or mobilisation of chemically contaminated soils and sediments from the crushing site that could have long term adverse effects on local aquatic health and/or other water uses.
- Possible shallow groundwater contamination adversely affecting the quality

of the local water resource and its beneficial use. limiting the potential for dust generation on the rehabilitated crushing site that could cause nuisance and/or health

effects to surrounding landowners;

- Limiting the possible adverse water quality and quantity effects arising from the rehabilitated crushing site to ensure that long term beneficial use of local resources is not compromised;
- Conducting soil clean-up/remediation to ensure that the planned land use could be implemented and maintained;

4. Health and safety

To limit the possible health and safety treats due to terrain hazards to humans and animals utilizing the rehabilitated crushing site after closure by:

- demonstrating through upfront soil testing that any resultant inorganic and organic pollution present on the site is acceptable; Removal of potential contaminants such as hydrocarbons and chemicals off site;
- shaping of embankments and trenches to safe slopes and reintegrating of these into surrounding topography ensuring that the environmental quality as reflected above is achieved

5. Land capability / land use

To ensure that the required land capability to achieve and support the planned land use can be achieved over the crushing site by:

- Clean-up and reclamation of contaminated soil areas in order not to compromise the above land use planning earmarked for implementation;
- To ensure that the overall rehabilitated crushing site is free draining
- Transferring crushing related surface infrastructure to third parties for beneficial use after closure.

6. Aesthetic quality

To ensure that the rehabilitated crushing site will display, at a minimum, an acceptable aesthetic appearance that would not compromise the planned land use by leaving behind:

- A crushing area that is properly cleared-up with no fugitive/scattered waste piles
- Rehabilitated crushing area that is free draining and disturbed areas that are suitably vegetated.
- Rehabilitated crushing residues that are suitably landscaped, blending with the surrounding environment as far as possible.
- Shaped and rehabilitated terrace and hard stand areas, roughly emulating the local natural surface topography.

7. Landscape viability

To create a landscape that is self-sustaining and over time will evolve/converge to the desired ecosystem structure, function and composition by:

- Conducting surface profiling, with associated material movement optimisation, to obtain a landscape resembling the natural landscapes to support the succession trajectory towards a climax ecological system.
- Establishing woody patches and create –rough and loose‖ areas for pioneer specie establishment around the respective patches. Establishing pioneer species as follows:
  - Cuttings collected from surrounding veld areas;
- Conducting rehabilitation monitoring and corrective action as required.

8. Biodiversity

To encourage, where appropriate, the re-establishment of native vegetation on the rehabilitated mine site such the terrestrial biodiversity is largely re-instated over time, by:

- Stabilising disturbed areas to prevent erosion in the short- to medium term until a suitable vegetation cover has established; and establishing viable self-sustaining

vegetation communities of local fauna, as far as possible

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

The closure objectives within the EMPr have been presented to the public as part of the public participation process and on- going closure planning for crushing activities.

c) 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.

Map drawn

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

The rehabilitation plan is compatible with the closure plan in that it focuses on rehabilitating the entire disturbed environment to archive a closure that will be satisfactory to the DMR, stakeholders, interested and affected parties. And at the end the area will be able to support grazing for cattle as it is currently prior to crushing.

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

Rehabilitation quantum attached.

f) Confirm that the financial provision will be provided as determined.

Maluti Plant and Crushers CC is determined to make available financial provision as determined by the DMR and agreed upon with the EAP.

APPENDIX A:

THE CV AND DECLARATION 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 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 (Mining Right, Mining Right, and Mining Permit on DMR Samrad online 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, mining 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 : Managing high quality production and enforcing safe working 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 (Mining 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 Mining 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 (Mining 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 Mining 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 news papers, 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 everyday 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

pride, determination, and resilience
Reg. No. 2015/153624/07

Cell: 079 362 6046 (+27)
076 763 8486 (+27)
Fax: 086 556 2568 (+27)

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mulaudzit@engedime.com
www.engedime.com

8th of February 2021

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

As refer to the subject of the matter above;

I am hereby confirming 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) 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 8th of Februa

SUID-AFRIKAANSE POLISIEDIENS
COMMUNITY SERVICE CENTRE
2021 -02- 0 8
BAYSWATER
SOUTH AFRICAN POLICE SERVICE

Yours sincerely

T. Mulaudzi
Engedi Minerals and Energy (Pty) Ltd (Consultant)

Ek sertifiseer dat bostaande verklaring deur my afgeneem is en dat die verklaarder erken dat hy/sy vertroud is met die inhoud van hierdie verklaring en dit begryp. Hierdie verklaring is voor my beëdig/bevestig en verklaarder se handtekening/duimafdruk is in my teenwoordigheid daarop aangebring.

te BAYSWATER op 2021-02-08 om 14:00
at on

(HANDTEKENING) KOMMISSARIS VAN EDE
(SIGNATURE) COMMISSIONER OF OATHS

VOLLE VOORNAME EN VAN IN DRUKSKRIF
FULL FIRST NAMES AND SURNAME IN BLOCK LETTERS

BESIGHEIDSADRES (STRAATADRES)
BUSINESS ADDRESS (STREET ADDRESS)

RANG/STATUS

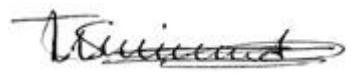
I certify that the above statement was taken by me and that the deponent has acknowledged that he/she knows and understands the contents of this statement. This statement was sworn to/affirmed me and deponent's signature/mark/thumbprint was placed thereon in my presence.

T.K. MALEBANE
99 WILCOKS STR
BLOEMTOS

SA POLISIEDIENS
SA POLICE SERVICE

APPENDIX 2
UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I *Tshimangadzo Mulaudzi* herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected parties has been correctly recorded in the report.

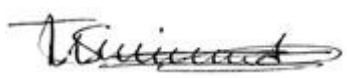


Signature of the EAP

DATE: 06 May 2022

APPENDIX 3
UNDERTAKING REGARDING LEVEL OF AGREEMENT

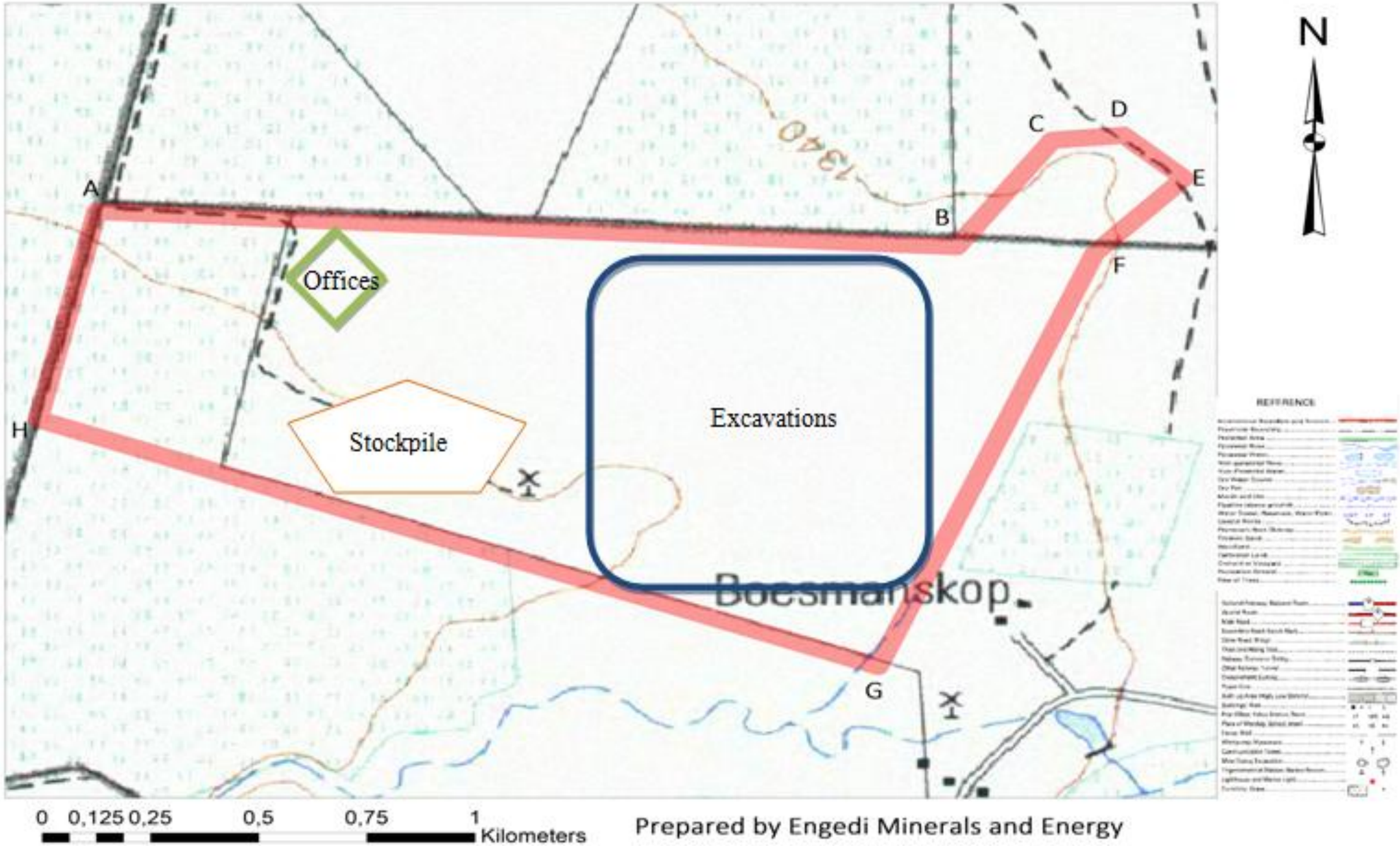
I *Tshimangadzo Mulaudzi* herewith undertakes that the information provided in the foregoing report is correct, and that the level of agreement with interested and Affected Parties and stakeholders has been correctly recorded and reported herein.



Signature of the EAP

DATE: 06 May 2022

Layout Map of Portion 2 of the Farm Boesmanskop 115 and a Portion of the Remainder of the Farm Waterlaagte 1210



Prepared by Engedi Minerals and Energy

-END