SCOPING REPORT FOR THE APPLICATION OF A MINING RIGHT ON A PORTION OF THE REMAINING EXTENT OF THE FARM ZANDFONTEIN 259 IN THE MAGISTERIAL DISTRICT OF SASOLBURG

FOR

JONGILIZIWE SAND MINE (PTY) LTD

DMR REF. NO. FS 10069 MR

Compiled by: Engedi Minerals and Energy

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mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

SCOPING REPORT

FOR LISTED ACTIVITIES ASSOCIATED WITH MINING RIGHT ACTIVITIES INCLUDING TRENCHING IN CASES OF SAND (GENERAL).

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: Jongiliziwe Sand Mine (Pty) Ltd

TEL NO: N/A

FAX NO: N/A

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FILE REFERENCE NUMBER SAMRAD: FS 30/5/1/2/2/10069 MR

IMPORTANT NOTICE

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

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 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.

OBJECTIVE OF THE SCOPING PROCESS

1) The objective of the scoping process is to, through a consultative process—

(a) identify the relevant policies and legislation relevant to the activity;

(b) motivate 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 and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;

(d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;

(e) identify the key issues to be addressed in the assessment phase;

(f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and

(g) Identify suitable measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

SCOPING REPORT

2) Contact Person and correspondence address

a) Details of:

i) THE EAP WHO PREPARED THE REPORT

Name of The Practitioner: Tshimangadzo Mulaudzi, Engedi Minerals and Energy (Pty) Ltd

Tel No.: 079 362 6046

Fax No. : 086 556 2568

e-mail address:info@engedime.com

ii) EXPERTISE OF THE EAP

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

(With evidence attached as **Appendix 1**).

Honours Degree in Mining and Environmental Geology

(2) **Summary of the EAP's past experience**.

(Attach the EAP's curriculum vitae as **Appendix 2**)

Tshimangadzo hold an Honours Degree in Mining and Environmental Geology from the University of Venda. He has 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.

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

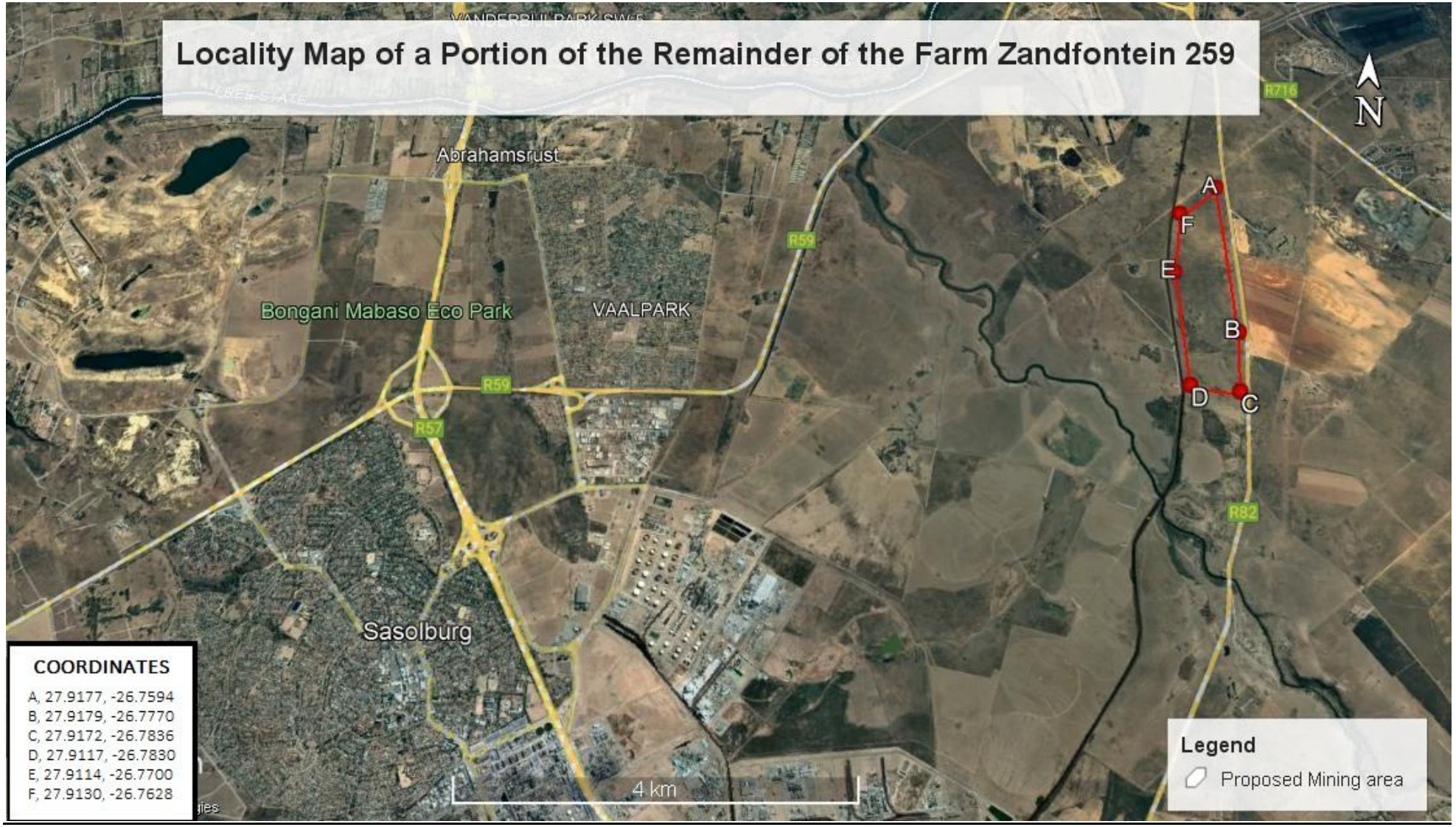
Tshimangadzo has five years working experience in environmental, geology and public participation.

b) **Description of the property.**

Farm Name:	A Portion of the Remaining extent of the farm Zandfontein 259
Application area (Ha)	144.30 Ha
Magisterial district:	Sasolburg
Distance and direction from nearest town	± 6 km east of Sasolburg
21 digit Surveyor General Code for each farm portion	F01600000000025900000

c) **Locality map**

(shows nearest town, scale not smaller than 1:250000 attached as **Appendix 3).**



d) **Description of the scope of the proposed overall activity.**

i) Listed and specified activities

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 and attach as **Appendix 4**

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 544, GNR 545 or GNR 546)/ NOT LISTED***
Existing Crushing plant, Jaw crusher, Cone Crusher, conveyors, Transformer room-Electricity	0.05 Ha	X	Listing Notice 2, Activity 17
Stock piles and dumps	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	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, Ablution, stores, and Workshop area, Boiler shop, and Storage (tyre, oil, Paint, Flammable, and used oil)	0.08 Ha	X	Listing Notice 2 Activity No. 17

ii) Description of the activities to be undertaken

(Describe Methodology or technology to be employed, and for a linear activity, a description of the route of the activity

- **DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:**

(These activities do not disturb the land where mining will take place e.g. aerial photography, desktop studies, aeromagnetic surveys, etc)

Mining Right

Open cast/roll over mining will be used to access sand. Trucks will be used to transport sand 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 sand 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

e) **Policy and Legislative Context**

APPLICABLE LEGISLATION AND 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**
MPRDA (Act no. 28 of 2002, as amended by Act no. 49 of 2008)	All phases
NEMA (Act no. 107 of 1998)	All phases
National Water Act (Act no 36 of 1998)	All phases
Mine Health and Safety Act, Act no. 29 of 1996	All phases

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).

Project need and desirability

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

Benefits of the project

Benefits of the project may include increased employment of local residents in the area, greater economic input into the area allowing better development of the towns and surrounding area, and greater socio-economic stability.

g) **Period for which the environmental authorisation is required**

The required period is 30 years.

h) **Description of the process followed to reach the proposed preferred site.**

NB!! – This section is not about the impact assessment itself; It is about the determination of the specific site layout having taken into consideration (1) the comparison of the originally proposed site plan, the comparison of that plan with the plan of environmental features and current land uses, the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout as a result.

i) Details of all 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;

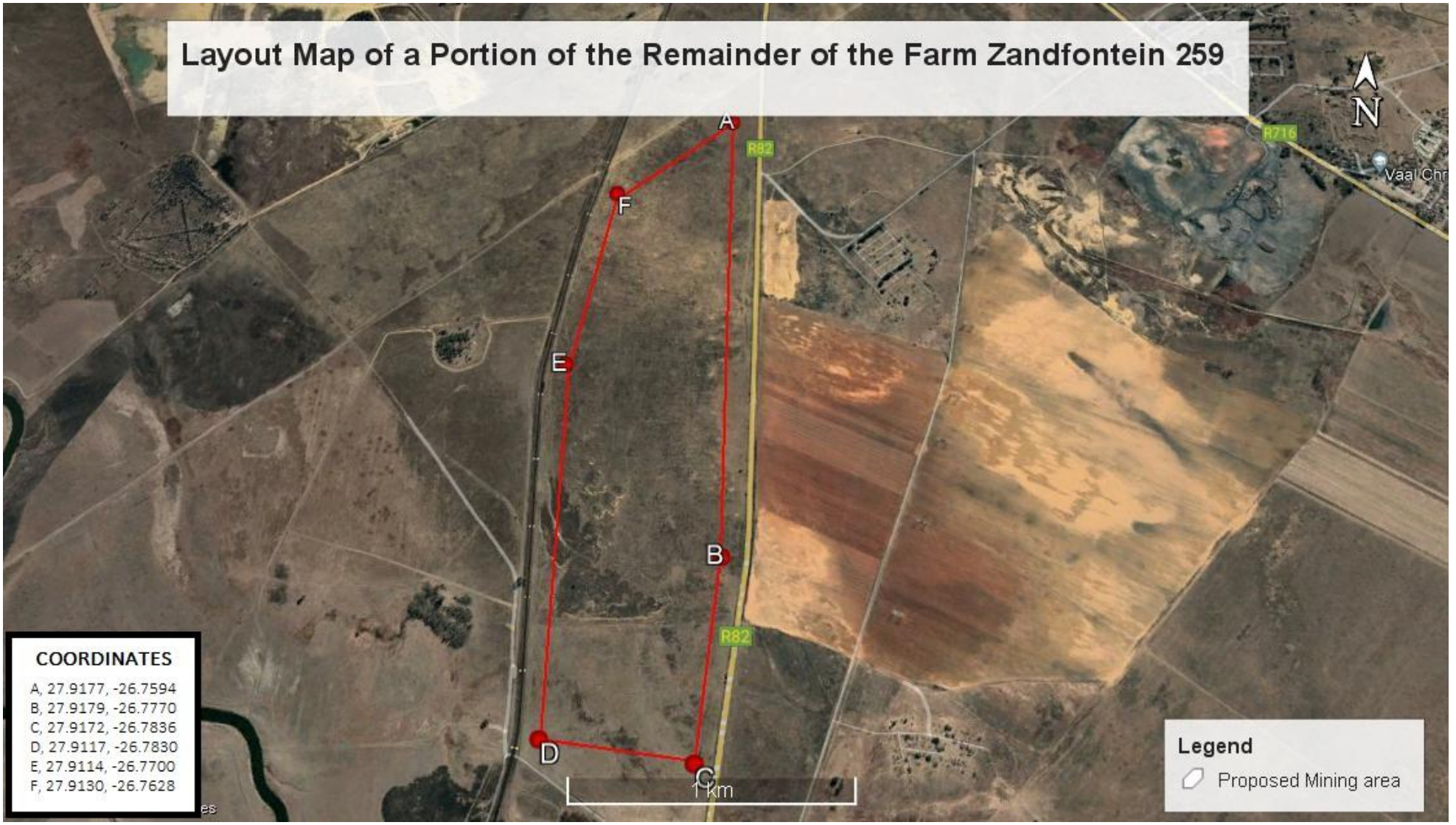
(b) the type of activity to be undertaken;

(c) the design or layout of the activity;

(d) the technology to be used in the activity;

(e) the operational aspects of the activity; and

(f) the option of not implementing the activity.



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

d) The main activities of the proposed mining is open pit mining. Trucks will be used to transport sand 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.

e) Open cast/roll over mining will be used to access sand. Trucks will be used to transport sand 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. The rehibilitation will take place concurrently with the mining work programme. All activities will happen outside 100 m away from wetlands.

f) The historic land use is one of cattle farming. The mining option will result in the continuation of such land use after rehabilitation.

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 Sand (General) reserve would remain unutilised, 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 activities on the remaining extent of the farm Zandfontein 259 were not to proceed with the proposed project, mining of these commodities 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 sand (General).

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 was appointed by Jongiliziwe Sand Mine (Pty) Ltd 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 of 2002).

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.

Identification of Interested and Affected Parties

The following categories of stakeholders were identified: the landowners of the remaining extent of the farm Randfontein 259 (the area included in the Mining Right Application i.e. the site). In addition other potential stakeholders were identified and invited to register themselves as I&APs. This invitation was also 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 a private landowner.

Farm name	Portion (if applicable)	Extent (ha)	Owner	Title deed number
Zandfontein 259	Remaining extent	1863.84	Seriti Resources	

At the time of writing, formal consultation has taken place. The landowner of the application area has been informed of the proposed mining activities and the process to follow. According to information provided by the landowner of the application area, there are no communities living on the site, but it could not be established whether there are communities living on adjacent properties.

ii) Summary of issues raised by I&APs

(Complete the table summarising comments and issues raised, and reaction to those responses)

The public participation report is attached as appendix 5.

iii) The Environmental attributes associated with the sites

(1) Baseline Environment

(a) Type of environment affected by the proposed activity.

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

Physical environment

The environment on site relative to the environment in the surrounding area

1.1 Climate

Sasolburg normally receives about 550mm of rain per year, with most rainfall occurring during summer. The chart below (lower left) shows the average rainfall values for Sasolburg per month. It receives the lowest rainfall (0 mm) in July and the highest (103 mm) in January. The monthly distribution of average daily maximum temperatures (centre chart below) shows that the average midday temperatures for Sasolburg range from 17 °C in June to 27.9 °C in January. The region is the coldest during June when the mercury drops to 0 °C on average during the night.

1.2 Topography and Elevation:

The Free State province is located on the Highveld, a plateau rising to elevations of 1,800 m in the east and sloping to about (1,200 m) in the west. Two streams drain the province: the upper Orange River, which forms the province's southern boundary, and the Vaal River, part of its northern boundary.

1.3 Geology and Soils:

The area is largely dominated by the dolerite dykes and sills that formed as the result of magma intruding through sedimentary rocks of the Beaufort group of the Karoo Supergroup. Although the dolerites are more resistant to physical wreathing than the surrounding sedimentary rock, they weather easily under chemical weathering resulting in stone aggregates, clay and sand formation that occurs in place around this area.

1.4 Biological Environment

1.4.1. Vegetation

The natural vegetation of the eastern part of the Free State is grassland, with savanna in the north-west and Nama-karoo in the south-west. The savanna biome is often described as an area of grassland with dispersed trees or clusters of trees. The lack of water makes the savanna a difficult place for tall plants such as trees to grow. Grasses and trees that grow in the savanna have adapted to life with little water and hot temperatures. Grasses, for example, grow quickly in the wet season when water is abundant and turn brown in the dry season to conserve water. Some trees store water in their roots and only produce leaves during the wet season. Due to frequent fires, grasses stay close to the ground and some plants are fire resistant. Examples of vegetation in the savanna include wild grasses, shrubs, baobab trees, and acacia trees.

1.4.2. Fauna

1.4.2.1. Mammals

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

1.4.2.2 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.

1.4.3. Conservation areas

There are currently no formally protected areas in Upper Vaal.

Surface water

1.5.1 Catchment

Upper Vaal Water Management Area includes the following major rivers: the Wilge River, Liebenbergsvlei River, Mooi River and Vaal River, and covers the following Dams: Boskop Dam; Grootdraai Dam; Klerkskraal Dam; Klipdrift Dam; Potchefstroom Dam; Saulspoort Dam; Sterkfontein Dam; Vaal Dam.

1.5.2 Water Management Area

The land use in the Upper Vaal Water Management Area (WMA) is characterised by the sprawling urban and industrial areas in the northern and western parts of the WMA. There is also extensive coal and gold mining activities located in the Upper Vaal water management area. These activities are generating substantial return flow volumes in the form of treated effluent from the urban areas and mine dewatering that are discharged into the river system. These discharges are having significant impacts on the water quality in the mainstream of the Vaal River, throughout all three of the Vaal water management areas.

1.5.3 Rivers

Upper Vaal Water Management Area includes the following major rivers: the Wilge River, Liebenbergsvlei River, Mooi River and Vaal River, and covers the following Dams: Boskop Dam; Grootdraai Dam; Klerkskraal Dam; Klipdrift Dam; Potchefstroom Dam; Saulspoort Dam; Sterkfontein Dam; Vaal Dam.

1.6 Socio-economic setting

1.6.1 Population

Total	Density
153 038	1 900 km^2

1.6.2 Race

POPULATION GROUP	PERCENTAGE
Black African	80.8%
Coloured	0.6%
Indian or Asian	0.3%
White	18.0%
Other	0.2%

1.6.3 Gender composition

GENDER	POPULATION	PERCENTAGE
Female	233 921	50.82%
Male	226 368	49.18%

1.6.4 Age groups

	PERCENTAGE
Population under 15	28.1%
Population 15 to 64	65.8%
Population over 65	9.0%

1.6.5 Education

EDUCATION (AGED 20 +)	
No schooling	7.3%
Higher education	27.5%
Matric	9.1%

1.6.7 Employment

EMPLOYMENT

	2017/18	2016/17	2015/16	2014/15	2013/14
EMPLOYMENT					
Employment Costs (R'000)	93 362	90 657	88 361	80 294	70 606
Remuneration of councillors (R'000)	7 198	6 547	6 895	6 577	5 983
Total Employee Positions	186	188	196	214	162
Total Vacant Employee Positions	33	13	22	27	16

	2017/18	2016/17	2015/16	2014/15	2013/14
EMPLOYMENT					
Total Vacancy Percentage	17.74%	6.91%	11.22%	12.62%	9.88 %

Inland water features

Groundwater

The groundwater study will be undertaken and groundwater results will be included in the EIA.

Air quality

The ambient air quality in the area of the site is expected to be acceptable. There are however a number sources of air pollution close to the site including mining activities and agricultural activities. 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.

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.

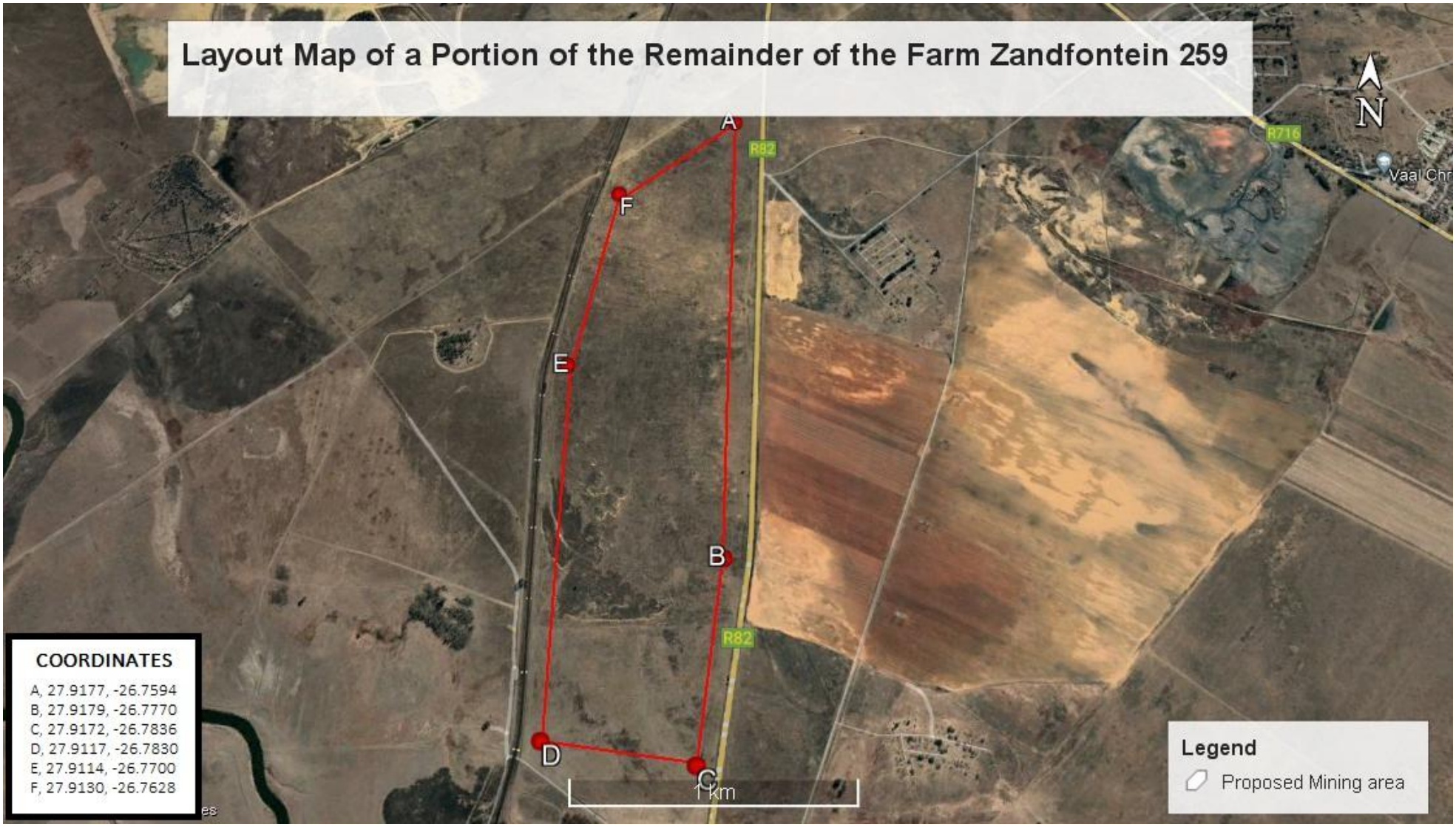
(b) Description of the current land uses.

Agriculture and mining

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

Mining and agriculture. Vegetation is also available for grazing.

(d) Environmental and current land use map.



iv) Impacts identified

(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.

ASPECT	POTENTIAL IMPACT
Soil	• Compaction – from movement of heavy machinery • Contamination – from diesel, oil, grease, etc. used for the trenching machinery and from maintenance of machinery conducted on site • Contamination – from domestic waste. • Loss of topsoil – when the trenching site is cleared of vegetation, topsoil may be lost • Erosion – from the clearing of trenching 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 trenching 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 • Bulk sampling 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 trenching activities could disturb residents within the site

v) 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 was 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**	Impacts with little real effect and which should not have an influence

	environmental significance	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

vi) 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	Construction and Operational phases

therefore job opportunities might be very limited.	
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

vii) 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 open cast 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 open cast 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 open cast 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 open cast and disturbed areas will take place.
	• Contamination – from diesel, oil, grease, etc. used for the open cast machinery and from maintenance of machinery conducted on site • Contamination – from domestic waste, sewerage and open cast core	• Topsoil must not be contaminated with oil, grease, diesel, etc. which may inhibit the later growth of vegetation. • Open cast sumps and containment measures will be designed to contain all open cast fluid. • Open cast sumps will be constructed sufficiently large to retain all slurry produced during open cast. • 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 open cast core will be removed from the open cast sites or place in a specified area as per request or permission from the land owner.. • Rehabilitation of open cast and disturbed areas will take place.
Land use	Mining may interfere with any land uses currently taking place on the site	• Only one pitting site will be operational at any time. • The area to be disturbed will be kept to a minimum (not exceeding 20mx20m). • No pitting site will be established within 50m of any agricultural land unless consent is received from the land owner.

		• Rehabilitation of open cast and disturbed areas will take place.
Biodiversity (fauna and flora)	The fauna and flora could be negatively affected by the establishment of the open cast sites and access tracks	• Open cast and access tracks will be located in areas that will result in minimal ground disturbance. • A field survey will be undertaken before open cast commences at each open cast 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. • Rehabilitation of open cast and disturbed areas will take place.
	Alien and invasive species could be introduced through the disturbance	• 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 open cast machinery and from maintenance of machinery conducted on site • Contamination – from domestic waste, sewerage, open cast and contaminated soil • Water discharge during open cast	• No open cast will be established within 100m of any watercourse or wetland. • Open cast sumps and containment measures will be designed to contain all open cast fluid. • Open cast sumps will be constructed sufficiently large to retain all slurry produced during open cast. • 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

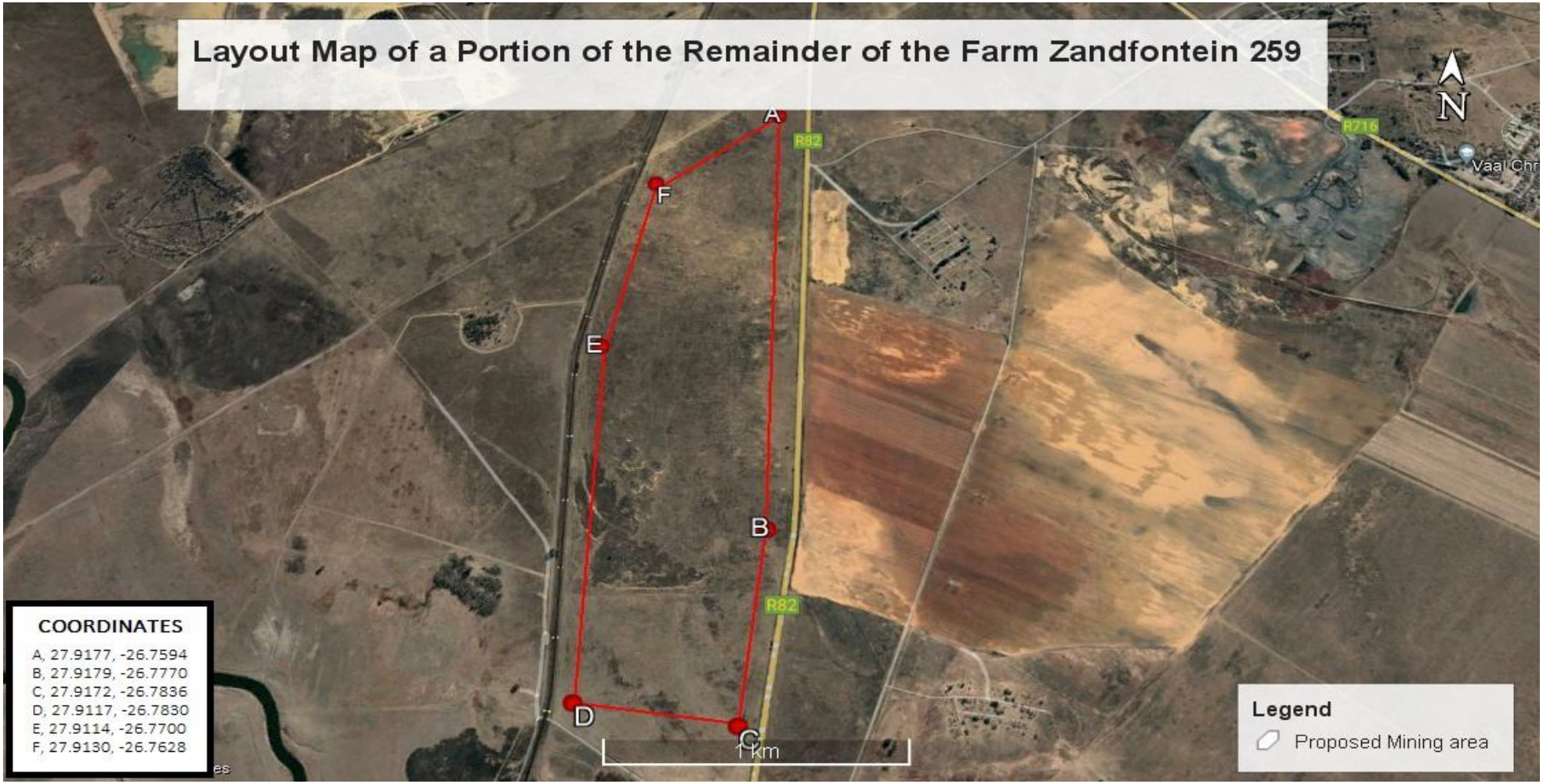
		maintained so that during operations it does not spill oil, diesel, fuel, etc. • Any contaminated soil will be collected into non-permeable bags and disposed of at an approved landfill site. • A chemical toilet will be used on site and will be used in such a way as to prevent water pollution. Full or leaking toilets must be reported to the supervisor for corrective action or replacement. • All open cast will be drilled and constructed in such a way as to prevent ingress of water into the hole. • Any completed pitting 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 open cast	• All open cast 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 open cast activities could disturb residents within the	• Modern, low noise emission vehicles and equipment will

	site	be favoured. • All equipment on site will be maintained in good working order. • Open cast 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.

viii) The outcome of the site selection Matrix. Final Site Layout Plan

(Provide a final site layout plan as informed by the process of consultation with interested and affected parties)



ix) Motivation where no alternative sites were considered.

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

x) Statement motivating the preferred site.

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

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

However, where mining activities occur 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) Plan of study for the Environmental Impact Assessment process

i. Description of alternatives to be considered including the option of not going ahead with the activity.

The historic land use is one of agriculture, where land use is for grazing and cultivation in the form of maize production. The no-mining option will result in the continuation of such land use. 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 supply 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 mining activity 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 sand (General) deposits would remain unutilised, 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 activities on the remaining extent of the farm Zandfontein 259 were not to proceed with the proposed project, mining of sand 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 sand (General) deposits.

ii. Description of the aspects to be assessed as part of the environmental impact assessment process

(The EAP must undertake to assess the aspects affected by each individual mining activity whether listed or not, including activities such as blasting, Loading, hauling and transport, and mining activities such as Excavations, stockpiles, discard dumps or dams, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.).

ACTIVITY (whether listed or not listed) **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and open cast, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc.)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc…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…etc…)**	**STANDARD TO BE ACHIEVED** **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives etc…etc…etc…)**
Mining (open cast)	• Compaction – from movement of heavy machinery • Contamination –	Soil	Phase 2 - Exploration (open cast)	• Control through management and monitoring • Remedy through rehabilitation where negative impacts have been identified	Impact kept to minimum and rehabilitate affected area.

	from diesel, oil grease etc. used for the open cast machinery and from maintenance of machinery conducted on site • Contamination – from domestic waste, sewage and open cast core				
	• Loss of top soil - when open cast site is cleared of vegetation		Phase 2 - Exploration (open cast)	• Control through management and monitoring • Remedy through rehabilitation where negative impacts have been identified	Impact kept to minimum and rehabilitate affected area.
	• Erosion – from clearing of drill site and movement along access tracks				
	• Current land use	Land use			

	on site				
	• Fauna & flora currently on site	Biodiversity (fauna & flora)			
	• Potential introduction of alien & invasive species				
	• Contamination – from diesel, oil grease etc. used for the open cast machinery and from maintenance of machinery conducted on site • Contamination – from domestic waste, sewage and open cast core	Biodiversity (fauna & flora) Surface- and groundwater			
	• Potential water discharge – from	Surface- and groundwater			Impact kept to minimum and rehabilitate affected

	a borehole during open cast	Heritage sites			area.
	• Potential water availability to other users – water for open cast may be sources on site				
	• Potential heritage sites may be disturbed and/or damaged				
	• Potential minimal dust may be caused	Air quality (dust)			
	• Potential noise from open cast	Noise			

iii. Description of aspects to be assessed by specialists

There is no need to engage specialist studies in these proposed activities since the farm is already in use for mining purposes. There are no wetlands that exist within the portions of proposed activity. Furthermore, no heritage property exists on site. There will be a ground water study that will be done during EIA process.

iv. Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives

The EIA utilises a rigorous, numerical environmental significance rating process which is based on the accepted impact assessment methodology that uses the probability of an event occurring and the severity of the impact, should an event occur, as factors to determine the significance of a particular environmental risk. To determine the severity of any potential environmental impact, the criteria that are taken into consideration are the spatial extent of the impact, the duration of the impact and the severity of the impact. The probability of an impact occurring is determined by the frequency at which the activity takes place and by how often the type of impact in question has taken place or takes place in similar circumstances. The values assigned to these factors (weighting) are discussed as part of the EIA. To clarify the purpose and limitations of the impact assessment methodology, it is necessary to address the issue of subjectivity in the assessment of the significance of environmental impacts. Even though Engedi Minerals and Energy, and the majority of the environmental impact assessment practitioners propose a numerical methodology for impact assessment, it needs to be accepted that the process of environmental significance determination is inherently subjective. The weight assigned to each factor of a potential impact, and also the design of the rating process itself, is based on the values and perception of risk by members of the assessment team, as well as that of the I&APs and authorities who provide input into the process. Whereas the determination of the spatial scale and the duration of impacts are to some extent amenable to scientific enquiry, the severity value assigned to impacts is highly dependent on perceptions and values of all involved. It is for this reason that it is crucial that all EIAs make reference to the environmental and socio-economic context of the proposed activity to reach an acceptable rating of the significance of impacts. Similarly, the perception of the probability of an impact occurring is dependent on perceptions, aversion to risk and availability of information. It has to be stressed that the purpose of the EIA process is not to provide an incontrovertible rating of the significance of various aspects, but rather to provide a structured, traceable and defendable methodology of rating the relative significance of impacts in a specific context. For the purpose of this study, the methodology employed for the environmental impact assessment is divided into two distinct phases, namely, impact identification and impact rating.

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.
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

v. The proposed method of assessing duration significance

Duration (D)		
The period over which the impact will be experienced		
Temporary (T)	1	0 – 6 months (or confined to the construction period).
Short term (S)	2	6– 36 months (or confined to the construction and part of the operational period).
Medium term (M)	3	18 – 48 months (or confined to the construction and whole operational period).

Long term (L)	4	48 –60 months For the whole life of mine (including closure and rehabilitation period).
Permanent (P)	5	Beyond the anticipated lifetime of the project.

vi. The stages at which the competent authority will be consulted

It's an ongoing process until project closure.

vii. Particulars of the public participation process with regard to the Impact Assessment process that will be conducted

1. Steps to be taken to notify interested and affected parties.

(These steps must include the steps that will be taken to ensure consultation with the affected parties identified in (h) (ii) herein).

Engedi Minerals and Energy was appointed by Jongiliziwe Sand Mine Pty Ltd as the independent consultant to conduct the PP 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 of 2002).

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.

Identification of Interested and Affected Parties

The following categories of stakeholders will be identified: the landowner of the remaining extent of the farm Zandfontein 259 (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 was also extended to the public by means of site notices and newspaper notices.

2. Details of the engagement process to be followed.

(Describe the process to be 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 and records of such consultation will be required in the EIA at a later stage).

Site notices will be placed on the border fences of the study site and on a main route close to the study site which would be conspicuous to passers-by. An advertisement notice of the project, inviting people to provide comments and/or concerns, will be placed within a local newspaper. I&APs will be required to raise issues of

importance, share their input, comments and/or concerns to inform the Scoping and EMPr. The draft Scoping/EMPr was made available for review.

3. Description of the information to be provided to Interested and Affected Parties.

(Information to be provided must include the initial site plan and sufficient detail of the intended operation and the typical impacts of each activity, to enable them to assess what impact the activities will have on them or on the use of their land).

Letters and a Background Information Document (BID) were sent to all identified stakeholders either by means of e-mail, fax or by post.

viii. Description of the tasks that will be undertaken during the environmental impact assessment process

a) Application and Scoping

At the onset of the project an application form will be submitted to the DMR. In conjunction with the application, this Consultation Scoping Report will be submitted to the DMR and all commenting authorities and notification of the availability of the report sent to all identified interested and affected parties (I&APs). An updated Scoping report, containing comments and issues identified by I&APs, will be submitted to the DMR. The DMR will issue a decision on the acceptance or refusal of the application.

b) EIR & EMPr

The Impact Assessment Process will be conducted in accordance with the approved Plan of Study (PoS) for EIA. The Consultation EIR and EMPr will be prepared with information and issues identified during the Scoping Phase activities, comments from I&APs, commenting authorities and the findings from the specialist studies.

The Impact Assessment Phase comprises of:

- The completion of the specialist studies and reports;
- The finalisation of the impact assessment;
- The compilation of the Consultation EIR and EMPr;
- The public review of the Consultation EIR and EMPr and possible extended public review period, at the discretion of the competent authority (DMR);
- The compilation of the Final EIR and EMPr; and

- The submission of the Final EIR and EMPr.

The Consultation EIR and EMPr include:

- The details of the EAP who prepared the report;
- A detailed description of the proposed development and alternatives;
- A description of the environment that may be affected by the activity and the manner in which physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed development;
- A description of the methodology of the stakeholder engagement process;
- The comments and response report and stakeholder database;
- A description of the need and desirability of the proposed development and the identified potential alternatives to the proposed activities;
- A summary of the methodology used in determining the significance of potential impacts;
- A description and comparative assessment of all alternatives identified during the EIA process;
- A summary of the findings of the specialist studies;
- A detailed assessment of all identified potential impacts;
- A list of the assumptions, uncertainties and gaps in knowledge;
- An opinion by the consultant as to whether the development is suitable for approval.

Once the Consultation EIR and EMPr have been placed on public review, comments received from stakeholders will be documented and considered in the Final EIR and EMPr which will be placed on public review and simultaneously submitted to the DMR for approval.

(ix) Measures to avoid, reverse, mitigate, or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

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, power lines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution 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)** **E.g.** **Modify through alternative method.** **Control through noise control** **Control through management and monitoring through rehabilitation..**	**POTENTIAL FOR RESIDUAL RISK**
Excavations	• Dust; • Surface disturbance; • Fly rock; • Loss of wetland • habitat; • Surface water • contamination; • Destruction of • heritage resources; • Groundwater contamination; • Loss/deterioration of biodiversity and ecosystem resilience.	• Control and minimise through adequate dust control strategies; • Control run-off through implementation of appropriate storm water management measures; • Contain dirty water runoff; • Concurrent rehabilitation must take place on the mine; • Avoid mining, or otherwise disturbing the catchment area of	Moderate

		the pans; • Implement an effective soil Management programme; • Effective control of alien invasive plants; Vehicles and machinery should be checked on a regular basis to prevent leaks and spills; • Limit the footprint of areas to be disturbed; • Use proper charging • methodology to prevent fly rock; • Relocation of heritage resources; • Impacted groundwater should be pumped to dirty water dams. These dams should be lined to ensure no future pollution of groundwater resources; • Water levels within the wetlands should be monitored. The ecological integrity of the wetlands should be monitored.	
Diesel storage and	Surface and contamination.	• Bunded containment and settlement	Low

refuelling station		facilities will be provided for hazardous materials, such as fuel and oil; • Spill-sorbs or a similar product will be kept on site, and used to clean up hydrocarbon spills in the event that they should occur.	
ROM Stockpiles	Soil, surface and Groundwater contamination.	• All facilities with the potential to generate dirty storm water runoff, effluent or wash-down water will be located within the designated dirty water area. • Clean runoff will be diverted around the designated dirty areas by means of cut-off canals, sized to accommodate at least the 1:50 year peak flow event.	Moderate
Storm water evaporation	Loss of habitat from salt deposition Surface and Groundwater contamination.	• Ensure that the evaporation facility operates within a contained area and will be located within the designated dirty water area.	Low

I) Other Information required by the competent Authority

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

(1) Impact on the socio-economic conditions of any directly affected person. (Provide the results ofInvestigation, assessment, and evaluation of the impact of the mining, bulk sampling or sand (General), stone aggregate and stone aggregate gravel mining on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as **Appendix 2.19.1** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).

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

2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

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

There is no heritage site that exist within portions of the proposed activities hence the land is already in use for agricultural purpose.

m) 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)**.

Alternative investigations were conducted for the alternatives related to the proposed project and no motivations are required for no reasonable or feasible alternatives.

APPENDIX 1

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
Languages : Speak and write (English and Tshivenda)
Driver's license: Code 10 (C1)

Nationality : South African
ID : 8803265731082
Gender : Male
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

ENGEDI Minerals & Energy

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

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076 763 8486 (+27)
Fax: 086 556 2568 (+27)

email: info@engedime.com
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 deur verklaarder se handtekening/vingerafdruk is in my teenwoordigheid daarop aangebring.
te BAYSWATER op 2021-02-08 om 14:00
at on at

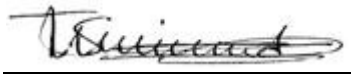
I certify that the above statement was taken by me and that the deponent has acknowledged that he/she knows and understands the contents of this statement. This statement was sworn to/affirmed by the deponent's signature/mark/thumbprint was placed thereon in my presence.

(HANDTEKENING) KOMMISSARIS VAN EDE
(SIGNATURE) COMMISSIONER OF OATHS
T.K. MALEFANE
VOLLE VOORNAME EN VAN IN DRUKSKRIF
FULL FIRST NAMES AND SURNAME IN BLOCK LETTERS
99 WILCOKS STR
BESIGHEIDSADRES (STRAATADRES)
BUSINESS ADDRESS (STREET ADDRESS)
BLOEMFOS
RANG/RANK
SAPS
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.



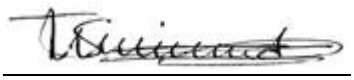
Signature of the EAP

DATE: 18 October 2021

APPENDIX 3

UNDERTAKING REGARDING LEVEL OF AGREEMENT

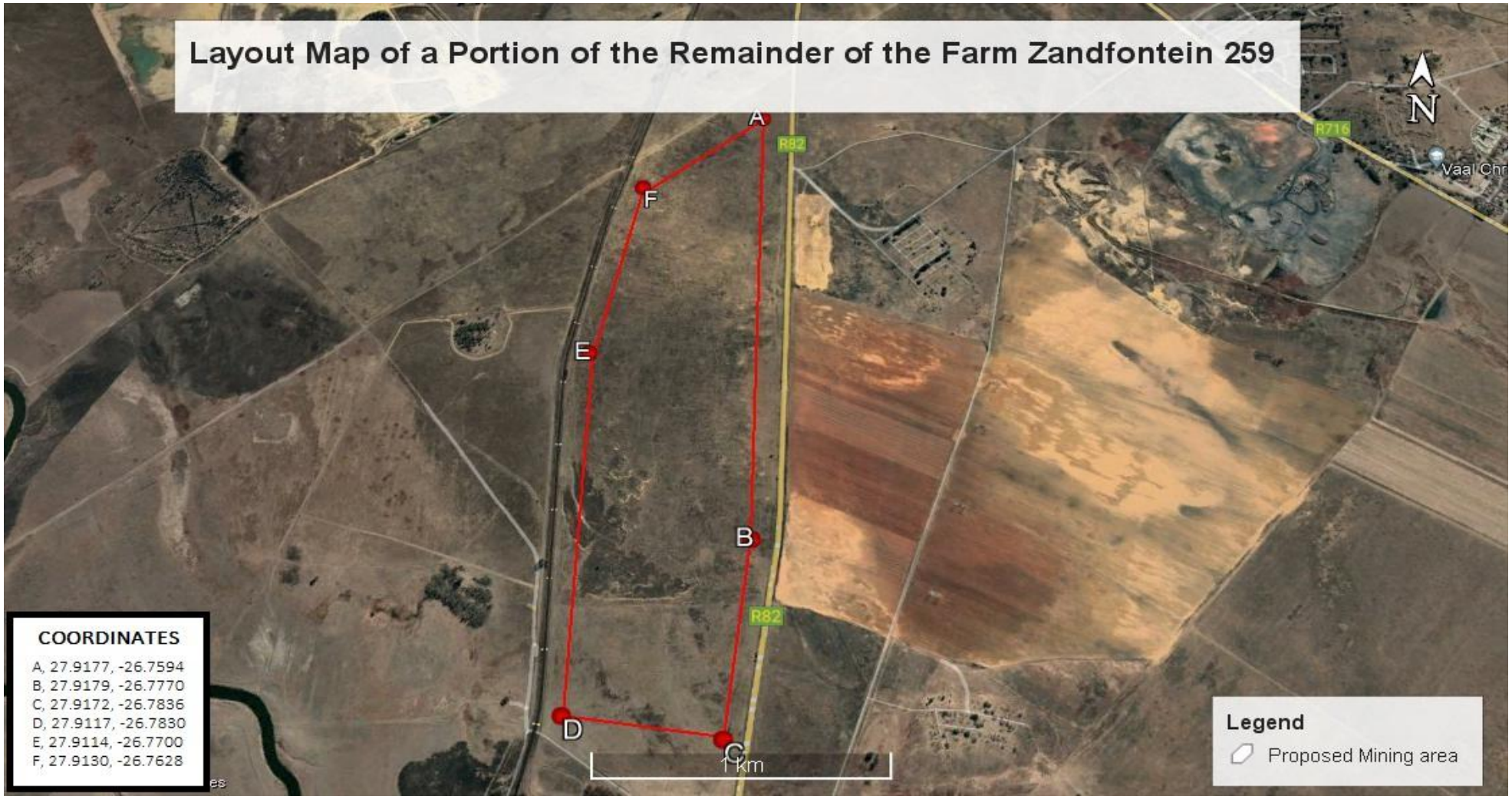
I *Tshimangadzo Mulaudzi* herewith undertakes that the information provided in the foregoing report is correct, and that the level of agreement with interested and Affected Parties and stakeholders has been correctly recorded and reported herein.



Signature of the EAP

DATE: 18 October 2021

APPENDIX 4
FINAL LAYOUT MAP OF SITE



-END