

**SCOPING REPORT FOR THE APPLICATION OF A
PROSPECTING RIGHT WITH BULK SAMPLING IN
THE REMAINING EXTENT OF THE FARM
BUFFELSPOORT 222 IN THE MAGISTERIAL
DISTRICT OF SOUTPANSBERG**

FOR

N2ME (PTY) LTD

DMR REF. NO. LP 14052 PR



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mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

SCOPING REPORT

FOR LISTED ACTIVITIES ASSOCIATED WITH PROSPECTING RIGHT WITH BULK SAMPLING ACTIVITIES INCLUDING TRENCHING IN CASES OF SAND (GENERAL), STONE AGGREGATE AND STONE AGGREGATE GRAVEL PROSPECTING.

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: N2ME (Pty) Ltd

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FILE REFERENCE NUMBER SAMRAD: LP 30/5/1/1/2/14052 PR

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting 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 prospecting right, mining rights, mining permits, technical co-operate permits, reconnaissance permits, exploration rights, production rights, integrated water use license, environmental authorisation among other licenses.

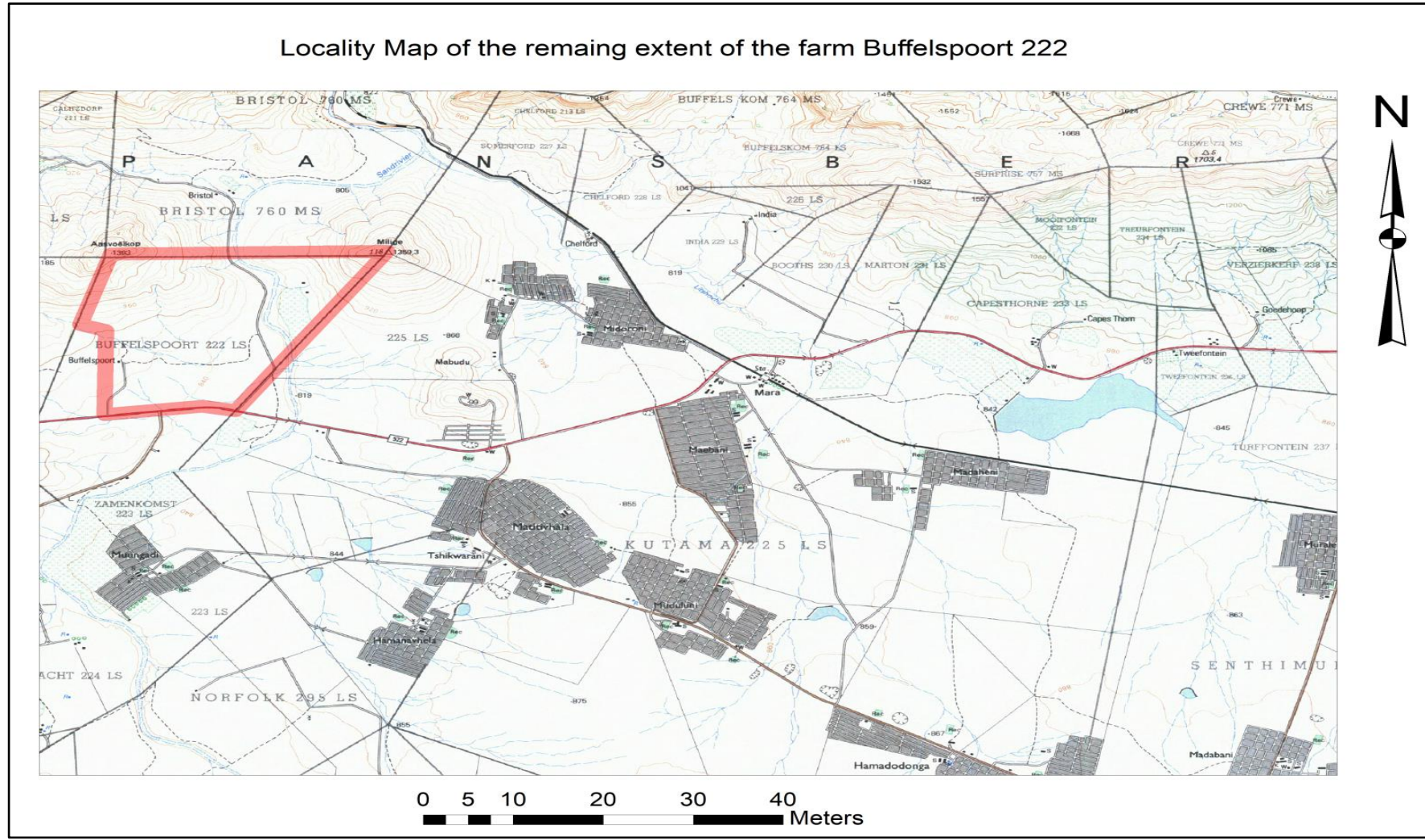
Tshimangadzo has five years working experience in environmental, geology and public participation.

b) Description of the property.

Farm Name:	Remaining extent of the farm Buffelspoort 222
Application area (Ha)	594 Ha
Magisterial district:	Soutpansberg
Distance and direction from nearest town	~ 31.22 km west of Louis Trichardt
21 digit Surveyor General Code for each farm portion	TOLS00000000022200000

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**

<p>NAME OF ACTIVITY (All activities including activities not listed)</p> <p>(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.)</p>	<p>Aerial extent of the Activity</p> <p>Ha or m²</p>	<p>LISTED ACTIVITY</p> <p>Mark with an X where applicable or affected.</p>	<p>APPLICABLE LISTING NOTICE</p> <p>(GNR 544, GNR 545 or GNR 546)/ NOT LISTED</p>
Trenching and pitting (bulk sampling)- Site clearance,	Included in the overall extent of bulk sampling.	X	Listing Notice 2, Activity 19
Mobile diesel storage and refuelling station	Included in the overall extent of bulk sampling.	NO	Listing Notice 1 Activity No. 20
Conveyor to convey from feed to the processing plant	Included in the overall extent of bulk sampling.	NO	Listing Notice 1 Activity No. 20
Raw water pipelines, water treatment			
plant and water storage tanks	Included in the overall extent of bulk sampling.	NO	Listing Notice 1 Activity No. 20
Prospecting	400	X	Listing Notice 1 Activity No. 20
Stock piles	0.05	X	Listing Notice 1 Activity No. 20
Offices, Ablution, stores, and Workshop	0.09	X	Listing Notice 1 Activity No. 20
Dumps	5	X	Listing Notice 1

			Activity No. 20
Water supply dams/boreholes	0.02		Listing Notice 1 Activity No. 20
Drilling	150		
Berm and Roads	2		
Pipelines and Power lines	0.09		
Processing plant (Screening)	0.03	X	Listing Notice 1 Activity No. 20
Bulk sampling	10	X	Listing Notice 1 Activity No. 20

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**

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 prospecting will take place e.g. aerial photography, desktop studies, aeromagnetic surveys, etc)

Phase 1

Non-invasive prospecting work will be as follows:

Desktop Study

A comprehensive literature survey will be undertaken such that all available information relevant to the style and type of mineralization anticipated to occur within the area can be compiled and collated. This will include compilation of all available boreholes information available from previous drilling campaigns.

This phase is planned for one (1) month (with an additional month for reporting) commencing within an acceptable timeframe from the granting of the prospecting right, after necessary contracts and agreements have been finalized.

Ground validation

- After the desktop study, a site validation exercise will be undertaken. The aim is to visit all the targets identified in the desktop study to make sure that they are no cultural features. This phase is planned for a period of one (1) month.

- **DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:**

(These activities result in land disturbances e.g. sampling and drilling)

Phase 2

Invasive prospecting methods will be as follows:

Pitting & Trenching (Bulk sampling)

A pitting and trenching campaign will be undertaken as part of a field mapping exercise aimed at demonstrating geological continuity of the mineralized horizons.

A limited number of representative samples will be obtained from the materials excavated from this campaign. A one-month period at the end of the Pitting and Trenching program has been reserved for reporting and decision-making. The limited extent of the envisaged mineralisation does not at this stage justify a drilling programme.

Planning

In the planning stages, proposed sample sites are initially marked in prominent drainages on a topographic map using a sample spacing designed to take advantage of the region. In arid regions, sample spacing should take advantage of relatively short transport distances of the indicator minerals.

Drilling of 2 drill holes to a depth of 100 m (Phase 4)

Drilling of 3 drill holes to a depth of 100 m (Phase 5)

Sand (General), stone aggregate, and stone aggregate gravel drilling programme comprising of three boreholes will be undertaken. Should the drilling programme prove to be successful, additional holes will be considered. This will be indicated in the form of a Section 102 application together with the proposed revised prospecting plan and EMP.

Drilling will be conducted in a competent and environmentally responsible manner including rehabilitation of the drill sites to their original state. Plastic lining will be placed underneath the rig motors to prevent oil seepage. It is noted that no drilling fluids other than water for dust suppression, will be utilised in the case of drilling for sand (General), stone aggregate, and stone aggregate gravel. Environmental rehabilitation measures will be included in the contract with the drilling company and environmental rehabilitation costs will be included in the drilling costs.

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 majority of South Africa's mining houses of Sand (General), stone aggregate and stone aggregate gravel are currently reducing their production scales. They are now focused on large scale mining, leaving all the satellite Sand (General), stone aggregate and stone aggregate gravel for small scale or medium scale miners to profit from. The market of these commodities/deposits is consistent with the demand.

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 5 years.

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

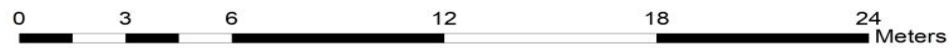
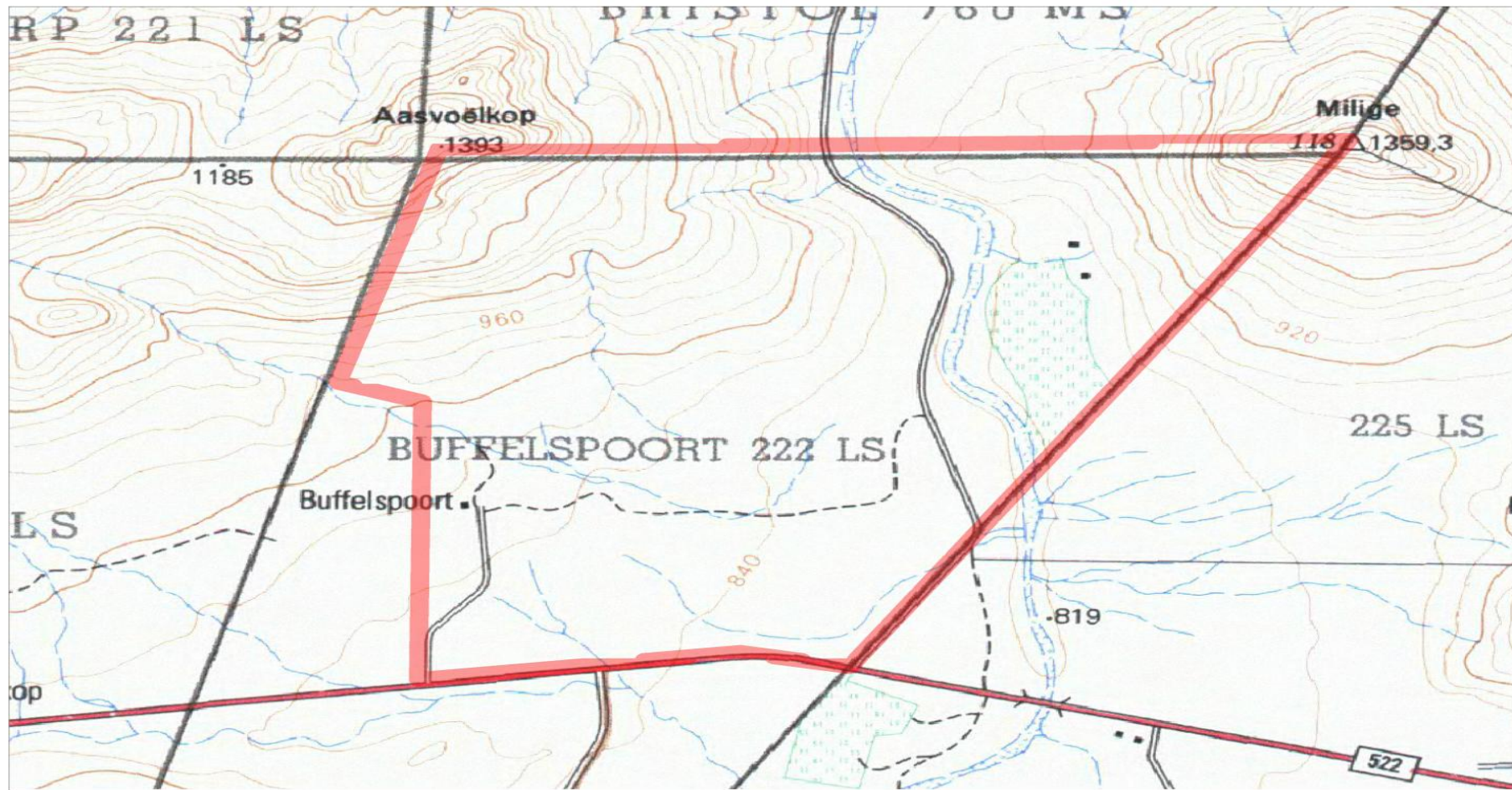
NB!! – This section is not about the impact assessment itself; It is about the determination of the specific site layout having taken into consideration (1) the comparison of the originally proposed site plan, the comparison of that plan with the plan of environmental features and current land uses, 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.

Layout Map of the remaining extent of the Farm Buffelspoort 222



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

d) The main activities of the proposed prospecting trenching and pitting (bulk sampling). Technology such as GPS will be used to properly locate boreholes and trenching.

e) 80 holes will be drilled 100 m deep.

The bulk sampling will be carried out in the form of Trenching and pitting as per revised prospecting work programme. The rehabilitation will take place concurrently with the prospecting 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), stone aggregate and stone aggregate gravel reserves 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 prospecting activities on the remaining extent of the farm Buffelspoort 222 were not to proceed with the proposed project, prospecting 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), stone aggregate and stone aggregate gravel.

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 was appointed by N2ME(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 prospecting rights.

Identification of Interested and Affected Parties

The following categories of stakeholders were identified: the landowners of the remaining extent of the farm Buffelspoort (the area included in the Prospecting 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
Buffelspoort 222	Remaining extent	594	Khariivhe Communal Prop Assoc	T21813/2011PTA

At the time of writing, formal consultation has taken place. The landowner of the application area has been informed of the proposed prospecting 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.

iii) 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.

iv) 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

Climatic condition within Makhado Municipality supports a variety of agricultural activities and the climate of the Municipality ranges between 18°C in the mountainous areas to 28°C in the rest of the area, with an average of 25.5°C. Generally summers have a high number of sunshine hours with the occasional afternoon thunderstorms. Winters throughout the province are dry, mild and mostly frost free. Hence, winters are usually characterised by pleasant weather during the day although early mornings and nights can be cool to chilly. The months of January to February are the main rainfall period with an annual rainfall of 450mm in the low-lying plains to 2300mm in the Soutpansberg. The general average rainfall for the study area ranges between 450mm to 800mm. The areas north of the Soutpansberg have less rainfall than the lower western foothills and central and eastern high lying areas of the mountain itself. Due to the east-west orientation of the Soutpansberg, it experiences orographic rainfall.

1.2 Topography and Elevation:

From east to west, the Soutpansberg spans approximately 210 km, and from north to south it is 60 km at it's widest and 15 km at it's narrowest. Its altitude ranges from 250 m above sea level to Hanglip 1719 m (second-highest peak) and Letjuma 1748 m (the highest peak) on the western half of the mountain.

1.3 Geology and Soils:

The Soutpansberg basin was formed approximately 1 800 million years ago as an east-west trending asymmetrical rift along the Palala Shear Belt (Brandl 2002). This belt formed due to a collision between the Kaapvaal craton from the south and the Limpopo Belt from the north (Bumby 2000). Layering of the most prominent geology started with the deposition of basaltic lavas, followed by the settling of various sediments

over an extended period of time (Barker 1979). The pink resistant quartzite was instrumental in shaping the present morphology. The Soutpansberg rocks rest on gneisses of the Limpopo Belt and Bandelierkop Complex. Sedimentary rocks of the Karoo Supergroup cover the Soutpansberg outcrops along its eastern and northern margins.

The Soutpansberg Group represents a volcano-sedimentary succession, which is subdivided into seven formations (Brandl 1999). The geology is dominated by pink, erosion resistant quartzite, and sandstone with minor pebble washes of the Wyllies Poort Geological Formation of the Soutpansberg Group. Other less prominent rock types include shale, conglomerate, basalt and diabase intrusions of the Wyllies Poort and Sibasa Geological Formations.

Soils derived from the quartzite and sandstone are generally shallow, gravely, skeletal and well drained, with low nutrient content and acidic characteristics. Soils derived from the basalt and diabase dykes are fine textured, clayey, well weathered and generally deep. These poorly drained soils are prone to erosion along the higher rainfall southern slopes. Soils derived from the Aeolian Kalahari sands are fine grained deep sands. Large areas along the northern sloped contain no soil, consisting only of the exposed underlying mother material. Peat soils occur along the cooler high lying wetlands of the SC. The deeper soils and saprolite matrix within the mistbelt act as sponge areas, which slowly release water to feed mountain streams over prolonged periods.

1.4 Biological Environment

1.4.1. Vegetation

The vegetation types of the Soutpansberg area range from high Afro-montane forest to sparse Kalahari sand-type xeric scrub communities. One unique veld type, the Soutpansberg Arid Mountain Sour Bushveld, is entirely confined to this region.

The flora (or plant life) of the Soutpansberg is exceptionally diverse with between 2 500–3 000 taxa (different kinds) of vascular (higher) plants (ferns, cycads, gymnosperms and flowering plants) known to occur here. It has been identified as one of the 19 centres of floristic endemism (plants that are only found in a restricted area) in Southern Africa - the whole sub-continent being recognized as having one of the world's richest regional floras. The Soutpansberg holds plants belonging to 1 066 different genera (a genus is a term for a group of closely related species such as the genus *Acacia* which includes all the species of thorn trees) which exceeds the number of genera in the world renowned Cape Floral Kingdom (1 000 genera in 90 000 km²) at the southern tip of South Africa and one of only six floral kingdoms that cover the entire earth. The Soutpansberg flora is also remarkable for the diversity of its arborescent (tree and shrub) species: it holds 594 of these species — a higher number than in any area of comparable size anywhere else in South Africa. Many of the indigenous plant species of the Soutpansberg are utilized in traditional medicinal practices.

1.4.2. Fauna

1.4.2.1. Mammals

The Soutpansberg has a remarkable diversity of mammals making up 60% of the total number of species that occur in South Africa. There are more mammal species in the Soutpansberg than in the Cape Floristic Kingdom. The whole of the Kruger National Park only contains two more species of mammals than the Soutpansberg. It is particularly rich in bats, carnivores and larger hoofed animals. Six species are listed in the SA Red Data Book on Mammals. One critically endangered (black rhino), two endangered (elephant and wild dog), and three vulnerable (cheetah, lion and springhare). The black rhino has been exterminated from the Soutpansberg. What about Lichentstein hartebeest and Roan. Elephant, wild dog and lion only remain in the far eastern part within the Kruger National Park. Elephant do occasionally move to the northern foothills from the Limpopo region. Cheetah is not found on the mountain plateau any more but it is still amazingly common on the plains north of the mountain. Springhare is still relatively common in areas with suitable habitat.

1.4.2.2 Birds

The Soutpansberg Mountain has tracts of indigenous mistbelt forest where Blue-spotted Wood-Dove, African Broadbill, Eastern Nicator, Gorgeous Bush-Shrike, Orange Ground-Thrush, Crested Guineafowl and Crowned Eagle can be found together with Bat Hawk, African Finfoot and African Skimmer African Fish Eagle.

The Soutpansberg has an amazingly high diversity of birds. 56% of the birds of Southern Africa and 75% of the relevant South African avifauna occur in the greater Soutpansberg area. A large number of forest bird species, often rare in South Africa, occur as isolated populations in the Soutpansberg in disjunct forest patches. Very high densities of birds of prey occur, including some very significant breeding populations of endangered species such as Cape Griffon, Crowned and Martial Eagles and Bat Hawk.

1.4.3. Conservation areas

South Africa's Soutpansberg Mountains are noted for their high levels of species endemism and unique ecosystems. They form part of the core area of the UNESCO Vhembe Biosphere Reserve that also includes the northern Kruger National Park and Mapungubwe National Park and Cultural Landscape. Five different biomes are present in the Soutpansberg Protected Area (SPA) – namely forest, thicket, savannah, grassland and wetland. All the vegetation types that occur in the SPA are endemic to Limpopo Province, or the Soutpansberg Mountains, and have a relatively limited range. Despite this, less than 1% of the Soutpansberg Mountains is formally conserved and hence there is a critical need to declare more of this area under formal conservation status.

Surface water

1.5.1 Catchment

The most important catchments in Makhado are the Nzhelele Water Catchment and the Luvuvhu River Catchment.

1.5.2 Water Management Area

Limpopo Water Management Area.

1.5.3 Rivers

The major river systems include the Sand and Hout river system, the Luvuvhu river system, the Little Letaba and Nzhelele river systems. Rivers which are regarded as either endangered or critical endangered and even vulnerable are as follows, namely: Dorinspruit, Sand (upper parts), Hout, Little Letaba, Soeketse, Middle Letaba, Luvuvhu (lower parts), Lutanandwa, Mutshedzi, Tshiluvhadi, Dzindi, Mutshindudi, Mutamba, Nzhelele and Nwanedzi Rivers. These are those rivers where many settlements in the rural areas to the south-east occur. Their status may be explained due to the presence of human activity and facts associated with urbanisation, such as pollution and soil erosion

The Nzhele water catchment is a rural catchment draining northwards into the Limpopo which is dominated by irrigation, with some forestry on the slopes of the Soutpansberg Mountains. There are two major dams within the catchment, the Nzhelele Dam and the much smaller Mutshedzi Dam, used for irrigation and domestic supply. This catchment is severely stressed.

The Luvuvhu River rises off the south-eastern flanks of the Soutpansberg, and it is one of the only well-watered catchments within the Limpopo Water Management Area. The catchment is now very densely populated. A number of dams have been built in the Luvuvhu catchment and there is no scope for further storage. The Albasini Dam is over-allocated and, along with reductions in canal losses, some curtailment of irrigation may be necessary in order to balance requirements with availability. The most recent dam is Nandoni Dam, completed in 2005 and it is going to supply regional bulk water to areas such as Thohoyandou, Malamulele, and Makhado.

1.6 Socio-economic setting

1.6.1 Population

The population of Makhado local municipality is 516 031 (62.17 per km²) according Census 2011.

1.6.2 Race

POPULATION GROUP	PEOPLE	PERCENTAGE
Black African	502 123	97.30%
White	10 457	2.03%
Indian or Asian	1 819	0.35%
Coloured	1 114	0.22%
Other	518	0.10%

1.6.3 Gender composition

GENDER	PEOPLE	PERCENTAGE
Female	279 236	54.11%
Male	236 795	45.89%

1.6.4 Age groups

	PEOPLE	PERCENTAGE
Population under 15	179 373	34.77%
Population 15 to 64	300 041	58.15%
Population over 65	36 617	7.08%

1.6.5 Education

EDUCATION (AGED 20 +)	
No schooling	17.8%
Higher education	22.2%
Matric	9.1%

1.6.6 Poverty and inequality

POVERTY LEVELS (2001-2011)	
2001	58.5%
2002	59.6%
2003	57.5%
2004	57.0%
2005	54.3%
2006	51.8%
2007	51.2%
2008	52.3%
2009	50.3%
2010	48.0%
2011	45.4%

1.6.7 Employment

EMPLOYMENT

	2017/18	2016/17	2015/16	2014/15	2013/14
EMPLOYMENT					
Employment Costs (R'000)	249 841	255 293	227 595	212 743	198 567
Remuneration of councillors (R'000)	25 307	23 595	22 592	21 798	20 782
Total Employee Positions	992	914	801	851	961
Total Vacant Employee Positions	135	197	166	113	175
Total Vacancy Percentage	13.61%	21.55%	20.72%	13.28%	18.21%

1.6.8 Income

Household income in Makhado increased steadily since 2001, from approximately R26.097 to R51.429 in 2011.

	AVERAGE HOUSEHOLD INCOME
2001	R 26 097,00
2011	R 51 429,00

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 prospecting 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 prospecting 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.

The site is located at mountainous area .

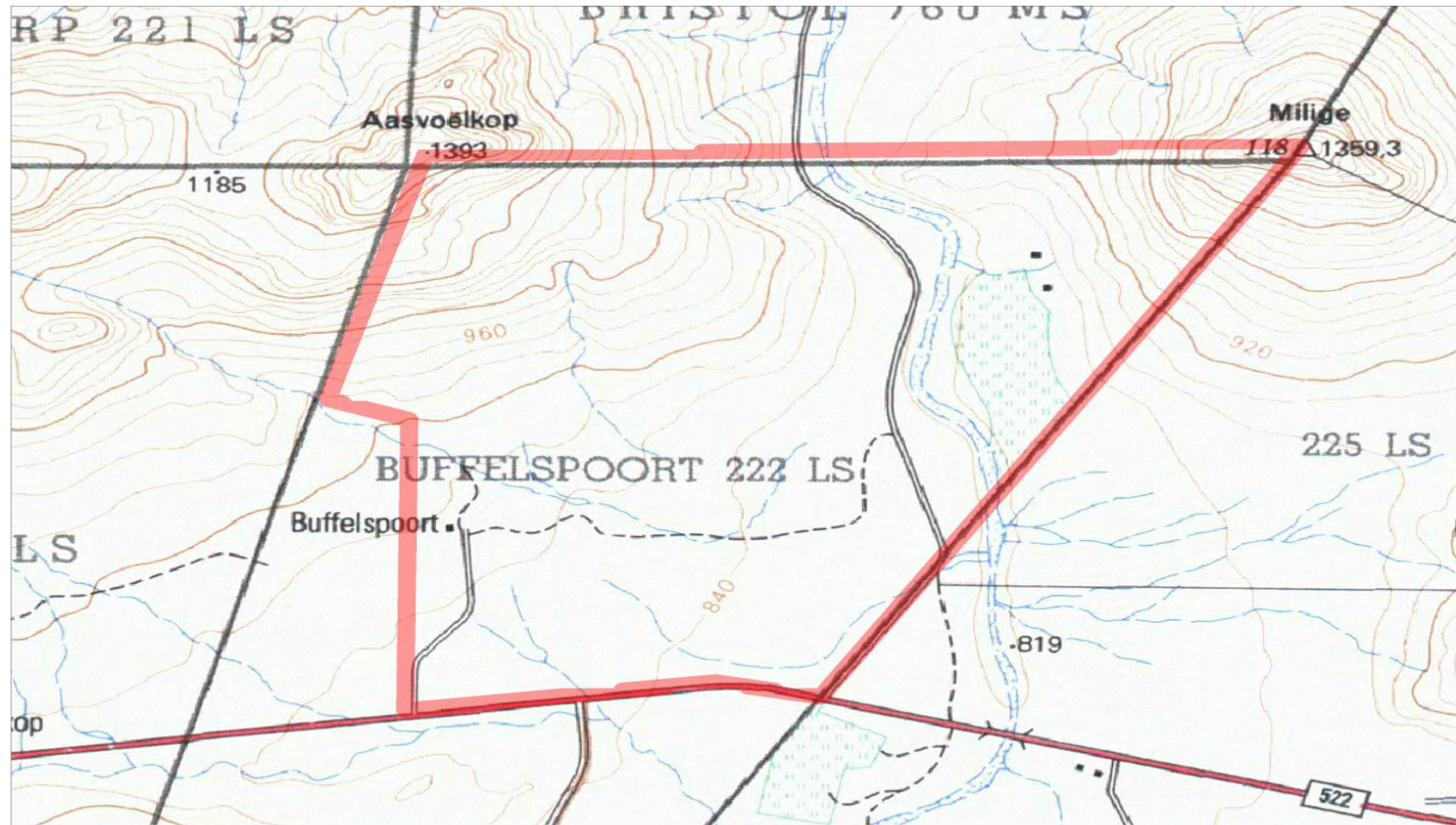
(c) Description of specific environmental features and infrastructure on the site.

The following environmental features and infrastructure is present at the site:

Access roads are available on site as there is a main road by the site.

(d) Environmental and current land use map.

Layout Map of the remaining extent of the Farm Buffelspoort 222



0 3 6 12 18 24 Meters

v) 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • The land use will temporarily change to prospecting • Prospecting may interfere with any land uses currently taking place on the site
Biodiversity (fauna and flora)	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Heritage sites may be present on the site, which may be disturbed and/or damaged during prospecting
Dust	<ul style="list-style-type: none"> • Dust from prospecting activities may coat vegetation making it unsafe for livestock grazing
Noise	<ul style="list-style-type: none"> • Noise from the trenching 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 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):

$$\text{Significance Point (SP)} = (\text{Probability} + \text{Extent} + \text{Duration}) \times \text{Intensity}$$

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	Impacts with little real effect and which should not have an influence on or require modification of the project design.

	significance	
+	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)		
<i>The period over which the impact will be experienced</i>		

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 prospecting 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	<ul style="list-style-type: none"> • 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 pitting and trenching site is cleared of vegetation, topsoil may be lost	<ul style="list-style-type: none"> • Any removed topsoil will be kept to one side and protected from being blown away or being eroded. • Rehabilitation of pitting and trenching and disturbed areas will take place.
	Erosion – from the clearing of drill sites and movement along access tracks	<ul style="list-style-type: none"> • Sediment and erosion controls will be designed to prevent runoff from the pitting and trenching 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 pitting and trenching and disturbed areas

	<ul style="list-style-type: none"> • Contamination – from diesel, oil, grease, etc. used for the pitting and trenching machinery and from maintenance of machinery conducted on site • Contamination – from domestic waste, sewerage and pitting and trenching core 	<p>will take place.</p> <ul style="list-style-type: none"> • Topsoil must not be contaminated with oil, grease, diesel, etc. which may inhibit the later growth of vegetation. • Pitting and trenching sumps and containment measures will be designed to contain all pitting and trenching fluid. • Pitting and trenching sumps will be constructed sufficiently large to retain all slurry produced during pitting and trenching. • 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
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		<p>site.</p> <ul style="list-style-type: none"> • 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 pitting and trenching core will be removed from the pitting and trenching sites or place in a specified area as per request or permission from the land owner.. • Rehabilitation of pitting and trenching and disturbed areas will take place.
Land use	Prospecting may interfere with any land uses currently taking place on the site	<ul style="list-style-type: none"> • 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 pitting and trenching and disturbed areas will take place.

Biodiversity (fauna and flora)	The fauna and flora could be negatively affected by the establishment of the pitting and trenching sites and access tracks	<ul style="list-style-type: none"> • Pitting and trenching and access tracks will be located in areas that will result in minimal ground disturbance. • A field survey will be undertaken before pitting and trenching commences at each pitting and trenching 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 pitting and trenching and disturbed areas will take place.
	Alien and invasive species could be introduced through the disturbance	<ul style="list-style-type: none"> • 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 prospecting activities will be undertaken and removed if required.

<p>Surface-and groundwater</p>	<ul style="list-style-type: none"> • Contamination – from diesel, oil, grease, etc. used for the pitting and trenching machinery and from maintenance of machinery conducted on site • Contamination – from domestic waste, sewerage, pitting and trenching and contaminated soil • Water discharge during pitting and trenching 	<ul style="list-style-type: none"> • No pitting and trenching will be established within 100m of any watercourse or wetland. • Pitting and trenching sumps and containment measures will be designed to contain all pitting and trenching fluid. • Pitting and trenching sumps will be constructed sufficiently large to retain all slurry produced during pitting and trenching. • 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.
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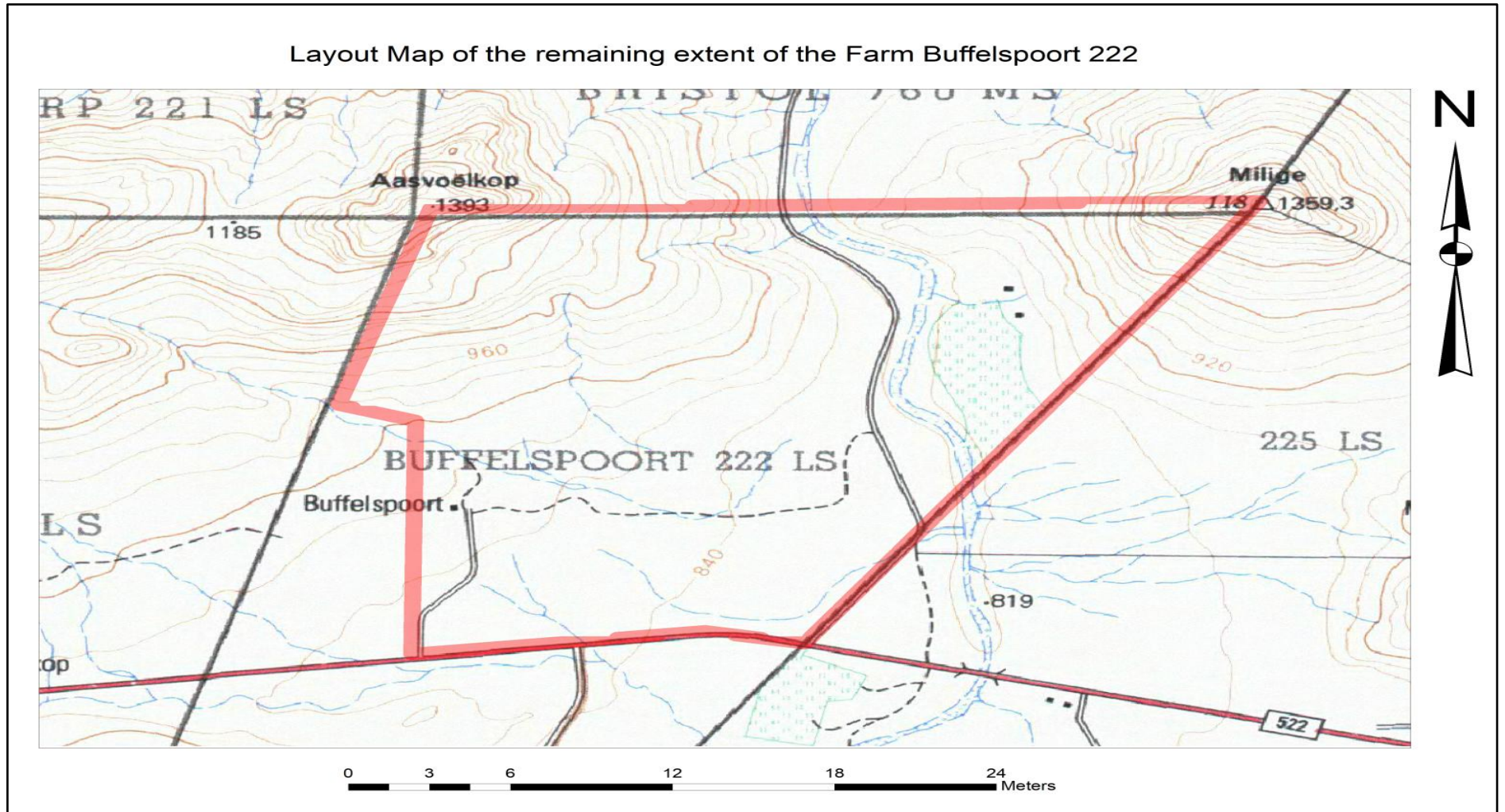
		<ul style="list-style-type: none"> • Any contaminated soil will be collected into non-permeable bags and disposed of at an approved landfill site. • A chemical toilet will be used on site and will be used in such a way as to prevent water pollution. Full or leaking toilets must be reported to the supervisor for corrective action or replacement. • All pitting and trenching 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	<ul style="list-style-type: none"> • 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 prospecting	<ul style="list-style-type: none"> • 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 prospecting area during pitting and trenching	<ul style="list-style-type: none"> • All pitting and trenching 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 pitting and trenching activities could disturb residents within the site	<ul style="list-style-type: none"> • Modern, low noise emission vehicles and equipment will be favoured. • All equipment on site will be maintained in good working

		<p>order.</p> <ul style="list-style-type: none"> • Pitting and trenching 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 prospecting	<ul style="list-style-type: none"> • Due to the nature of prospecting, employment opportunities will be minimal. The prospecting crew is small (4-6 people) with specialised skills. Where possible, local people will however be employed during the project.

ix) **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)



x) Motivation where no alternative sites were considered.

No location alternatives are applicable to this project since the sand (General), stone aggregate and stone aggregate gravel is contained in the proposed prospecting 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 prospecting and possible mining activities.

xi) 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), stone aggregate and stone aggregate gravel are contained in the proposed prospecting 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 prospecting activities.

However, where prospecting 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 prospecting 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 prospecting 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), stone aggregate and stone aggregate gravel 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 prospecting activities on the remaining extent of the farm Buffelspoort 222 were not to proceed with the proposed project, prospecting of this gravels 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 prospect the sand (General), stone aggregate and stone aggregate gravel 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 pitting and trenching, 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...)
Prospecting (pitting and trenching)	<ul style="list-style-type: none"> • Compaction – from movement of heavy machinery • Contamination – from diesel, oil 	Soil	Phase 2 - Exploration (pitting and trenching)	<ul style="list-style-type: none"> • Control through management and monitoring • Remedy through rehabilitation where negative impacts have been identified 	Impact kept to minimum and rehabilitate affected area.

	<p>grease etc. used for the pitting and trenching machinery and from maintenance of machinery conducted on site</p> <ul style="list-style-type: none"> • Contamination – from domestic waste, sewage and pitting and trenching core 				
	<ul style="list-style-type: none"> • Loss of top soil - when pitting and trenching site is cleared of vegetation 		Phase 2 - Exploration (pitting and trenching)	<ul style="list-style-type: none"> • Control through management and monitoring • Remedy through rehabilitation where negative impacts have been identified 	
	<ul style="list-style-type: none"> • Erosion – from clearing of drill site and movement along access tracks 				Impact kept to minimum and rehabilitate affected area.
	<ul style="list-style-type: none"> • Current land use 	Land use			

	on site				
	<ul style="list-style-type: none"> • Fauna & flora currently on site 	Biodiversity (fauna & flora)			
	<ul style="list-style-type: none"> • Potential introduction of alien & invasive species 				
	<ul style="list-style-type: none"> • Contamination – from diesel, oil grease etc. used for the pitting and trenching machinery and from maintenance of machinery conducted on site • Contamination – from domestic waste, sewage and pitting and trenching core 	Biodiversity (fauna & flora) Surface- and groundwater			
	<ul style="list-style-type: none"> • Potential water discharge – from 	Surface- and groundwater			Impact kept to minimum and rehabilitate affected

	a borehole during pitting and trenching	Heritage sites			area.
	<ul style="list-style-type: none"> • Potential water availability to other users – water for pitting and trenching may be sources on site 				
	<ul style="list-style-type: none"> • Potential heritage sites may be disturbed and/or damaged 				
	<ul style="list-style-type: none"> • Potential minimal dust may be caused 	Air quality (dust)			
	<ul style="list-style-type: none"> • Potential noise from pitting and trenching 	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 prospecting 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 defensible 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):

$$\text{Significance Point (SP)} = (\text{Probability} + \text{Extent} + \text{Duration}) \times \text{Intensity}$$

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)		
<i>The period over which the impact will be experienced</i>		
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 N2MEpty 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 Buffelspoort 222 (the area included in the Prospecting 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.

<p>ACTIVITY</p> <p>whether listed or not listed</p> <p>(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.).</p>	<p>POTENTIAL IMPACT</p> <p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.....etc...)</p>	<p>MITIGATION TYPE</p> <p>(modify, remedy, control, or stop)</p> <p>through</p> <p>(e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)</p> <p>E.g.</p> <p>Modify through alternative method.</p> <p>Control through noise control</p> <p>Control through management and monitoring through rehabilitation..</p>	<p>POTENTIAL FOR RESIDUAL RISK</p>
<p>Bulk sampling</p>	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	<p>Moderate</p>

		<p>the pans;</p> <ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Bunded containment and settlement 	Low

refuelling station		<p>facilities will be provided for hazardous materials, such as fuel and oil;</p> <ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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 of investigation, assessment, and evaluation of the impact of the mining, bulk sampling or sand (General), stone aggregate and stone aggregate gravel prospecting 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 prospecting 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 of investigation, assessment, and evaluation of the impact of the mining, bulk sampling or sand (General), stone aggregate and stone aggregate gravel prospecting 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 (Prospecting 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, prospecting right and also attend the site inspection with the officials from Department Mineral Resources to help the small scale miners to comply with the legislation of the department.

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

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

Job title : Consultant Environmental Geologist and GIS specialist
 Name of organization : Engedi Minerals and Energy (Pty) Ltd
 Period : February 2015 – Present
 Experiences and skills: Map Production (Using ArcGis), Identification of Minerals, and Applications for (Prospecting Right, Mining Right, and Mining Permit on DMR Samradonline portal), Technical Cooperation Permit, Reconnaissance Permit, Exploration Right, Production right (Petroleum applications) Compilation of EMP, EIA, Environmental Authorisation, Progress report, Environmental Performance Assessment, Closure application, and Mineral Laws Administration (Broad knowledge of MPRDA, 2002), Assisting small scale miners in the region of Northern Cape, North West, and Free State with

application for Mining permit and Prospecting right, help them with compliance in terms of the MPRDA, 2002. Also do the site inspection with the officials from Department of Mineral Resources, and help the miners and management to comply with the statutory while operating and always work in a safe working conditions and enforce also that the act of one employee must be safer towards another employee to achieve zero harm.

Knowledge of Legislations and Acts

Constitution of the Republic of South Africa No.108 of 1996
 Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)
 Mineral and Petroleum Resources Development Act Amendments bill 15 of 2013
 Mineral and Petroleum Resources Development Act Regulations
 National Water Act, 1998 (Act 36 of 1998)
 Mine Health and Safety Act, 1996 (Act 29 of 1996)
 National Heritage Resources Act, 1999 (Act 25 of 1999)
 National and Environmental Management Act, 1998 (Act 107 of 1998)
 Public Finance Management Act, 1999 (Act 1 of 1999) and Act 29 of 1999 as Amended
 2014 Environmental Impact Assessment Regulations
 Mining Charter, 2010
 Freedom Charter, 1955
 Municipal System Act, 2000 (Act 32 of 2000)
 Municipal Structure Act, 1998 (Act 117 of 1998) and as amended in Act 20 of 2002.

COMPETENCIES

Ability to relate with people,
 Ability to work independently and as a team,
 Determination to succeed,
 Strong leadership skills,
 Proactive, resourceful, well organized and able to meet deadlines, and
 Ability to communicate effectively

EXTRAMURAL ACTIVITIES AND INTERESTS

I love reading 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>ENGEDI Minerals & Energy</p>	Cell: 079 362 6046 (+27) 076 763 8486 (+27) Fax: 086 556 2568 (+27)
P.O.Box 29567 Danhof 9310	<i>pride, determination, and resilience</i> Reg. No. 2015/153624/07	email: info@engedime.com mulaudzi@engedime.com www.engedime.com

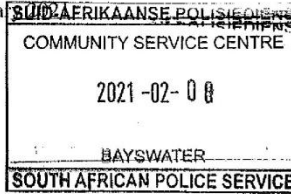
8th of February 2021

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

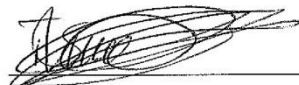
As refer to the subject of the matter above;

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 February



Yours sincerely


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

Ek sertifiseer dat boesendo verklaring deur my
 sigeneem is en dat die verklaring eiken dat
 my besidder se naam is en dat die inhoud van hierdie ver-
 klaring en dit begryp. Hierdie verklaring is voor
 my hand geskryf en gemaak deur die
 persoon wat hierdie verklaring in my teen-
 teenwoordigheid aangebring.

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

BAYSWATER op 08-02-2021 om 14:00

(GRANDTREKENER) K. M. MALFFANE
 (SIGNATURE) K. M. MALFFANE
 VOLLE VOORNAAM EN SURNAAM IN DRUKSKRIF
 FULL FIRST NAMES AND SURNAME IN BLOCK LETTERS

99 WILCOCKS STR
 BLOEMFONTEIN

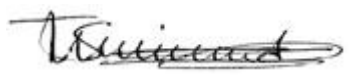
BESIGHEIDSDRESE (STRAATADRES)
 BUSINESS ADDRESS (STREET ADDRESS)

SA POLISIEDIENS
 SA POLICE SERVICE

pride, determination, and resilience.

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.

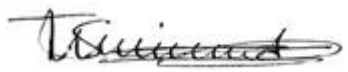


Signature of the EAP

DATE: 11 January 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: 11 January 2021

APPENDIX 4
FINAL LAYOUT MAP OF SITE

Layout Map of the remaining extent of the Farm Buffelspoort 222

