



# SOCIO-ECONOMIC IMPACT ASSESSMENT

AS PART OF THE APPLICATION FOR THE AMENDMENT  
OF THE EXISTING MINE RIGHT HELD BY TJA NALEDI FOR  
THE MINING OF SAND, TO INCLUDE AGGREGATE ON  
PORTION 4 OF THE FARM WOODLANDS 407, NGWATHE  
LOCAL MUNICIPALITY, FREE STATE PROVINCE

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## EXECUTIVE SUMMARY

### INTRODUCTION

Envioworks was appointed by Greenmined Environmental, the Environmental Assessment Practitioner (EAP), to undertake a Socio-Economic Impact Assessment (SEIA) of the proposed amendment to the Mining Right for Barrage Bulk Sand Mine (BBSM), held by Tja Naledi Beafase Investment Holdings (Pty) Ltd. (The Applicant). This report has been compiled by Envioworks in collaboration with Coastal Environmental Services (CES).

Envioworks (Pty)Ltd, part of the SHE Group, is a professional Environmental Specialist, Compliance, Training and Advice Consultancy. Envioworks, established in 2002 is backed by a collective 35 years of professional service and experience in the environmental field. The qualifications and expertise of the professional team forms the backbone of the company's continued success. Envioworks has grown continuously in their offering of high-quality Environmental Specialist Services *inter alia* Social Impact Assessments. Envioworks received various awards for their services and works both nationally and internationally.

Coastal and Environmental Services (Pty) was established in 1990 to service a then fledgling market in the field of Environmental Management and Impact Assessment. The Company has grown significantly since then, due to the increased demand for their high quality environmental and social advisory services, both in South Africa as well as many African countries. CES has worked in over 20 African countries.

Both Envioworks and CES consultants are members of the International Association of Impact Assessment, South Africa (IAIAsa) (<http://www.iaiasa.co.za/>). As members of IAIAsa, Envioworks and CES work according to their code of ethics.

Furthermore, Envioworks' consultants belong to the International Association for Public Participation (IAP2) (<http://iap2sa.org/>), and adhere to the purpose and code of ethics.

This report has been reviewed by Ms. Erika Du Plessis, the Chairperson of IAP2 Southern Africa.

### The Applicant

There has been much confusion amongst the public with regards to the different names for the Applicant and the mine. The structure is explained here as follows:

- The Applicant and owner of the current mining right, is Tja Naledi Beafase Investment Holdings (Pty) Ltd.
- The mine, owned by the Applicant, operates under the name, Barrage Bulk Sand Mine.
- Dr. Stephen Jacobs, Joy Rabotapi and Catharina Jacobs are shareholders of Tja Naledi Beafase Investment Holdings (Pty) Ltd.
- The farm, on which the mine is situated is owned by Dr. Stephen Jacobs.
- SPH Kundalila (the Contractor) are contracted by the Applicant to operate the mine.

The Applicant currently holds an existing Mining Right (MR) and an approved Environmental Management Programme (EMPr) for Portion 4 of the farm Woodlands 407 (437.8330ha), falling within the Ngwathe Local Municipality in the Fezile Dabi Magisterial District, Free State Province. The current MR and EMPr allows the Applicant to mine silica sand with no on-site processing. One cell is to be mined at a time and rehabilitation is to take place concurrently. The Applicant wishes

to apply for a Mining Right amendment, to include aggregate, as well as to amend the EMPr to include processing (see ‘**Location and Project Description**’ below for a full description).

This SEIA will form part of the Basic Assessment Process (BA) process conducted by Greenmined Environmental. The information contained in this report was sourced from:

- The Final Basic Assessment Report compiled by Greenmined Environmental
- Public Comments received by Greenmined Environmental
- The Amended Social and Labour Plan, 2017
- Relevant policy and planning documents
  - The National Development Plan (2030)
  - Department of Environmental Affairs & Development Planning: Guideline for Involving Social Assessment Specialists in EIA Processes (2007);
  - Department of Mineral Resources Strategic Plan 2014/19
  - Free State Provincial Spatial Development Plan 2014
  - Fezile Dabi District Municipality: Integrated Development Plan 2017-2022
  - Fezile Dabi District Municipality: Rural Development Plan 2016
  - Ngwathe Local Municipality: Environmental Management Framework (2013)
  - Ngwathe Spatial Development Framework 2015/2016
  - Ngwathe Local Municipality: Draft Review IDP 2018/19
  - Frank Vanclay: International Principles for Social Impact Assessment (2003)
- Consultation with Interested & Affected Parties (I&APs) - Identification of I&APs was done by:
  - Using the PPP conducted by Greenmined Environmental.
  - Approaching key Organs of State, namely Department of Water and Sanitation, Department of Mineral Resources, Free State Department: Police, Roads, and Transport, Free State Department of Agriculture and Rural Development, Ngwathe Local Municipality, Emfumlani Local Municipality and Sedibeng Local Municipality.
- Discussion with representatives of the local community. These included
  - The Protect Vaal Eden Committee
  - Vaal Justice Alliance
  - The Savannah Africa Vredefort Dome Tourism Association
- Discussion with an Urban and Regional Planner, Jako Viviers of LMV.
- Review of SEIA’s done on similar projects in the area.

The proposed mining right amendment will result in changes to the existing mining practices and this has resulted in significant public outcry regarding the potential increase in negative impacts, in particular the cumulative impacts. In order to ascertain the potential impacts on the surrounding communities, a SEIA study was commissioned.

Barrage Bulk Sand Mine is situated in close proximity to two other sand mines, and there was much speculation and discontent regarding previous and current Public Participation Processes for mines in general in the area. While this report will solely focus on and assess the socio-economic aspects of the proposed amendment application, the circumstances surrounding the application will be taken into account. The initial stages of the Public Participation Process conducted by Greenmined Environmental was perceived to not have been far reaching enough and to have not met all requirements. The subsequent Public Participation efforts conducted by Greenmined Environmental, as well as the SEIA study’s process conducted by Enviroworks, aimed to involve all relevant I&APs and allowed sufficient time for comment. Furthermore, this report will also be subjected to a 30-day comment period.

**Alluvial Diamonds**

Alluvial diamonds were initially included as one of the minerals being applied for. Due to much contention regarding this, the Applicant has since removed alluvial diamonds from their application. Thus no aspects, with regards to alluvial diamonds, will be assessed in this report as it is no longer relevant.

This SEIA aims to determine and assess the social and economic impacts associated with the proposed amendment as well as to provide measures to increase any positive impacts and mitigate negative impacts.

**Report Structure**

Section 1 of this SEIA report outlines the proposed Mining Right (MR) amendment application and provides an overview of the proposed amendment. The details of the specialists involved are included in this section.

Section 2 provides a review of the relevant policy and planning environment.

An overview of the study area is given in Section 3. This begins at a provincial-level, working down to a ward level.

Section 4, provides an overview of the consultation process followed in the compilation of this report.

Impacts arising from the consultation process are described in Section 5.

The information gathered through the review processes and consultation with I&APs is then taken into account in Section 6, where the impacts are assessed.

The assessment of impacts is divided into three phases, namely the Construction, Operational and Decommissioning Phases.

Section 7 provides a summary of the findings as well as a conclusion and Impact Statement.

**LOCATION AND PROJECT DESCRIPTION**

Tja Naledi Beafase Investment Holdings (Pty) Ltd. (The Applicant), operating as Barrage Bulk Sand Mine (BBSM) currently holds a Mining Right and approved EMPr for Portion 4 of the farm Woodlands 407, situated within the in the Ngwathe Local Municipality in the Fezile Dabi Magisterial district, Free State Province. The farm is in close proximity to two other provinces, namely Gauteng and North West. The farm borders Gauteng Province on its eastern border and is situated approximately four kilometres from the border of the North West Province. Portion 4 of the farm Woodlands 407 is located at the following coordinates:

- 26°45'17.62"S 27°36'23.60"E
- 26°45'15.81"S 27°37'23.58"E
- 26°45'23.53"S 27°37'53.44"E
- 26°45'52.42"S 27°37'38.48"E
- 26°46'5.48"S 27°37'40.79"E
- 26°46'24.86"S 27°37'29.26"E
- 26°45'54.36"S 27°35'59.29"E
- 26°45'17.62"S 27°36'23.60" E



**Borders of Barrage Bulk Sand Mine illustrated in red. The access road is depicted in yellow.**

### **Project Description**

An Environmental Impact Assessment (EIA) was conducted in 2014 and the Mining Right awarded to the Applicant in 2016. Under the current mining right The Applicant is permitted to conduct strip mining of silica sand. The Applicant wishes to amend their mining right to include aggregate, as well as the EMPr to include processing (crushing and screening).

The farm portion is currently used for small-scale cultivated grazing, mixed farming and sand mining. According to the farm owner, Dr. Stephen Jacobs on 21/04/2018, mining activities have been taking place on the farm since 1976. On the eastern side of the property is an area previously used for sand mining. Current sand mining activities are situated at the center of the property on the northern side of the access road. The farm portion is predominantly surrounded by agricultural land, including activities such as cropping, beef cattle and livestock breeding.

There has been much contention with regards to the zoning of the property concerned. As mentioned, Portion 4 of the farm Woodlands 407 was used for amongst others, mining activities, varying in nature, since 1976. Based on information received from the Applicant's attorneys (see Appendix D), the farm has effectively never been zoned for any purposes, according the Ngwathe Local Municipality (NLM) Land Use Scheme. As the farm was used for mining purposes since 1976, it consequently falls within the ambit of section 26(3) of the Spatial Planning and Land Use Management Act (SPLUMA). The Act states: *"Where no town planning or land use scheme applies to a piece of land before a land use scheme is approved in terms of this Act, such land may be used only for the purposes listed in Schedule 2 of this Act and for which such land was lawfully used or could lawfully have been used immediately prior to the commencement of the Act."* In turn, Schedule 2 of the Act includes "mining purposes".

Re-zoning is an issue that will need to be resolved between the Applicant and the municipality prior to approval of the amendment. The Applicant is currently underway with this process.

### **Current Mining Method**

Currently BBSM is operated by SPH Kundalila, (the Contractor).

The current MR allows for the mining of silica sand on Portion 4 of the farm Woodlands 407 via a strip-mining process.

- Strips of land are cleared with a bulldozer. No size is provided within the current EMPr.
- Sand is loaded onto the trucks of customers with a front-end loader.
- The topsoil is to be stored separately and has to be replaced during rehabilitation.
- Only one active cell is open at any given time. No cell size is provided in the current EMPr. Rehabilitation is conducted concurrently and the open cell is kept as small as practically possible.
- On-site processing of sand is not allowed.
- Dust must be suppressed using a water truck which sprays internal dirt roads.
- Current infrastructure and machinery allowed on the site for mining activities are one caravan (admin purposes), one front end loader, one tractor (a bulldozer has been approved by the DMR) and one water trailer for dust suppression.

There has been speculation regarding the mine failing to implement concurrent rehabilitation. This was discussed with the Contractor and they will to correct wrong actions and adhere to the mining plan. From their side, they explained that there are different types of commercially sought after sand available to be mined, at different depths, therefore it is difficult to mine only one cell at a time. The mining method applied for in the Amended Application, take this into account. The mining method is explained in the 'Proposed Mining Method'. Working hours and noise after hours also were amongst the complaints received.

The following measures should be in place to ensure proofed compliance to the Mining Plan and to show commitment from the Applicant and Contractor to minimize their impacts:

- In order to confirm that working hours, from 7:30am to 4:00pm, are being adhered to, the Contractor should use their camera and tracking system (Although working hours are 8:00am, the workers must be there at 7:30am to prepare for the day, start up vehicles and other preparations). They must compile reports that can be made available to the public. The client has confirmed that these reports are available.
- As dust blowing from client's trucks on the roads is a nuisance, the Contractor needs to inform clients that they need to use a tarpaulin to their cover loads. The Contractor needs to enforce clients to adhere to this.
- If a closure certificate for the historical mine is not issued, the rehabilitation thereof, will need to form part of the current rehabilitation plan.
- Upon approval of the amendment, the Contractor is to investigate spraying the entrance road, up to the point where the vehicles turn, with a dust-allaying agent. Whilst this is expensive, it will assist in dust suppression at the major point of loading of sand.
- A map needs to be created that clearly illustrates areas that will not be mined and areas that will, and the Contractor needs to give their assurance that what is illustrated is final and will not be altered in future. The direction of mining and rehabilitation also needs to be illustrated. This map will need to be made available to the public.
- The large alien trees should be left as they aid in suppression of dust impacts. This keeping of alien trees needs to be applied for, at the relevant Forestry Department. These can be replaced with indigenous trees as part of the final rehabilitation process of the mine.
- The Contractor needs to establish a method of regular communication with the surrounding community, where they make available their reports and where issues can be discussed. A complaints register needs to be readily available on-site.
- Any deviation on infrastructure needed on-site, needs to be applied for to DMR. If this is applied for, the mining method and EMPr need to be amended to include these changes.

Greenmined Environmental are in the process of applying for the aforementioned as part of the amended application now under Public Review.

### **Proposed Mining Method**

As per the Final Basic Assessment Report (FBAR), the proposed MR amendment allows for the inclusion of aggregate, in addition to the already approved sand.

Furthermore the EMPr has been amended to include screening and crushing. Mining will continue to be conducted by the Contractor.

- It is proposed that material will be mined in strips.
- Strips to be mined will be scraped and the topsoil set aside for rehabilitation purposes.
- Strips will be excavated to a maximum of 10 metres in some areas, with an average depth of 2 to 3 metres.
- In order to allow for the different types of sand that are mined, two active cells will be open at any time. Rehabilitation will happen concurrently.
- Material will then be loaded and hauled to the processing plant via a front end loader.
- The processing plant will consist of a mobile crusher and screen. Screening of sand entails putting the sand through a sieve to remove debris. Extracted aggregate will be crushed and then screened in order to obtain the correct sizes.
- All activities will be contained within the boundaries of the site.
- Once all the sand has been extracted from a strip, the topsoil will be replaced and sloped. Two growing seasons will be allowed for natural succession to take place. If substantial rehabilitation has not taken place following this, then the area will require manual revegetation.

The Public perceives that aspects of the proposed mining method were found to be vague.

- The Applicant and Contractor need to define their proposed mining method and rehabilitation plans very clearly.

### **ALTERNATIVES**

Possible alternatives that could be considered include, in addition to the existing approved mining of sand:

- Approval only of on-site sand processing;
- Approval of on-site sand processing, aggregate mining and crushing; or alternatively,
- The No-Go option.

### **NEED FOR THE PROJECT**

The proposed amendment will result in several needs being met. The mine will supply sand and aggregate to the regional construction-, residential- and manufacturing sectors, particularly those located in the growing urban areas of Gauteng where demand is greatest. The mine is anticipating close by road activities to commence in the near future, and they would like to be in a position to supply aggregate. This will ensure a more profitable product and local supply with lessened impacts on roads for long distances.

Sand and aggregate are essential ingredients in the production of concrete for buildings, roads/paths and other infrastructure, and are also used for landscaping, glass production and filtering systems. The supply of sand is therefore seen as a valuable economic benefit. Other benefits include:

- The Applicant will be able to utilise the available sand and aggregate;
- The Applicant will benefit economically, which will result in downstream economic benefits to the economy, for example tax;

- While only a few employment opportunities will be created, this can be enhanced by Local Economic Development initiatives; and,
- The Applicant will be able to expand the variety of minerals mined on the property and thus diversify the sources of income from the property.

### **APPROACH TO THE STUDY**

The Social component of the study was undertaken by Enviroworks, whilst the Economic aspects were investigated and reported on by CES. The two components are integrated throughout the study and the full Economic Report is attached as Appendix E.

The approach to the SEIA is based on the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for Social Impact Assessment (February 2007). These guidelines are based on international best practice. The key activities in the SEIA process embodied in the guidelines, was applied as follows:

- Describing and obtaining an understanding of the proposed intervention (type, scale, and location), the settlements, and communities likely to be affected by the proposed mining activities on Portion 4 of the Farm Woodlands 407.
- Collecting baseline data on the current social and economic environment of the Free State Province, Fezile Dabi District Municipality and Ngwathe Local Municipality.
- Identifying the key potential socio-economic issues associated with the proposed project. This required a site visit to the mine and consultation with affected individuals and communities (local community, organs of state and surrounding landowners).
- Assessing and documenting the significance of socio-economic impacts associated with the amendment of the mining right and associated activities.
- Identifying enhancement and mitigation measures to enhance benefits and reduce the significance of negative impacts.

The identification of potential socio-economic issues associated with proposed mining right amendment were based on:

- Observations during the project site visit;
- Consultation with Interested and Affected Parties (I&APs);
- Review of relevant documentation;
- Review of similar projects;
- Review of the general area.

### **SUMMARY OF KEY FINDINGS**

#### **POLICY AND PLANNING FINDINGS**

A “one-sentence” is provided below, to explain the main aims of the different Policy documents reviewed during the SEIA study:

The National Development Plan (NDP) (2011) contains a plan aimed at eliminating poverty and reducing inequality by 2030 making this one of the guiding objectives of the NDP over the next 20 years.

The Department of Mineral Resources Strategic Plan (DMRSP) (2014/19) was developed with the vision of a mining and minerals sector that is globally competitive, sustainable and meaningfully transformed.



The Free State PSDF aims to address the key challenges facing the province, namely implementing a 'developmental state' while ensuring global obligations to social, economic and environmental sustainability are achieved.

Within the Fezile District Municipality Integrated Development Plan (IDP) strategic planning guiding is provided, aiming to guide all the planning within the municipality.

Within the Ngwathe Local Municipality (NLM) Integrated Development Plan (IDP) an overview of the current status of the municipality along with development strategies, objectives and planned programmes and projects is provided.

The Spatial Development Framework (SDF) classifies the area of the municipality according to Standard Planning Categories (SPCs), which include Core Conservation Areas, Natural Buffer Areas, Agricultural Areas, Urban Related Areas, Industrial Areas and Surface Infrastructure.

Within the NDP and DMRSP job creation is noted as an important factor for future development. As shown by the Economic Impact Assessment Report (Appendix E), the proposed amendment will result in the creation of additional jobs, however negative impacts could result in a greater number of jobs being lost in other industries, should impacts not be effectively mitigated. Due to this, the proposed amendment is not supported by the NDP and DMRSP. If however, negative impacts can be effectively mitigated and effective LED is pursued, then the proposed amendment may possibly align with the above mentioned planning documents.

The Free State PSDF supports the proposed amendment with regards to the amendment extending the life of an existing mine. The mine however, is situated within a tourism corridor, as per the PSDF, where efficient tourism should be encouraged and environmentally-disruptive land-uses considered with caution. Should the Applicant continue to not strictly adhere to the mining plan, the tourism potential of the area will be negatively affected by dust, noise and road deterioration. Should the proposed amendment be approved and the mining process still does not adhere to the mining plan, it will further negatively impact the tourism potential of the area. Thus, if the amendment is approved and mining is carried out without adhering to the approved mining methods and EMPr, it would not be in line with the PSDF. If compliance with the mining plan is improved, nuisances could be mitigated to acceptable levels.

The Social and Labour Plan (SLP) was perceived by I&APs to have a weak LED component and they felt that not enough was being done in order to include input from the local communities. Furthermore, I&APs felt the number of extra jobs created by the proposed amendment is not significant. This needs to be addressed by the Applicant, coordinated by Greenmined Environmental.

According to the Fezile Dabi District Municipality Integrated Development Plan (2017-2022), Ngwathe Local Municipality Integrated Development Plan (2018/19) and the Ngwathe Local Municipality Environmental Management Framework Status Quo Report (2013), agriculture, manufacturing and tourism are important industries for the area. BBSM is situated on land that has potential for both agricultural and tourism activities and the activities carried out are in line with the IDP. Again, if any activity compromises the potential of another activity in the area, it is not supported by the IDP. The mine has a definite Life of Mine, and can be rehabilitated to an acceptable standard. Therefore, if the mining takes place in an environmentally responsible manner, and can be returned to another use, after closure, it is in line with the IDP's objectives.

In summary, both the NDP and DMRSP both promote job creation. While the mine will create additional employment, this is likely to be outweighed by knock-on negative economic impacts. The proposed amendment will likely be profitable on a national scale, local benefits will be small.

Mining, agriculture and tourism are noted as important factors for economic growth. The area concerned has potential for agricultural, mining and tourism activities. As the area is classified as a tourism corridor in the PDSF, any land uses compromising the areas tourism integrity would be in contradiction to the PDSF. Current mining activities already compromise the tourism potential of the surrounding area (see Appendix E). Any impacts caused by the amendment that may further affect the surrounding sense of place will affect current and future tourism initiatives.

The findings from the reviewed literature, the findings from the Public Consultation Process and the findings from Site Investigations concluded that from a socio- economic perspective, the proposed mining amendment is not supported, as it currently stands. Current mining activities already compromise the tourism potential of the surrounding area. As the area is classified as a tourism corridor, any impacts caused by the amendment that may further affect the surrounding sense of place will affect current and future tourism initiatives. It must however be noted that the sand mines are not the only source of dust and noise as agricultural activities also generate impacts, particularly with regards to dust.

Should the LED, provided by the Municipality, be approved by the DMR be approved as providing a meaningful contribution and not compromise the ability of the surrounding landscape to realise its tourism potential, the proposed amendment may be considered to align to planning documents.

Furthermore, mining operations would need to take place in a sustainable way, that leaves the land in suitable condition for either agricultural or tourism activities following closure of the mine.

Mitigation measures are discussed in depth in Sections 6 and 7, and include among others, strict adherence to working hours.

## **KEY IMPACT FINDINGS AND RECOMMENDATIONS OF THE CONSTRUCTION, OPERATIONAL AND DECOMMISSIONING PHASES**

### **CONSTRUCTION PHASE**

Due to the mine already being operational, the Construction Phase will have very few impacts associated with it. During the construction phase new equipment will need to be brought to the site and installed. This could possibly cause a temporary increase in dust and noise. Other activities associated with the Construction Phase include advertising for new available jobs, which may lead to an influx of work seekers and possibly an increase in crime.

#### **Possible Increase in Crime**

While unlikely, it is possible that the proposed amendment might lead to increased crime levels.

An influx of job seekers may occur, as knowledge of possible job opportunities spreads. Should there be a large influx of work seekers, those that are unsuccessful may turn to crime.

It is therefore recommended to ensure that unrealistic expectations regarding employment opportunities are carefully managed and that a substantial contribution is made towards the upliftment of local communities and addressing their identified needs. Furthermore it is recommended that the application process be conducted at the expected source of local employment, in order to avoid a potential influx of work seekers to the area immediately surrounding the mine.

**OPERATIONAL PHASE****Potential Negative Impacts****Dust and Noise**

The addition of minerals that can be mined and on-site processing (crushing and screening) will increase dust and noise levels emanating from the mine. While dust and noise levels are still well within limits, they do cause a nuisance impact.

High atmospheric dust levels pose a health risk as well as a nuisance factor, causing dust in people's homes.

Potential health risks associated with long term high levels of exposure to crystalline silica include silicosis, lung cancer, bronchitis as well as autoimmune diseases. No studies that speak specifically to the risk, were observed in the FBAR. As discussed in the Conclusion as Strategic Environmental Impact Assessment is recommended to accurately determine and assess cumulative impacts.

- This aspect needs to be investigated and a health risk statement from an expert must be included in the FBAR.

High levels of uncharacteristic noise disturb the tranquility and sense of place of the area. Although the noise levels are within acceptable level range according to the DMR prescriptions, the river environment may affect the traveling of noise impacts and the local residents alongside the river, experience this aspect very disturbing to the tranquility of the environment. Efforts were made by the Contractor to silence the reverse hooters to a level that still fulfills the safety aspect and he is also adhering to approved working times. Reports on operating times need to be made available by the Contractor in order to affirm local residents, who suspect mines are not adhering to operating hours.

Increased dust and noise will affect the tourism potential of the surrounding area and may lead to a decreased satisfaction of the living area for the surrounding community.

Mitigation measures to manage these impacts to a possible acceptable level are discussed in Section 7 and form part of our overall recommendations.

**Sense of Place**

The Vaal River creates an environment ideal for tourism and nature-based activities, both of which rely heavily on the area's sense of place.

Should the proposed amendment lead to an unacceptable increase dust and noise levels, the areas sense of place will be negatively impacted upon. This will affect areas such as Vaal Oewer, local residents and other tourism related activities. Aspects of the area's economy which rely on the 'sense of place' may see a decline, if these impacts are not mitigated, managed and monitored.

According to Mr. Craig Richardson, if nuisance impacts resulting from the mine are high, the value of a potential multi-million Rand educational facility planned on his farm may be compromised.

Again, as in the aforementioned paragraph, mitigation measures can be applied and the impacts can be contained, if these are adhered to.

**Deterioration of the Access Road**

Access to the mine is gained via the S171 Road. The aged state of the road, coupled with the frequent heavy vehicle traffic, has resulted in the road being in an unsafe state. This was evident in

the inspection report conducted by the Provincial roads department (see Appendix B). The unsafe state of the road and heavy vehicles frequenting the sand mines, put local road users at risk.

- The state of the road is an issue that will need to be addressed by the Applicant and surrounding mine owners. Based on discussions, the neighboring Pure Source Sand Mine is responsible for the initial rehabilitation of the road. Following this the Applicant, along with surrounding mine owners, need create a forum responsible for the upkeep of the road.

#### **Water**

Concern was raised with regards to water. Water will not be used as part of the screening process and will only be used for dust suppression and drinking water on site. Thus, the proposed amendment will not result in excessive use of water. As the water will be extracted from boreholes, the Vaal River will not be affected. A General Authorisation (GA) was obtained from Department of Water and Sanitation for the use of the amount of water needed on-site. No public participation is required for the obtaining of a GA. Due to trust issues, as mentioned below, the public felt they were supposed to be informed as they are worried about all aspects of the natural environment. In the event of silence, many misperceptions can evolve. We therefore recommend a total open-book approach from the mine's side, to inform the public clearly, thoroughly and on a regular basis of all mining and associated activities that may impact on the public's well-being. This can build trust and coexistence in a harmonious manner. This will also avoid unnecessary public speculation that may lead to exaggeration of possible impacts.

#### **Trust Issues**

A great distrust towards the mines has been fostered among the people. This is largely due to previous inadequate public participation process and misunderstandings in the absence of very clear factual information.

#### **Potential Positive Impacts**

The proposed amendment will essentially create an additional three direct job opportunities (See Section 5.5). Due to the nature of the mining industry, these job opportunities will likely be filled by local males. Labour will be locally sourced.

While the amendment will not result in a substantial number of new jobs being created, more are created than if the mine continued to operate as current. While these jobs will have a positive knock-on effects on the local economy of the area, the effects will be minor.

Furthermore, the Applicant would benefit economically through the sale of an additional mineral, namely aggregate. In order for these positive impacts to be more widely felt, it is recommended that as the Applicants profits increase so should their contribution to LED.

- It is recommended that the Applicant only use local resources, for example, obtain fuel locally, and spares from the Free State.

This mine has the potential, after closing, to return to its original agricultural potential and a well-executed rehabilitation plan, could return the land to a better condition than prior to mining.

#### **DECOMMISSIONING PHASE**

##### **Potential negative impacts**

Upon closure of the mine those employed face possible job losses. Again, this will only result in three jobs been lost. Job losses will have negative knock-on effects on the local economy and could potentially lead to crime. This can be mitigated by the contractor absorbing those employed by the

mine into the rest of their work force and using them on other sites or alternatively to empower them by training and equipping them for other jobs after cessation of the mine.

#### **Potential positive impacts**

Decreased dust and noise levels, are likely to be the greatest positive impact and will have several positive knock-on effects. A decrease in nuisance impacts will likely lead to improved satisfaction with the living environment among surrounding residents, due to the area's sense of place improving. Tourism potential for the area is likely to improve and the land once mined could be used for a tourism related development. However, it needs to be kept in mind that BBSM is not the only source of dust and noise. Closure of the mine will thus only result in a reduction in nuisance impacts as agricultural and surrounding mining activities will still cause dust and noise.

The S171 Road will no longer be frequented by trucks using it to access BBSM. With fewer trucks using the road traffic levels and safety on the road will improve. This will benefit surrounding residents and farmers who use the road and cross it with their livestock.

#### **CUMULATIVE IMPACTS**

Two other sand mines, Sweet Sensations and Pure Source, are operating adjacent to BBSM. The impacts resulting from these two mines, as well as the dust resulting from agricultural activities cumulate impacts resulting from BBSM. The cumulative impacts from mining and agricultural activities is significantly high.

- A Strategic Environmental Impact Assessment is recommended in order to address the cumulative impacts as a result of the above mentioned activities.

#### **ASSESSMENT OF NO-GO OPTION**

##### **Potential Positive Impacts**

The No-Go option would result in the mine continuing to operate as it is currently. No additional noise and dust will be created as a result of additional minerals being mined and no on-site processing. As there will be no additional noise and dust created, any potential negative impacts affecting the areas sense of place will not occur. Surrounding residents' perception of the living environment will not be further negatively affected, but will still be as is, a negative perception and negative impacts will continue as it is currently. It is recommended, that in the event of a No-Go, that the recommendations contained in this report, still need to be implemented.

##### **Potential Negative Impacts**

The additional mineral, namely aggregate, will not be able to be mined and its economic benefits will not be realised.

No new job opportunities will be created.

#### **CONCLUSIONS AND RECOMMENDATIONS OF THE FINDINGS**

##### **Conclusions**

This SEIA has found the surrounding community to be extremely unhappy with the proposed mining right amendment. The community, namely Vaal Oewer and residents surrounding the mines, are already faced with high levels of dust and uncharacteristic noise, largely as a result of the three mines in the area. Furthermore, a flawed process for the BBSM's initial mining right has further angered the community and created distrust towards to the mines. Distrust towards the mine has created a very difficult situation, even if the mine undertakes to implement and adhere to the mitigation measures proposed. This can be resolved by written commitments approved as part of the EMPR, regular Auditing by and independent ECO and communication to the dissatisfied community.

- It is suggested that a forum should be established where issues can be discussed and attend to, on a quarterly basis or a frequency, as may be determined by both parties.

On a positive note, the proposed amendment will create employment opportunities and possible small-scale positive knock-on effects for the local economy.

On a negative note, noise is expected to be the most significant impact. Furthermore, dust will also increase, albeit only a slight increase. While these impacts are well below limits, they cause nuisance impacts. Determining the contribution to general dust levels by BBSM is difficult as there are numerous sources of dust in the area. Dust and noise levels are expected to increase should the proposed amendment be approved, without strict mitigation measures being adhered to. High dust and uncharacteristic noise levels will negatively affect the tourism potential of the area and cause the local residents to be increasingly dissatisfied with the living environment.

The tourism industry in this area is significant with many tourism resorts and residences, including the settlement of Vaalower, having been built along the river banks. This area is very popular as a weekend retreat for residents of the large urban centres of Gauteng. Negative impacts resulting from the mine could potentially lead to job losses within the tourism industry. The insignificant change in the number of persons employed on the mine (see Appendix E) as a result of the authorisation of the mining amendment application, is unlikely to outweigh job losses to the tourism industry. Other negative impacts include the possible loss of the proposed school and STEM campus on Mr. Craig Richardson's farm. Furthermore, as the product will be sold regionally, and the labour and technical services sourced regionally, there will be virtually no economic benefits from the mine for the local economy.

There has been much speculation with regards to whether or not current mining activities adhere to the existing EMPr. Issues raised include the prefab offices on the site, as in the EMPr only a 'caravan' is allowed. This needs to be addressed by the Applicant and needs to be approved by the DMR. Should it be difficult for the applicant to adhere to the EMPr they need to apply for a formal amendment, which goes through PPP as is required by law. Specific areas that will need to be addressed and mitigated are the condition of the S171 Road and the dust and noise resulting from the mine.

### **Cumulative Impacts**

When one only considers BBSM, the potential increase in impacts, as a result of the proposed amendment, will not be substantially high. However, the cumulative effect of these impacts is significantly high due to other surrounding mines and agricultural activities. The degree to which impacts are experienced will vary depending on where those experiencing them are situated. Those residing closest to the mine will experience impacts to a greater degree than those situated further away.

In the meeting held on the 27/11/2018 (see Appendix C), the cumulative effects of the mines on air quality was raised as an issue and needs to be addressed by the municipality in an Air Quality Management Programme. Furthermore, the increase in heavy vehicles utilizing the S171 Road has resulted in dangerous conditions for surrounding road users.

The comments submitted by the Federation for a Sustainable Environment (FSE) (see Appendix B), implying a strategic environmental impact assessment cannot be taken lightly and needs to be considered.

- Enviroworks recommend that the DMR plays the role to enforce a strategic EIA for all the mines in the area to assess the cumulative impacts on the area. This study should be funded according to the 'polluter pays' principle.

- With regards to air quality, it is further suggested that not only should passive information be used from existing sources, but a pro-active modelling should be undertaken by professional Air Quality Specialist to do a forecast of what the levels of dust holds for the future. This would need to be conducted at a District Municipality level and form part of their Air Quality Management Plan. The same applies to noise.

### **Recommendations**

Greenmined Environmental have already put forward mitigation measures in order to reduce negative impacts and improve positive impacts. Mitigation measures recommended by Enviroworks must be included in these mitigation measures. In conjunction with the mitigation measures listed in Section 6, Enviroworks recommend the following:

### **Trust and Communication**

- The community have little faith that the Applicant will adhere to any new mitigation measures. Should the Applicant wish to continue the application process for the amendment to their mining right, they are advised to only do so if all mitigation measures are strictly followed.
- The mine should adopt a total open-door approach, to inform the public clearly, thoroughly and on a regular basis of all mining and associated activities that may impact on the public's well-being.
- The use of a complaints register where complaints can be immediately recorded and corrected. This must be passed on to the DMR and community forum.
- The formation of a Forum that facilitates communication between the mine and the community. We suggest they meet on a quarterly basis or any other frequency agreed upon, where by the mine make available their audit reports on site, for public review and comment.
- The community needs to be consulted and included in planning processes.
- The mine needs to draw up a map that clearly indicates areas that will be mined and those that will not be. Trees that will not be removed should also be indicated on the map.
- Open, honest and regular communication between the mine and the I&AP's is needed in order to establish trust and co-existence of all parties involved. This communication structure needs to be provided for in the BAR.

### **Dust**

- Upon approval of the amendment, the Contractor is to investigate spraying the entrance road, up to the point where the vehicles turn, with a dust-allaying agent. This will aid in reducing dust.
- The Contractor must impose a rule that clients may only load sand on their trucks if they are in possession of a tarpaulin to cover it.
- Internal dirt roads are to be regularly sprayed to reduce dust. During the dry windy months, August to October, dust suppression measures should be conducted more frequently. Hourly application of water to internal dirt roads is recommended.
- Concurrent rehabilitation of mining strips must take place.
- Once mining of a strip is completed the topsoil is to be replaced should be replaced according to the rehabilitation plan.
- If an adequate amount of re-growth has not occurred on mined areas, following two growing seasons, the mined areas should be re-seeded and watered until rehabilitation has been sufficiently initiated.
- Dust monitoring should be conducted regularly to ensure dust levels are within acceptable levels.

- A specialist statement should be provided as to the health risks posed by dust to residents living near the mine.

**Noise**

- The sites selected for crushing activities should ideally have dense vegetation or trees surrounding them.
- Working hours are to be strictly adhered to. As stipulated in the Mine Works Programme working hours are from 7:30am to 4:00pm on weekdays. Preparation for the working day will take place between 7:30am and 8:00am. The mine may then only begin loading and selling sand from 8:00am.
- When required the mine will operate on Saturdays as well. When operating on a Saturday, working hours are from 7:30am to 4:00pm. Prior to a period of working on Saturdays is expected, the mine should notify surrounding residents of the expected duration of Saturday work.
- The mine will not operate on Sundays.
- All machinery to be fitted with silencers.
- Reverse beepers on all vehicles are to be replaced with white-noise reverse beepers or equivalent.
- Workers on site are to conduct themselves in an orderly manner on site.
- No loud music permitted on site.

**Visual**

- In order to screen mining activities vegetation situated along the edge of the S171 road, running through the property, should be maintained. Vegetation should be planted in sections where gaps occur.
- Machinery, such as the crusher, should be adequately screened so as not to be visible from the road.

**Condition of the S171 Road**

- Following the initial restoration of the S171 Road by Pure Source Sand Mine, the Applicant along with the neighboring mines should create a fund and take on responsibility for the upkeep of the road.
- The Applicant, along with relevant authorities, should ensure that speed limits are put in place and enforced. Adequate signage needs to be put in place.

**Local Economic Development**

- LED initiatives, provided by the municipality, need to be looked at as a means of off-setting negative mine impacts. This must be actively pursued and included in the SLP. It is suggested that the mine consult the surrounding community in order to ascertain their needs and address these in LED initiatives.
- Upon the closure of Barrage Bulk Sand mine, where possible, the Applicant should integrate those employed by the mine into the workforce of other projects operated by the Applicant.

**Equipment**

- Any equipment on site that does not appear in the current EMPr should be removed. Any equipment required by the Applicant, that is not included within the existing MR, should be applied for.



**Rezoning**

- Re-zoning is an issue that will need to be resolved between the Applicant and municipality. The Applicant is currently underway with this process. The DMR needs to take cognisance of this when considering the application.

**IMPACT STATEMENT**

The findings from the SEIA indicate that this stage, with the current mining practices and history, the socio-economic benefits associated with the proposed amendment will not out-weigh the negative impacts. Numerous negative impacts as a result of the sand mines in the area plague the surrounding community, the proposed amendment will compound this. While the amendment will result in national economic benefits, the local economy will likely be negatively affected.

Negative impacts associated with the proposed amendment can be reduced to acceptable levels only if stringent mitigation measures are applied and these measures strictly adhered to.

It is thus concluded that the proposed amendment, while providing jobs and small-scale economic benefits, will lead to great discontent among the local community and negatively affect the tourism potential of the area.

At this stage, with the information at hand, it is not possible for Enviroworks and CES to support the approval of the amendment from a socio-economic point of view, unless mitigation measures as proposed are implemented, adhered to and are strictly enforced.

The proposed amendment may be acceptable from a socio-economic impact point of view should the community approve mitigation measures and the Applicant ensure that these mitigation measures be strictly adhered to. Mitigation measures as provided in this document are to be incorporated in the BA done by Greenmined Environmental.

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## ABBREVIATIONS

BBSM	Barrage Bulk Sand Mine
BA	Basic Assessment
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
FBAR	Final Basic Assessment Report
FSP	Free State Province
I&AP's	Interested and Affected Parties
IWULA/IWMMP	Integrated Water Use Licence Application / Integrated Waste Water Management Plan
LED	Local Economic Development
NEMA	National Environmental Management Act, 1998
NLM	Ngwathe Local Municipality
MR	Mining Right
MPRDA	Minerals and Petroleum Resources Development Act, 2002
PPP	Public Participation Process
The Applicant	Tja Naledi Beafase Investment Holdings (Pty) Ltd
The Contractor	SPH Kundalila
SEIA	Socio-Economic Impact Assessment

## SECTION 1: INTRODUCTION

### 1.1 INTRODUCTION

Envioworks was appointed by Greenmined Environmental, the Environmental Assessment Practitioner (EAP), to undertake a Socio-Economic Impact Assessment (SEIA) of the proposed amendment to the Mining Right (MR for Barrage Bulk Sand Mine (BBSM)). The MR is currently held by Tja Naledi Beafase Investment Holdings (Pty) Ltd. (The Applicant). This report has been compiled by Envioworks in collaboration with Coastal Environmental Services (CES).

Envioworks (Pty)Ltd, part of the SHE Group, is a professional Environmental Specialist, Compliance, Training and Advice Consultancy. Envioworks, established in 2002 is backed by a collective 35 years of professional service and experience in the environmental field. The qualifications and expertise of the professional team forms the backbone of the company's continued success. Envioworks has grown continuously in their offering of high-quality Environmental Specialist Services *inter alia* Social Impact Assessments. Envioworks received various awards for their services and worked both nationally and internationally.

Coastal and Environmental Services (Pty) was established in 1990 to service a then fledgling market in the field of Environmental Management and Impact Assessment. The Company has grown significantly since then, due to the increased demand for their high quality environmental and social advisory services, both in South Africa as well as many African countries. CES has worked in over 20 African countries.

Both Envioworks and CES consultants are members of the International Association of Impact Assessment, South Africa (IAIAsa) (<http://www.iaiasa.co.za/>). As members of IAIAsa, Envioworks and CES work according to their code of ethics.

Furthermore, Envioworks' consultants belong to the International Association for Public Participation (IAP2) (<http://iap2sa.org/>), and adhere to the purpose and code of ethics.

This report has been reviewed by Ms. Erika Du Plessis, the Chairperson of IAP2 Southern Africa.

#### **The Applicant**

There has been much confusion amongst stakeholders with regard to the different names for the Applicant and the mine. The structure has therefore been explained here as follows:

- The Applicant and owner of the current mining right, is Tja Naledi Beafase Investment Holdings (Pty) Ltd.
- The mine, owned by the Applicant, operates under the name Barrage Bulk Sand Mine.
- Dr. Stephen Jacobs, Joy Rabotapi and Catharina Jacobs are shareholders of Tja Naledi Beafase Investment Holdings (Pty) Ltd.
- The farm, on which the mine is situated is owned by Dr. Stephen Jacobs.
- SPH Kundalila (the Contractor) are contracted by the Applicant to operate the mine.

The Applicant currently holds an existing MR and an approved Environmental Management Programme (EMPr) for Portion 4 of the farm Woodlands 407 (437.8330ha), falling within the Ngwathe Local Municipality in the Fezile Dabi Magisterial District, Free State Province. The current MR and EMPr allow the Applicant to mine silica sand with no on-site processing. The stipulations of the MR indicate that only one cell is to be mined at a time and rehabilitation is to take place concurrently. The Applicant

wishes to apply for a Mining Right amendment, to include, as well as to amend the EMPr to include processing (see '**Location and Project Description**' below for a full description).

This SEIA will form part of the Basic Assessment Process (BA) process conducted by Greenmined Environmental. The information contained within this report was sourced from:

- The Final Basic Assessment Report compiled by Greenmined Environmental
- Public Comments received by Greenmined Environmental
- The Social and Labour Plan
- Relevant policy and planning documents
  - The National Development Plan (2030)
  - Department of Environmental Affairs & Development Planning: Guideline for Involving Social Assessment Specialists in EIA Processes (2007);
  - Department of Mineral Resources Strategic Plan 2014/19
  - Free State Provincial Spatial Development Plan 2014
  - Fezile Dabi District Municipality: Integrated Development Plan 2017-2022
  - Fezile Dabi District Municipality: Rural Development Plan 2016
  - Ngwathe Local Municipality: Environmental Management Framework (2013)
  - Ngwathe Spatial Development Framework 2015/2016
  - Ngwathe Local Municipality: Draft Review IDP 2018/19
  - Frank Vanclay: International Principles for Social Impact Assessment (2003)
- Consultation with Interested & Affected Parties (I&APs) - Identification of I&APs was done by:
  - Using the PPP conducted by Greenmined Environmental.
  - Approaching key Organs of State, namely Department of Water and Sanitation, Department of Mineral Resources, the Department: Police, Roads, and Transport, Department of Agriculture and Rural Development, Ngwathe Local Municipality, Emfumlani Local Municipality and Sedibeng Local Municipality.
- Discussion with representatives of the local community. These included
  - The Protect Vaal Eden Committee
  - Vaal Justice Alliance
  - The Savannah Africa Vredefort Dome Tourism Association
- Discussion with an Urban and Regional Planner, Jako Viviers of LMV.
- Review of SEIA's done on similar projects in the area.

The proposed mining right amendment will result in changes to the existing mining practices, this has resulted in significant public outcry regarding the potential increase in negative impacts, in particular the cumulative impacts. In order to ascertain the potential impacts on the surrounding communities, a SEIA study was commissioned.

Barrage Bulk Sand Mine is situated in close proximity to two other sand mines, and there has been much speculation and discontent regarding previous and current Public Participation Processes for mines in general in the area. While this report will solely focus on and assess the socio-economic aspects of the proposed amendment application, the circumstances surrounding the application will be taken into account. The initial stages of the Public Participation Process conducted by Greenmined Environmental was perceived to not have been far reaching enough and to have not met all requirements. The subsequent Public Participation efforts conducted by Greenmined Environmental,

as well as the process conducted by Enviroworks, has alerted all relevant I&APs and allowed sufficient time for comment. This report will also be subjected to a 30-day comment period.

This SEIA aims to determine and assess the social and economic impacts associated with the proposed amendment as well as to provide measures to increase any positive impacts and mitigate negative impacts.

## **1.2 TERMS OF REFERENCE**

The key aim of this SEIA is to identify, describe and assess impacts of socio-economic nature that may arise as a result of the proposed amendment of the existing Mining Right and Environmental Management Programme (EMPr). The Terms of Reference for this SEIA require the following:

- A description of the environment surrounding Barrage Bulk Sand Mine that may be affected by the proposed amendment as well as the manner in which the surrounding environment may be affected.
- A description and assessment of the potential social and economic issues associated with the proposed amendment and associated activities.
- Identification of enhancement and mitigation measures aimed at maximising opportunities and avoiding and or reducing negative impacts associated with the proposed amendment and associated activities.

## **1.3 APPROACH TO STUDY**

The Social component of the study was undertaken by Enviroworks, whilst the Economic aspects were investigated and reported on by CES. The two components are integrated throughout the study and the full Economic Report is attached as Appendix D.

The approach to SEIA is based on the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for Social Impact Assessment (February 2007). These guidelines are based on international best practice. The key activities in the SEIA process embodied in the guidelines was applied as follows:

- Describing and obtaining an understanding of the proposed intervention (type, scale, and location), the settlements, and communities likely to be affected by the proposed mining activities on Portion 4 of the Farm Woodlands 407.
- Collecting baseline data on the current social and economic environment of the Free State Province, Fezile Dabi District Municipality and Ngwathe Local Municipality.
- Identifying the key potential socio-economic issues associated with the proposed project. This required a site visit to the mine and consultation with affected individuals and communities (local community, organs of state and surrounding landowners).
- Assessing and documenting the significance of socio-economic impacts associated with the amendment of the mining right and associated activities.
- Identifying enhancement and mitigation measures to enhance benefits and reduce the significance of negative impacts.

The identification of potential socio-economic issues associated with the proposed mining right amendment has been based on:

1. Observations during the project site visit;
2. Consultation with Interested and Affected Parties (I&APs);
3. Review of relevant documentation;
4. Review of similar projects; and,
5. Review of the general area.

### 1.3.1 Definitions of socio-economic impacts

Socio-economic impacts can be defined as consequences (positive and negative) to human populations of any public or private actions (including policies, programmes, plans and/or projects) that alter the ways in which people conduct everyday life. These impacts are felt at various levels, including:

- 1) Individual level;
- 2) Family or household level;
- 3) Community;
- 4) Organisation;
- 5) Society level.

An SEIA should therefore enable the relevant interested and affected parties (authorities, project proponents, individuals, communities, and organisations) to understand and be in a position to identify and anticipate the potential socio-economic consequences of the implementation of a proposed policy, programme, plan, or project.

The outcome of this SEIA process will therefore:

1. Alert communities and individuals within the area surrounding Barrage Bulk Sand Mine to the proposed project and potential socio-economic impacts.
2. Allow local communities to assess the implications and identify potential alternatives.
3. Alert proponents and planners to the likelihood and nature of socio-economic impacts associated with the mining right amendment.
4. Enable proponents to anticipate and predict socio-economic impacts in advance, so that the findings and recommendations of the assessment are incorporated into and inform the planning and decision-making process.

Social impacts are complicated by the way in which different people from different cultural, ethnic, religious, gender, and educational backgrounds etc. view the world. This is referred to as the “social construct of reality.” The social construct of reality informs people’s worldview and influences the way in which they react to changes

### 1.3.2 Timing of Socio-Economic Impacts

In terms of timing, all projects and policies go through a series of phases, usually starting with initial planning, followed by construction, operation, and finally decommissioning. The activities, type of activities and duration of the social impacts associated with each of these phases are likely to differ.

## 1.4 ASSUMPTIONS AND LIMITATIONS

### 1.4.1 Assumptions

- It is assumed that the development site represents a technically suitable site for the mining of sand and aggregate and that feasibility studies for BBSM were undertaken with integrity and accurately reflect the current situation on the ground.
- It is assumed that all information provided by the independent environmental assessment practitioner was accurate and true.
- It was assumed that the information gathered through the public participation process accurately reflects the attitude of the public towards the proposed amendment and as such was accurately recorded.
- Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard a key component of the SIA process is to assess the proposed amendment in terms of its fit with key planning and policy documents. As such, should the findings of the study indicate that the proposed amendment

in its current format does not conform to the spatial principles and guidelines contained in the relevant legislation and planning documents, and there are no significant or unique opportunities created by the amendment, the amendment cannot be supported.

#### **1.4.2 Limitations**

- The baseline study was conducted primarily using data from the 2011 Census, which is the most recent source of official statistics. While the data does provide useful information regarding the socio-economic situation of the area concerned, it needs to be noted that the data is now somewhat outdated and actual population demographics may differ.
- While this study did attempt to make use of as wide a range of data sources as possible, there was a limitation due to time and budgetary constraints.

### **1.5 SPECIALIST DETAILS**

This report and appendixes was compiled by Elbi Bredenkamp and Michael Leach of Enviroworks and Maura Talbot of Coastal Environmental Services.

A detailed Curriculum Vitae for each specialist is provided as **Appendix F**.

#### **DECLARATION OF INDEPENDENCE**

This confirms that Elbi Bredenkamp, Michael Leach and Maura Talbot, the specialist consultants responsible for undertaking the study and preparing the report, are independent and do not have vested or financial interests in the proposed project being either approved or rejected.

### **1.6 REPORT STRUCTURE**

The report is divided into five sections, namely:

- Section 1: Introduction
- Section 2: Policy and planning environment
- Section 3: Overview of the study area
- Section 4: Consultation process
- Section 5: Key socio-economic issues
- Section 6: Assessment of impacts
- Section 6: Key findings and recommendations.

### **1.7 PROJECT LOCATION AND DESCRIPTION**

#### **1.7.1 Project Background Summary**

Tja Naledi Beafase Investment Holdings (Pty) Ltd. (The Applicant), operating as Barrage Bulk Sand Mine (BBSM) currently holds a Mining Right and approved EMPr for Portion 4 of the farm Woodlands 407, situated within the Ngwathe Local Municipality in the Fezile Dabi Magisterial district, Free State Province. An Environmental Impact Assessment (EIA) was conducted in 2014 and the Mining Right awarded to the Applicant in 2016. Under the current Mining Right the Applicant is permitted to conduct strip mining of silica sand. The Applicant wishes to amend their Mining Right to include aggregate, as well as the EMPr to include processing (crushing and screening).

The farm portion is currently used for small-scale cultivated grazing, mixed farming and sand mining. According to Dr. Stephen Jacobs, on 21/04/2018, mining activities have been taking place on the farm since 1976. On the eastern side of the property is an area previously used for sand mining. Current sand mining activities are situated at the center of the property on the northern side of the access road. The farm portion is predominantly surrounded by agricultural land, including activities such as cropping, beef cattle and livestock breeding.

There has been much contention with regards to the zoning of the property concerned. As mentioned, Portion 4 of the farm Woodlands 407 was used for amongst others, mining activities, of a varying nature, since 1976. Based on information received from the Applicant attorneys (see Appendix D), the farm has effectively never been zoned for any purposes, according to the Ngwathe Local Municipality (NLM) Land Use Scheme. As the farm was used for mining purposes since 1976, it consequently falls within the ambit of section 26(3) of the Spatial Planning and Land Use Management Act (SPLUMA). The Act states: *“Where no town planning or land use scheme applies to a piece of land before a land use scheme is approved in terms of this Act, such land may be used only for the purposes listed in Schedule 2 of this Act and for which such land was lawfully used or could lawfully have been used immediately prior to the commencement of the Act.”* In turn, Schedule 2 of the Act includes “mining purposes”.

Re-zoning is an issue that will need to be resolved between the Applicant and the Municipality. The Applicant is currently underway with this process. The DMR needs to take cognisance of this when considering the application.

### **Current Mining Method**

Currently BBSM is operated by SPH Kundalila, (the Contractor).

The current MR allows for the mining of silica sand on Portion 4 of the farm Woodlands 407 via a strip-mining process.

- Strips of land are cleared with a bulldozer. No size is provided within the current EMPr.
- Sand is loaded onto the trucks of customers with a front-end loader.
- The topsoil is to be stored separately and has to be replaced during rehabilitation.
- Only one active cell is open at any given time. No cell size is provided in the current EMPr. Rehabilitation is conducted concurrently and the open cell is kept as small as practically possible.
- On-site processing of sand is not allowed.
- Dust must be suppressed using a water truck which sprays internal dirt roads.
- Current infrastructure and machinery allowed on the site for mining activities are one caravan (admin purposes), one front end loader, one tractor and one water trailer for dust suppression.

There has been speculation regarding the mine failing to implement concurrent rehabilitation. This was discussed with the Contractor and they will correct wrong actions and adhere to the Mining Plan. From their side, they explained that there are different types of commercially sought after sand available to be mined, at different depths, therefore it is difficult to mine only one cell at a time. The mining method applied for in the Amended Application, take this into account. The mining method is explained in the ‘Proposed Mining Method’. Working hours and noise after hours also were amongst the complaints received.

The following mitigation measures should be implemented as a matter of urgency to ensure compliance to the Mining Plan and to show commitment from the Applicant and Contractor to minimize their impacts:

- In order to confirm that working hours, from 8:00am to 4:00pm, are being adhered to, the Contractor should use their camera and tracking system (Although working hours are 8h00am, the workers must be there at 7:30am to prepare for the day, start up vehicles and other preparations). They must compile reports that can be made available to the public.
- As dust blowing from client’s trucks on the roads is a nuisance, the Contractor needs to inform clients that they need to use a tarpaulin to their cover loads. The Contractor needs to enforce clients to adhere to this.

- If a closure certificate for the historical mine is not issued, the rehabilitation thereof, will need to form part of the current rehabilitation plan.
- Upon approval of the amendment, the Contractor is to investigate spraying the entrance road, up to the point where the vehicles turn, with a dust-allaying agent. Whilst this is expensive, it will assist in dust suppression at the major point of loading of sand.
- A detailed layout map needs to be created that clearly illustrates areas that will not be mined and areas that will, and the Contractor needs to give their assurance that what is illustrated is final and will not be altered in future. The direction of mining and rehabilitation also needs to be illustrated. This map will need to be made available to the public.
- The large alien trees should be left as they aid in suppression of dust impacts. This keeping of alien trees needs to be applied for, at the relevant Forestry Department. At a later stage these can be replaced with indigenous trees.
- The Contractor needs to establish a method of regular communication with the surrounding community, where they make available their reports and where issues can be discussed. A complaint register needs to be readily available on-site.
- Any deviation on infrastructure needed on-site, needs to be applied for to DMR. If this is applied for, the mining method and EMPr need to be amended to include these changes. Greenmined Environmental are in the process of applying for the aforementioned as part of the amended application now under Public Review.

### 1.7.2 Locality

Barrage Bulk Sand Mine is situated on Portion 4 of the farm Woodlands 407, at the following co-ordinates:

- A. 26°45'17.62"S 27°36'23.60"E
- B. 26°45'15.81"S 27°37'23.58"E
- C. 26°45'23.53"S 27°37'53.44"E
- D. 26°45'52.42"S 27°37'38.48"E
- E. 26°46'5.48"S 27°37'40.79"E
- F. 26°46'24.86"S 27°37'29.26"E
- G. 26°45'54.36"S 27°35'59.29"E
- A. 26°45'17.62"S 27°36'23.60" E

Portion 4 is 437.8330ha in extent and is situated on the Vaal River, which borders the Gauteng Province. The property is situated approximately 22.65 km north east from Parys and 21 km north-west of Sasolburg in the Free State Province. Vaal Oewer residential area is situated approximately 3 km north of the property, within Gauteng. Portion 4 is surrounded predominantly surrounded by farming activities. A sand mine and game farm, owned by Goose Bay Developments, lies adjacent to the property's northern border. Sweet Sensations Sand Mine lies approximately 2.5 kilometres to the north-west of the property.



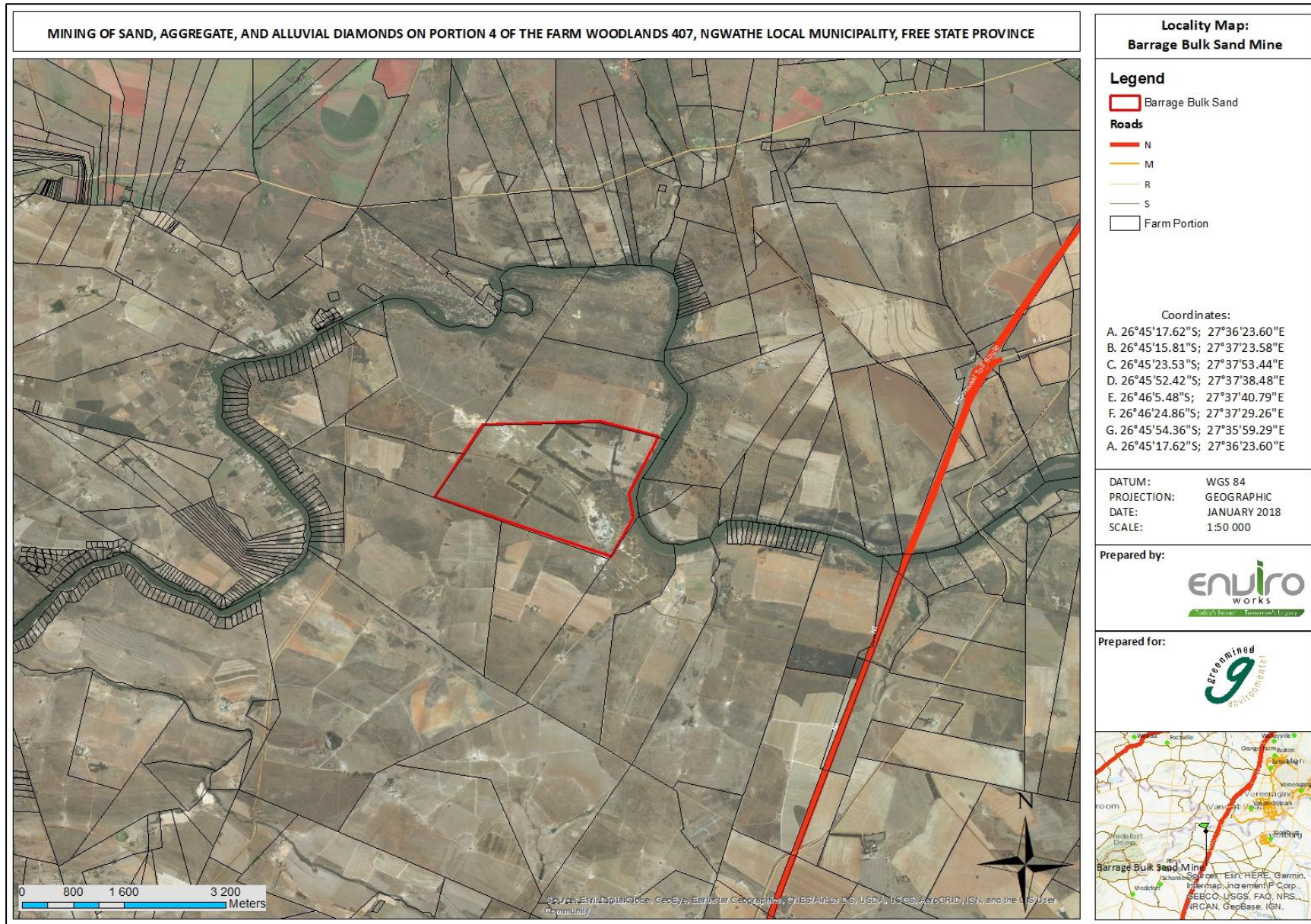
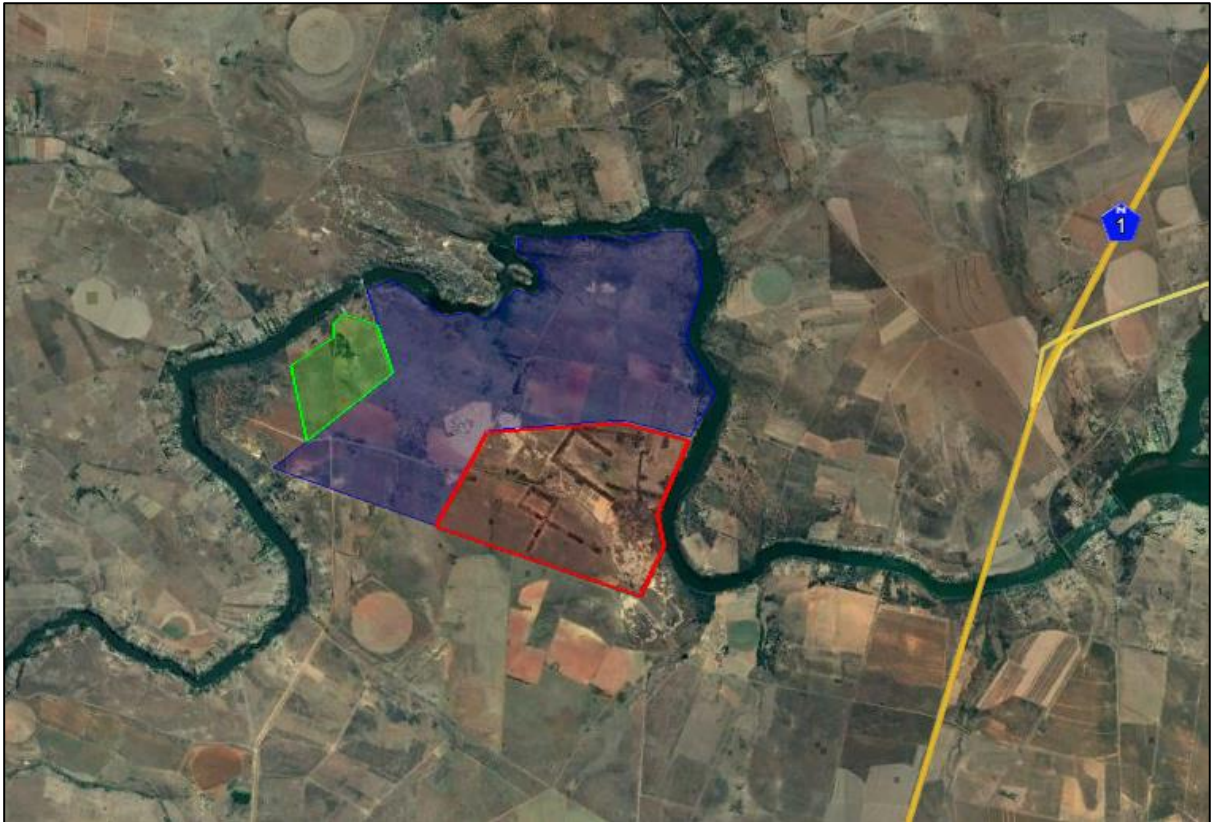
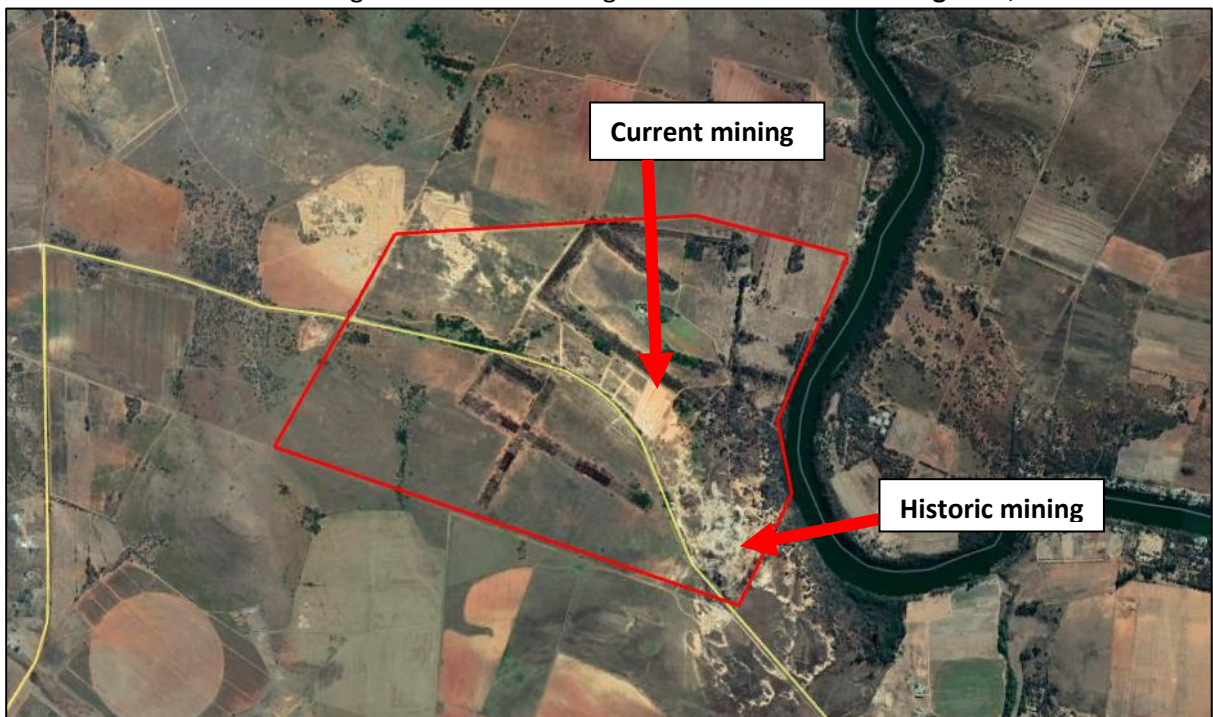


Figure 1: Locality map.



**Figure 2: Barrage Bulk Sand Mine in relation to neighbouring sand mines. Red - Barrage Bulk Sand Mine, Blue - Pure Source Sand Mine, Green - Sweet Sensations Sand Mine.**

The remains of historic mining activities and mining activities can be seen in **Figure 3**, below.



**Figure 3: Borders of Barrage Bulk Sand Mine illustrated in red. The access road is depicted in yellow.**

### 1.7.3 Main Project Components

As per the Final Basic Assessment Report (FBAR), the proposed MR amendment allows for the inclusion of aggregate, in addition to the already approved sand.

Furthermore the EMPr has been amended to include screening and crushing. Mining will continue to be conducted by the Contractor.

- It is proposed that material will be mined in strips.
- Strips to be mined will be scraped and the topsoil set aside for rehabilitation purposes.
- Strips will be excavated to a maximum of 10 metres in some areas, with an average depth of 2 to 3 metres.
- In order to allow for the different types of sand that are mined, two active cells will be open at any time. Rehabilitation will happen concurrently.
- Material will then be loaded and hauled to the processing plant via a front end loader.
- The processing plant will consist of a mobile crusher and screen. Screening of sand entails putting the sand through a sieve to remove debris. Extracted aggregate will be crushed and then screened in order to obtain the correct sizes.
- All activities will be contained within the boundaries of the site.
- Once all the sand has been extracted from a strip, the topsoil will be replaced and sloped. Two growing seasons will be allowed for natural succession to take place. If substantial rehabilitation has not taken place following this, then the area will require manual revegetation.

## 1.8 ALTERNATIVES

Possible alternatives that could be considered include, in addition to the existing approved mining of sand:

1. Approval only of on-site sand processing;
2. Approval of on-site sand processing, gravel mining and crushing; or alternatively,
3. The No-Go option

## 1.9 NEED FOR PROJECT

The proposed amendment will result in several needs being met. The mine will supply sand and aggregate to the regional construction-, residential- and manufacturing sectors, particularly those located in the growing urban areas of Gauteng where demand is greatest. The mine is anticipating close by road activities to commence in the near future, and they would like to be in a position to supply aggregate. This will ensure a more profitable product and local supply with lessened impacts on roads for long distances.

Sand and aggregate are essential ingredients in the production of concrete for buildings, roads/paths and other infrastructure, and are also used for landscaping, glass production and filtering systems. The supply of sand is therefore seen as a valuable economic benefit. Other benefits include:

- The Applicant will be able to utilise the available sand and aggregate;
- The Applicant will benefit economically, which will result in downstream economic benefits to the economy, for example tax;
- While only a few employment opportunities will be created, this can be enhanced by Local Economic Development initiatives; and,
- The Applicant will be able to expand the variety of minerals mined on the property and thus diversify the sources of income from the property.

## SECTION 2: POLICY AND PLANNING ENVIRONMENT

### 2.1 INTRODUCTION

Section 2 of this socio-economic report provides an overview of the most significant policy documents of relevance to the proposed mining right amendment. The key documents reviewed included the following:

- The National Development Plan (2030)
- Department of Environmental Affairs & Development Planning: Guideline for Involving Social Assessment Specialists in EIA Processes (2007);
- Department of Mineral Resources Strategic Plan 2014/19
- Free State Provincial Spatial Development Plan 2014
- Fezile Dabi District Municipality: Integrated Development Plan 2017-2022
- Fezile Dabi District Municipality: Rural Development Plan 2016
- Ngwathe Local Municipality: Environmental Management Framework (2013)
- Ngwathe Spatial Development Framework 2015/2016
- Ngwathe Local Municipality: Draft Review IDP 2018/19
- Frank Vanclay: International Principles for Social Impact Assessment (2003)

### 2.2 SUMMARY OF REVIEWED DOCUMENTS

#### 2.2.1 The National Development Plan (2030)

The National Development Plan (NDP) contains a plan aimed at eliminating poverty and reducing inequality by 2030 making this one of the guiding objectives of the NDP over the next 20 years. The NDP aims to address poverty and exclusion on the while simultaneously attempting to nurture economic growth by creating a virtuous cycle of expanding opportunities, building capabilities, poverty reduction, involving communities in their own development, all leading to rising living standards. The NDP identifies 9 key challenges and associated remedial plans. While all nine challenges/ plans are envisaged as part of an integrated whole, the highest priorities are regarded employment creation and improving the quality of national education. Expansion and acceleration of development which would result in increased employment opportunity is identified as a key intervention strategy.

#### 2.2.2 Department of Mineral Resources Strategic Plan 2014/19

The Department of Mineral Resources (DMR) Strategic Plan was developed with the vision of a mining and minerals sector that is globally competitive, sustainable and meaningfully transformed. The plan envisions leading in the transformation of South Africa through economic growth and sustainable development by 2030. The DMR Strategic Plan considers relevant policies, legislation and other mandates for which the DMR is responsible and puts forward the strategic goals and objectives the DMR will aim to accomplish by 2019. The DMR's strategic objectives are divided into four overarching programmes, namely Administration, Mine Health and Safety, Mineral Regulation and Mineral Policy and Regulation. Noted within in the four programmes are objectives that aim to facilitate projects for vulnerable groups, promote job creation through evaluation of social labour plans and to promote sustainable resource use and management.

#### 2.2.3 Free State Provincial Spatial Development Framework 2014

The Free State Provincial Spatial Development Framework (PSDF) is a provincial spatial plan and strategic planning policy which addresses and adheres to all relevant policies and legislation. The PSDF aims to address the key challenges facing the Free State of needing to implement a 'developmental state' while ensuring global obligations to social, economic and environmental sustainability are achieved. The Free State PSDF supplements the Free State Growth Development Strategy (FSGDS).

Together they provide a crucial tool for guiding the use of the provinces resources in a way that is ensures the provinces development needs and priorities are met while remaining sustainable.

Agriculture is a key economic driver within the Free State and areas of high agricultural potential need to be protected from non-agricultural activities and used appropriately. Where agricultural land is to be used for other activities, such as mining, the activities must result in meaningful benefit. With regards to industrial activities, the PSDF aims to ensure that any use of the provinces resources results in meaningful and lasting benefits for the people of the province and the environment. Furthermore, one of the prioritised strategies noted within the PSDF is the supporting of the life of existing mines and marketing new mining opportunities. Small-scale mining of sandstone, salt and clay should be promoted where possible.

Promoting sustainable tourism forms of part of the PSDF. Within Tourism Scenic Corridors, efficient tourism should be encouraged and environmentally-disruptive land-uses within these areas need be considered with caution.

#### **2.2.4 Fezile Dabi District Municipality: Integrated Development Plan 2017-2022**

The Fezile District Municipality Integrated Development Plan (IDP) is a strategic planning document which guides all the planning within the municipality. By combining economic, infrastructure, environmental and spatial plans sustainable development goals can be achieved. Noted within the IDP is that Fezile Dabi District Municipality (FDDM) is not considered a primary tourist destination, however the industry has been growing consistently within the district. The area is increasingly being favored as a weekend destination, with industries such as hunting and hospitality have grown rapidly.

The Local Economic Development Strategy Report within the IDP states that the region's agricultural sector has been declining and it is thus important to support this sector, particularly in areas of high agricultural potential such as Mafube and Ngwathe Local Municipalities. Tourism and mining are also noted as potential areas for economic growth.

#### **2.2.5 Fezile Dabi District Municipality: Rural Development Plan 2016**

The overarching objective of the Fezile Dabi District Municipality (FDDM) Rural Development Plan (RDP) is to see poverty within rural areas reduced through ensuring that factors driving rural development are optimally used to the advantage of the poor. Three strategic focus areas are identified, namely Food Security, Agricultural Development and Sustainable Livelihoods. A comprehensive overview of the status quo of the district is given and functional areas are demarcated and mapped, with a particular focus on agriculture. Rural development within the FDDM RDP should be directed towards eight development focus areas. The first three development areas are Agricultural Development, Mining promotion and beneficiation, and Tourism development and promotion.

#### **2.2.6 Ngwathe Local Municipality: Draft Review Integrated Development Plan 2018/19**

The Ngwathe Local Municipality (NLM) Integrated Development Plan (IDP) provides an overview of the current status of the municipality along with development strategies, objectives and planned programmes and projects. Tourism and hospitality opportunities along with agricultural development are identified as key components to the economic growth and sustainability of the municipality. Influential factors, that either currently or will impact the development include the road infrastructure, strategic location of the municipality, its tourism potential, the agricultural sector, AIDS, pollution of the Vaal, influx and competition with regard to international trade of agricultural products. The NLM Local Economic Development Strategy (LED) identifies tourism, agriculture and manufacturing as key economic drivers, due to the location of the municipality.

#### **2.2.7 Ngwathe Local Municipality: Spatial Development Framework 2015/2016**

The Spatial Development Framework (SDF) classifies the area of the municipality according to Standard Planning Categories (SPCs), which include Core Conservation Areas, Natural Buffer Areas, Agricultural Areas, Urban Related Areas, Industrial Areas and Surface Infrastructure. Noted within the

SDF is that the extraction of sand and aggregate, in urban areas, does not lend to a quality living environment and negatively affect residential areas. Furthermore it is noted that a substantial open cast gravel pit exists adjacent to the Parys/Sasolburg Road.

### **2.2.8 Ngwathe Local Municipality: Environmental Management Framework Status Quo Report (2013)**

The Environmental Management Framework (EMF) Status Quo Report provides a spatial representation of the current biophysical environment of the municipality. The EMF Status Quo Report gives a clear indication of the key focus areas of economic potential within the municipality, namely tourism, agriculture and manufacturing.

### **2.2.9 Frank Vanclay: International Principles for Social Impact Assessment (2003)**

This document is a statement of core values of the SIA community which is accompanied by a set of principles which can be used to guide SIA practice and the consideration of 'the social' in the EIA process. Social Impact Assessment includes the processes of analysing, monitoring and managing both intended and unintended social consequences. These consequences can be both positive or negative and are the result of planned interventions (policies, plans, projects) and the resultant social change that is invoked by such interventions. The document emphasises on the importance of sustainable interactions between humans and the environment.

## SECTION 3: OVERVIEW OF STUDY AREA

### 3.1 INTRODUCTION

The property concerned is situated on the Vaal River, approximately 22.65 km north-east of Parys and 21 km north-west of Sasolburg. The property falls within the Ngwathe Local Municipality (NLM), which is one of four local municipalities making up the Fezile Dabi District Municipality, Free State Province. NLM is bordered by two provinces, namely the North West Province and Gauteng Province, and lies directly adjacent to the Emfumeleni Local Municipality (Gauteng).

Section 3 of this report provides an overview of the study area and covers:

- The relevant administrative context;
- The municipal-level socio-economic context.

### 3.2 PROVINCIAL OVERVIEW

#### 3.2.1 Free State Province

The Free State Province (FSP) is the third largest province in the country and covers approximately 129 825km<sup>2</sup>. Bordered by the Orange River to the south and the Vaal River to the north, the province's landscape varies greatly from Kalahari country and Highveld Grassland to mountain ranges to farm land and wilderness areas. Located at the centre of South Africa, the Free State is bordered by six other provinces, namely North West, Gauteng, Mpumalanga, Eastern Cape and Northern Cape. Lesotho borders the province on its south-eastern side. Major towns within the province include Bloemfontein, the province's capital, as well as Welkom, Sasolburg, Kroonstad and Parys.

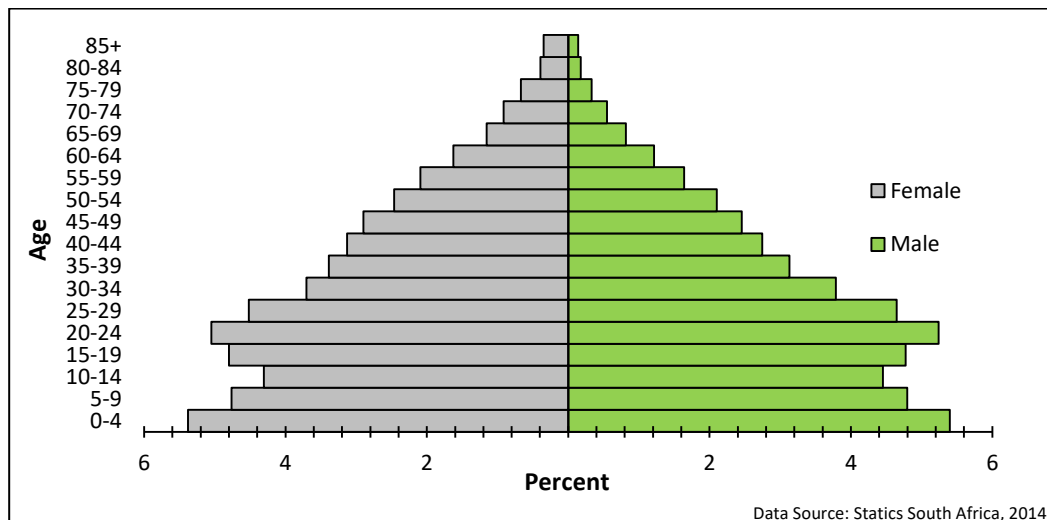
The province is divided into the Mangaung Metropolitan Municipality and four District Municipalities, namely Fezile Dabi, Lejweleputswa, Thabo Mofutsanyana and Xhariep. These District Municipalities are then further sub-divided into nineteen Local Municipalities (Free State PSDF, 2014).

With rich soils and good climatic conditions the Free State is conducive to agricultural activities (Free State PGDS, 2014). Known as the 'bread basket' of South Africa, the Free State is strongly rural and is one of South Africa's major agricultural producers, with 90% of the province's land being used for crop production. Agriculture, manufacturing and mining are the three dominant economic drivers. The province produces approximately 34% of the total maize production of South Africa, 53% of sorghum, 37% of wheat, 30% of groundnuts, 33% of potatoes, 18% of red meat, and 15% of wool. The mining industry is a major employer, with the province being the world's fifth largest producer of gold. Of note is the provinces chemical industry, with the company, Sasol, producing a significant amount of synthetic-fuels (Municipalities of South Africa, 2018).



**Figure 4: Map showing the Free State Province within South Africa**

Despite its size the FSP has the second smallest population and population density, with 2 759 644 people, making up 5.1% of the total population for the country. The population growth rate between 2001 and 2016 was 0.14% per annum, considerably lower than the National growth rate of 1.44% per annum. The ratio of males to females is fairly equal with approximately 49% (1 332 002) being male and 51% (1 427 642) being female. In respect to age structure, 29.2% of the population is under 15 years of age, while 65.5% is between 15 and 64 years with 5.3% 65 or older (Stats SA, 2011). The population pyramid of the province is illustrated in **Figure 5** below.



**Figure 5: Population pyramid of the Free State Province.**

With regards to population groups, the majority of the population is black African, 87.61%. 8.71% are white, 3.05% are coloured, 0.38% are Indian/Asian and 0.25% are classified as other. The majority of the population speak Sotho as their first language, 64.20%. Afrikaans is spoken by 12.72%, 7.52% speak isiXhosa, 5.24% speak Setswana, 4.41% speak isiZulu and 2.94% speak English. Various other languages make up the remaining 2.97% (Census 2011).

The dependency ratio indicates the burden placed on the population of working age, between 15 and 64 years, who support children under 15 years and people over 65 years. The dependency ratio for the FSP is 52.9. The unemployment rate in the FSP has decreased from 41.3% to 32.6%. Despite the decrease the unemployment rate is still high and presents a major challenge (Free State PSDF, 2014).



According to the 2011 Census, there were 823 316 households within the FSP, with an average household size of 3.3. The average household income was R75 315 per annum. 81.1% of households lived in Formal Dwellings, while 15.7% lived in Informal Dwellings, 2.4% in Traditional Dwellings and 0.9% in Other. Of the households, 51.64% were owned and fully-paid off, 9.03% were owned but not yet paid off and 19.93% were rented. With regards to household services, 67.7% had either a flush or chemical toilet and 89.8% had access to piped water within their dwelling. 89.9% of households used electricity for lighting and 71% had their refuse removed weekly (Stats SA, 2014).

Education levels in the FSP have improved significantly, with functional literacy increasing from 64% in 1994 to approximately 80% in 2010. Despite improvements, only 23% of the population have a Matric qualification. (Free State PSDF, 2014). For persons between the ages of 5-24 73.1% were attending an educational institution.

With regards to health matters, the Free State has the lowest predicted average life expectancy at birth, with males living to an average of 55 years and females 61.5 years (Stats SA, 2018). The prevalence of HIV is 19.5% of the general population. HIV prevalence showed a decrease between 2011 and 2015.

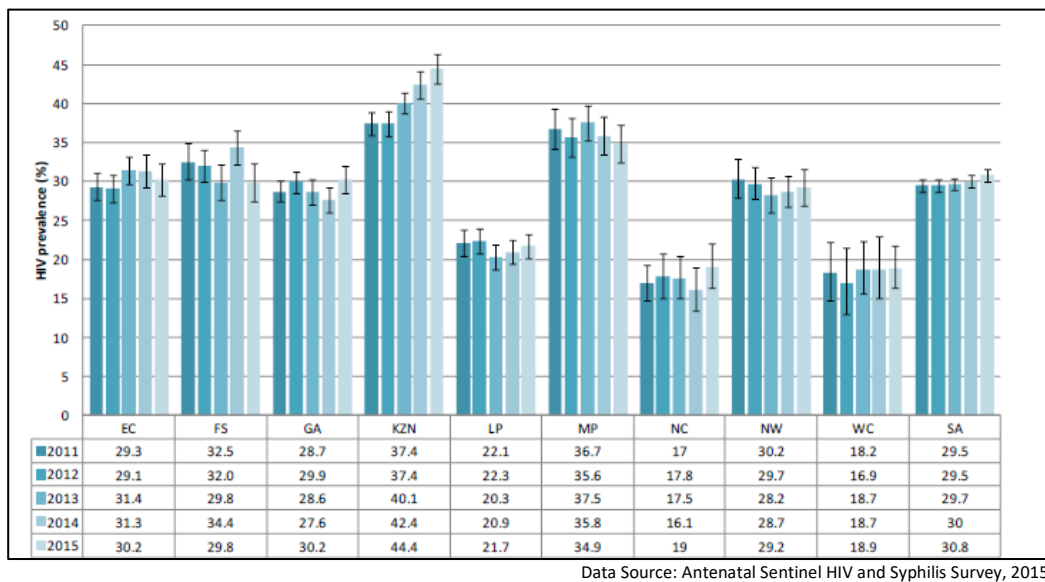


Figure 6: HIV prevalence by province - 2011 - 2015.

### 3.3 MUNICIPAL-LEVEL OVERVIEW

#### 3.3.1 Fezile Dabi District Municipality

The Fezile Dabi District Municipality (FDDM), previously known as the Free State District Municipality, is situated in the north-east of the Free State Province. FDDM is subdivided in four Local Municipalities, namely Mafube, Metsimaholo, Moqhaka and Ngwathe Local Municipalities. FDDM borders the Thabo and Lejweleputswa Local Municipalities and shares provincial borders with the North West, Gauteng and Mpumalanga Provinces. The Vaal River and Vaal dam form the districts northern border. The FDDM is the second smallest District Municipality, having an area of approximately 20 668km<sup>2</sup>, 15.92% of the province's land area (Fezile Dabi District Municipality IDP, 2017).

Major towns within FDDM include Parys, Kroonstad, Frankfort, Heilbron, Viljoenskroon and Sasolburg. A major economic driver is the chemical complex at Sasolburg, where refined petroleum, coke and chemical products are manufactured. The substantial mining industry within the district includes coal, bentonite and diamonds. Agriculture is another important economic contributor, with the FDDM lying at the centre of the provinces wheat and maize production, with the Vaal Dam providing water to the area. Other agricultural activities include tobacco, sunflower, sorghum peanut and cattle farming.

Although never a primary tourism destination, the areas tourism industry has shown an increase, particularly in the hunting and guesthouse industries.

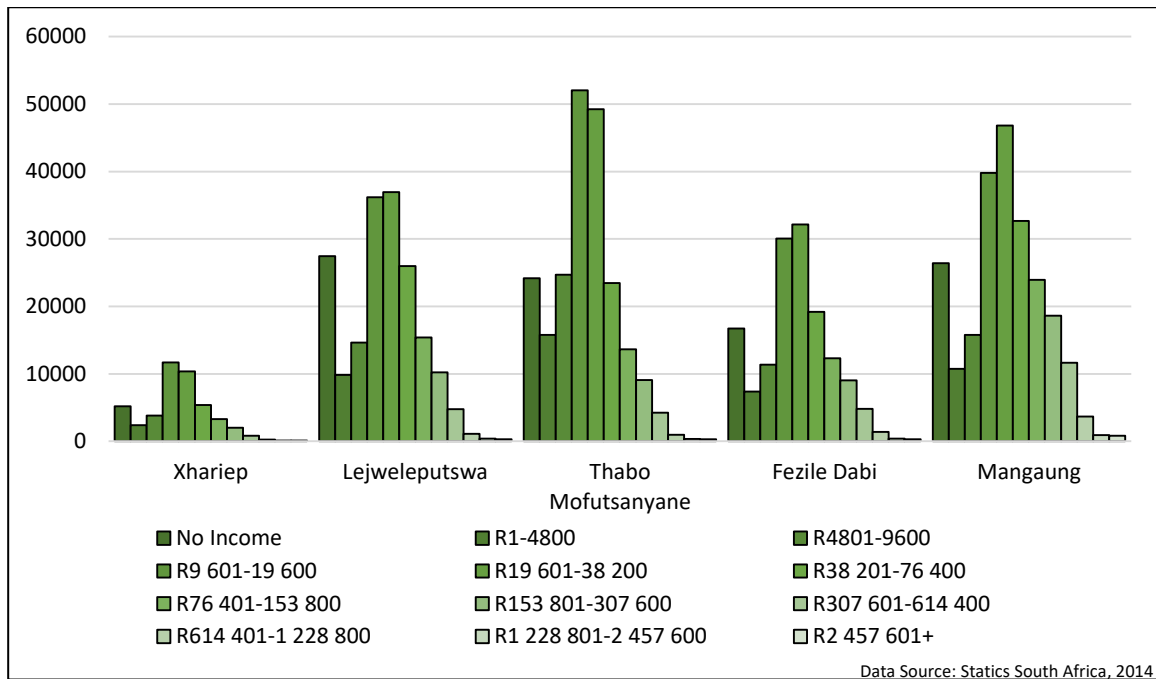


**Figure 7: Map showing the FDDM and the four Local Municipalities within it.**

In terms of demographics, the FDDM has a population of 488 036 people. The sex ratio of males to females is a 100, with 224 719 are males and 223 646 are females.

Black African is the largest population group, 86.07%. 11.45% percent if the population are white, 1.89% are coloured, 0.31% are Indian/Asian and 0.28% are classified as other. 67.32% of the population speak Sesotho as their first language. Afrikaans is spoken by 13.83% of the population, isiXhosa by 5.96%, isiZulu by 5.64%, English by 2.50%, sign language by 1.42% and various other languages make up the remaining 3.33%.

The district has a total of 144 980 households with an average household size of 3.4. Of the households 83.3% live in Formal Dwellings, with 51.27% living in houses that were owned and fully paid off. 22.36% of households rented. Piped water is supplied directly to 91.6% of the households, with 80.3% having flush or chemical toilets. 89.8% of households used electricity for lighting and 81.7% of households received weekly refuse removal. Average household income for the district is shown below.



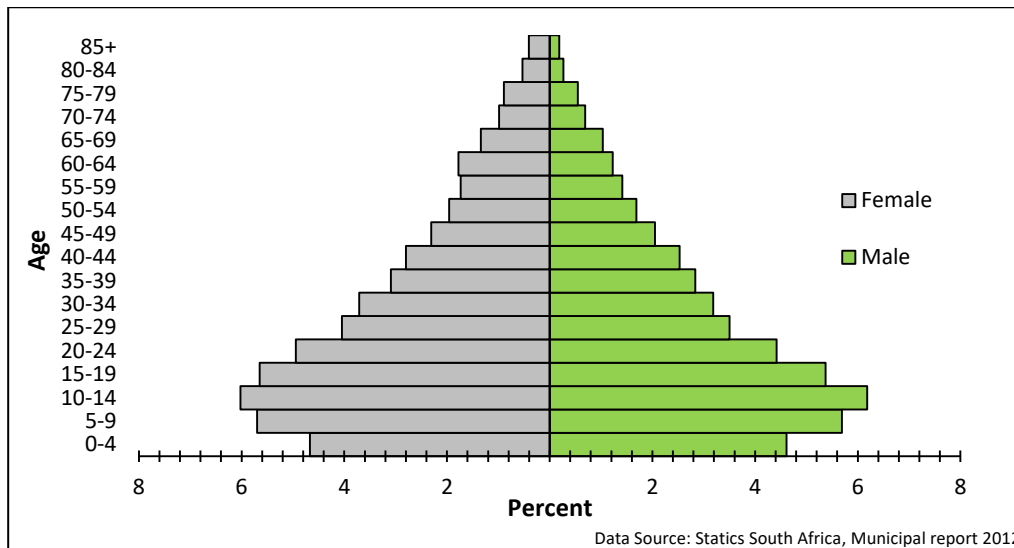
**Figure 8: The distribution of households by average income for Fezile Dabi compared with the other district municipalities in the province.**

### 3.3.2 Ngwathe Local Municipality

Ngwathe Local Municipality (NLM) is situated in the middle of the FDDM. The Vaal River forms the areas northern border, where it has provincial borders with North West Province and Gauteng. The five major towns in the municipality are Parys, Vredefort, Koppies, Heilbron and Edenville. The municipality is divided up into 18 wards with the political and administrative head office being located in Parys. NLM has a population of 120 520 and a land mass of 7 055.01 Km<sup>2</sup>.

#### Demographics

From 2001 to 2011 NLM had a population growth of 0.14% per annum. The sex ratio is 91.0, with females typically living longer than males. Regarding the age structure of the population, the majority of the population, 62.4 %, falls within the 15-64 age bracket. 30.1% of the population are younger than 15 years old and 7.5% are 65 years or older. As per the 2011 census, Ngwathe LM has a dependency ratio of 60.2. Despite a slight decrease from 60.5 in 2001, the dependency ratio is still considerably higher than that of the Free State Province, 52.9, and Fezile Dabi DM, 51.9. The population pyramid for Ngwathe LM is illustrated in **Figure 9**.



**Figure 9: Population pyramid of the Ngwathe Local Municipality.**

### Population Groups and Languages

Of the 120 520 people within the NLM the majority, 86.48%, are black African while 10.33% are white. The population groups within the NLM are fairly similar to those of the Free State Province and Fezile Dabi DM. A comparison of the population groups for the Province and District and Local municipalities is shown in **Table 1**. The dominant language is Sesotho, spoken by 68.6% of the municipality's population. The other main languages spoken include Afrikaans, 13.4%, isiXhosa, 8.5%, isiZulu, 3.4%, and English, 1.9% (Stats SA, 2014).

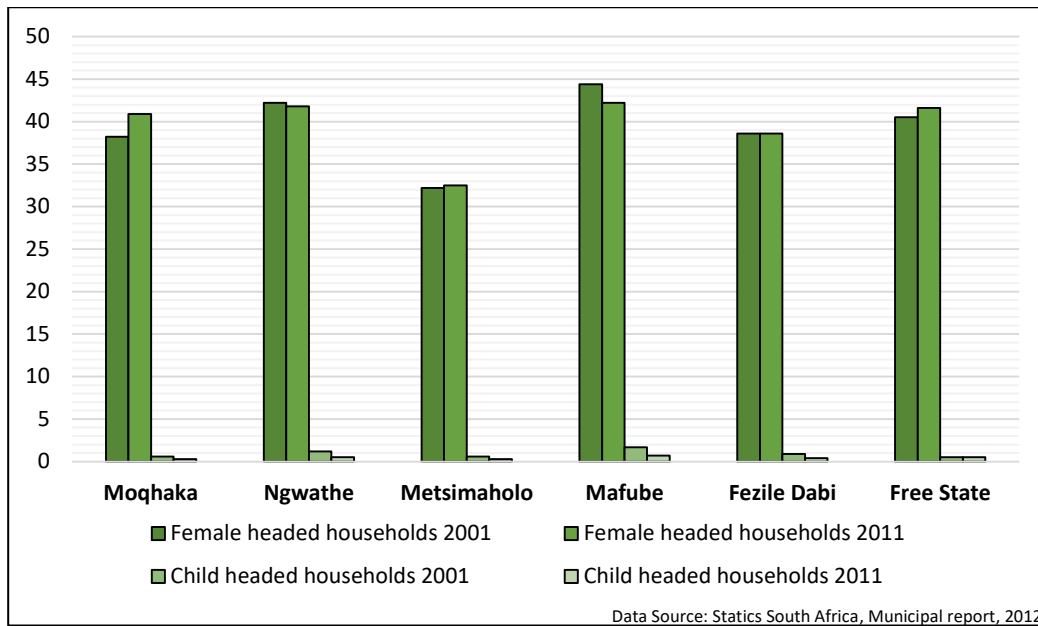
**Table 1: Population groups within The Free State Province, Fezile Dabi District Municipality and Ngwathe Local Municipality.**

Population Group	Free State Province (%)	Fezile Dabi (%)	Ngwathe (%)
Black African	87.6	86.1	86.48
White	8.7	11.4	10.33
Coloured	3.1	1.9	2.6
Indian/Asian	0.4	0.3	0.3
Other	0.2	0.3	0.3

Data Source: Stats South Africa, 2014

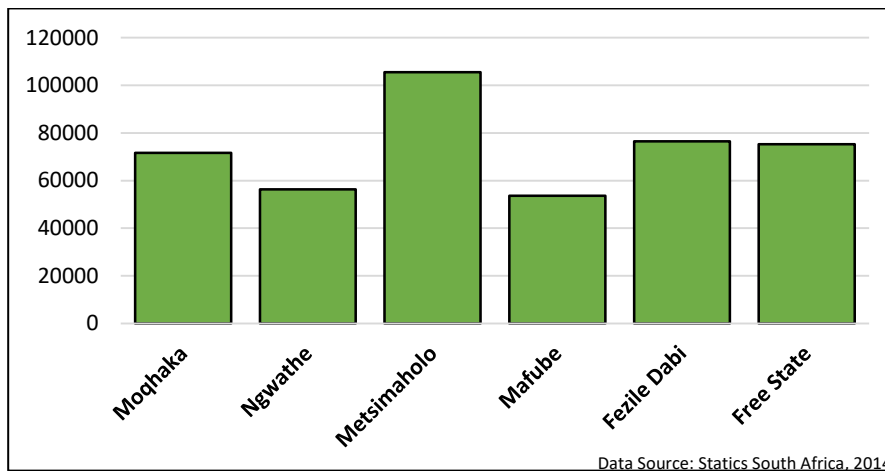
### Households

There are a total of 37 102 households in Ngwathe LM with an average household size of 3.2. 41.8% of households were female headed and 0.5% were child headed households.



**Figure 10: Percentage of female and child headed households.**

Household income is an important factor indicating the welfare of the region. Households with either no income or a low income are classified as falling within the poverty level. Of the four local municipalities Ngwathe LM had the second lowest average household income, considerably lower than the averages for the district and province, as shown in **Figure 11**. Metsimaholo, with the large industrial area in Sasolburg, had the highest average income.



**Figure 11: Average annual household income per household (R).**

When looking at the different income brackets, 74.7% of households fall within the Low Income bracket, earning less than R38 201 per annum. Households falling within the Medium and High Income brackets were 22.4% and 2.9% respectively. The high percentage of households falling within the Low Income bracket results in social impacts and a large portion of households may struggle with affording basic services.

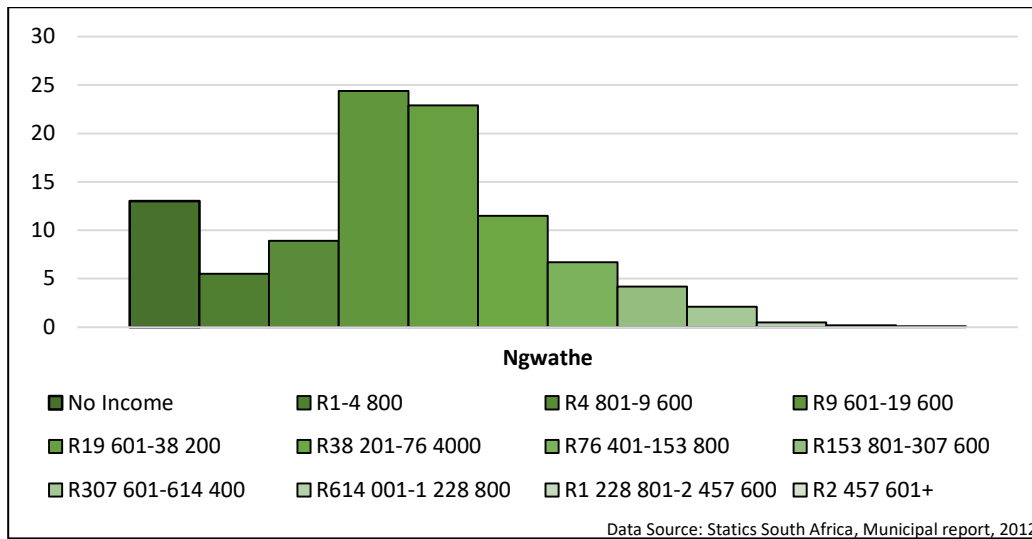


Figure 12: Annual average household income for Ngwathe Local Municipality.

In terms of housing 81.3% households lived in Formal Dwellings while 17.5% lived in Informal Dwellings. Of households 60.1% lived in houses that were owned and fully paid off, 17.57% rented and 12.83% of households were occupied rent free. Over the years there has been an increase in the number of households living in Formal Dwellings and a decrease of those living in Informal and Traditional Dwellings. Ngwathe LM has a lower percentage of households living in informal Dwellings compared to Fezile DM and the province.

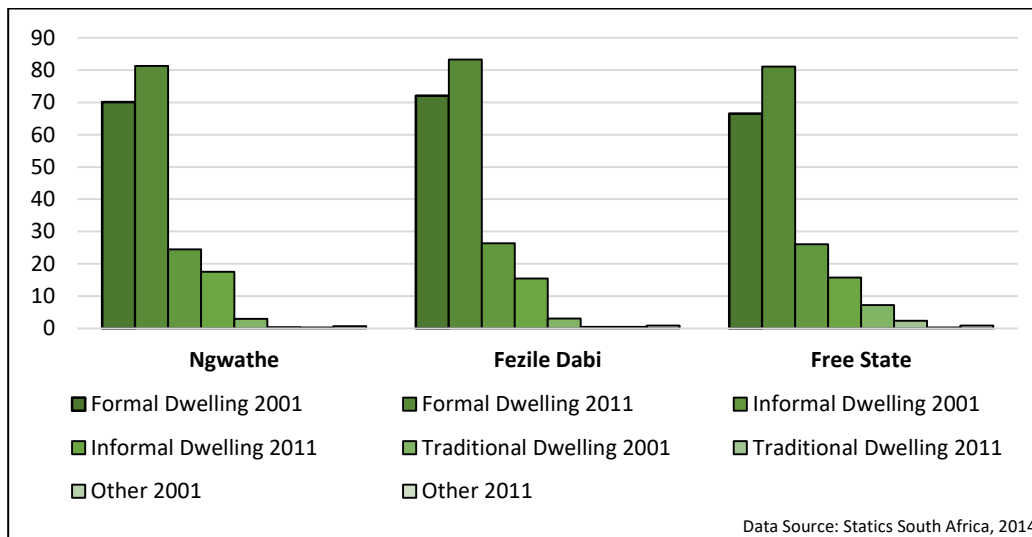


Figure 13: Household dwelling types for 2001 and 2011.

Households have the right to certain basic services. **Figure 14** shows the percentage of households with access to these basic services for Ngwathe LM compared to the district and province. The percentages of households with access to basic service delivery were fairly similar to those of the district and province. Although lower than that of the province, Ngwathe LM still has a high percentage of households that make use of pit or bucket latrine systems, with only 74.5% of households having flush toilets. Access to basic services needs to be improved within Ngwathe LM, in order for the whole population to experience equality in terms of living standards.

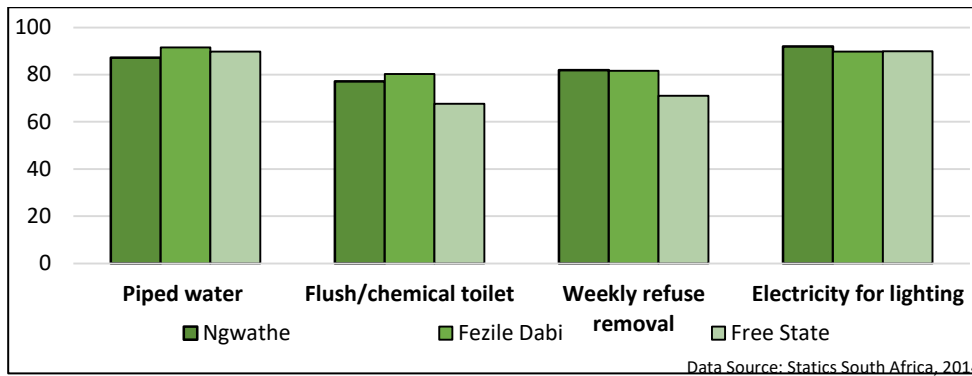


Figure 14: Access to household services.

**Education Levels**

Education is a crucial factor in creating widespread, meaningful employment opportunities and strengthening the municipality’s economy. Improving levels of education is critical for economic development and improving standards of living. In terms of schooling, the situation in the Ngwathe LM, and the rest of the province for that matter, has improved substantially since 2001. As indicated in **Figure 15**, the percentage of those with no schooling has seen a significant decrease and an increase in the number of people completing matric. There is however much room for improvement as only 32% of those over 20 years of age have completed Grade 12. Improving education levels is a key factor in reducing unemployment.

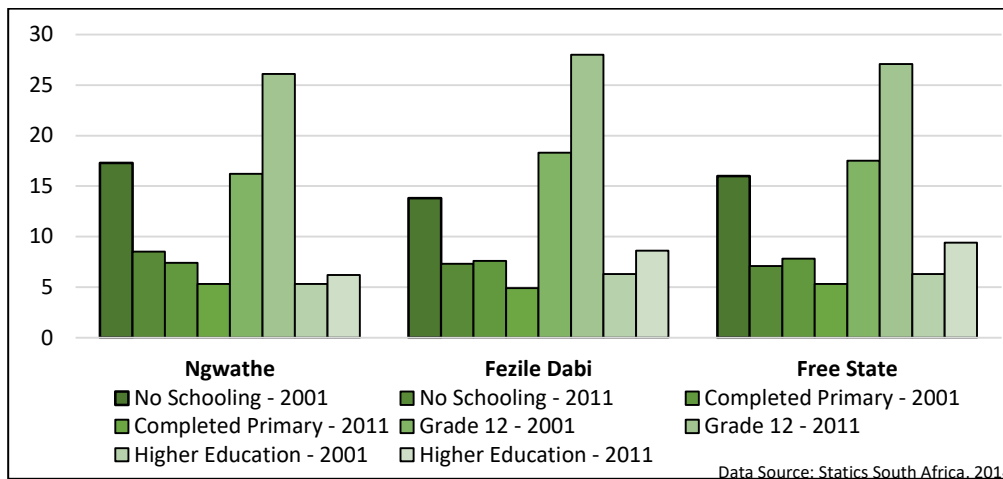
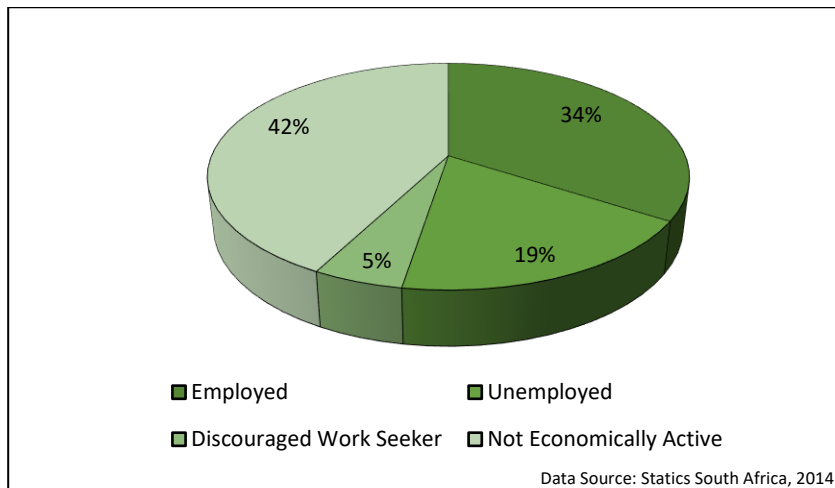


Figure 15: Level of education achieved for those over 20 years of age.

**Unemployment**

Members of the population falling within the 15-64 years age bracket are classified as being of working age. ‘Economically active’ persons are defined as those that are either currently employed or actively seeking employment. Of those classified as ‘economically active’ 25 635 are employed and 13 920 are unemployed. 35 688 members of the population are not economically active. Only 34% of those of working age were employed. The unemployment rate was 35.2% and labour absorption rate was 34.1%. There were 20 204 economically active youth (ie. between the ages 15–35 years) in the area, of which 45.1% were unemployed. A large portion of Ngwathe LM’s working age are unemployed and will benefit from developments that will provide increased and meaningful employment opportunities.



**Figure 16: Employment status for Ngwathe Local Municipality.**

### Economic Contributors

Due to a favourable rainfall and access to water, agriculture forms a large part NLM's economy. The two major sources of water supporting the area's agriculture are the Vaal River, which forms the northern border, and the Renoster River which drains through the area. Mining and tourism likewise are significant contributors to the economy. Key focus areas of economic potential are tourism, agriculture and manufacturing.

The NLM has the highest levels of tourism within the district, contributing 9.7% of the GDP, and there is still large potential for further growth of the NLM tourism industry. Of note is the Vredefort Dome World Heritage Site, situated next to Parys on the north-western border of NLM. Parys offers an exceptional tourism potential and has become a popular destination for weekend tourists, due its close proximity to Gauteng. Koppies, which is situated within an agricultural area, mainly provides for the surrounding rural areas. However the area is becoming known for the tourist attractions it offers, in particular the R82 Battlefield Route consisting of several historical battlefields.

Mining activities within Ngwathe LM include gravel, bentonite, silica sand and alluvial diamonds. Bentonite and coal deposits in the vicinity of Koppies will likely be exploited in the future. The possibility of mining bentonite and coal both provide significant potential for future growth.

Areas of concern include the impact of AIDS on the municipality, the influx of migrant workers and the pollution of the Vaal River, a key tourist attraction. Furthermore, competition posed by international trade could lead to the agriculture sector becoming less internationally competitive, which could result in negative impacts on economic growth (Ngwathe Local Municipality IDP, 2017).

### 3.3.3 Ward 7, Ngwathe Local Municipality

Portion 4 of the farm Woodlands 407 is situated within Ward 7 of Ngwathe LM. Ward 7 has a population of 10 108 people and an area of 699.7km<sup>2</sup>, with a density of 14.4 people per km<sup>2</sup>. 59% of the population are between 18 and 64 years of age and 37% are younger than 18 years.

#### Population groups and languages

The black African population group make up the vast majority, 91%, of Ward 7's population. The white population group form 7% of the population and the coloured group 1%. Sesotho is the most widely spoken language, 70%, followed by isiXhosa 13%.



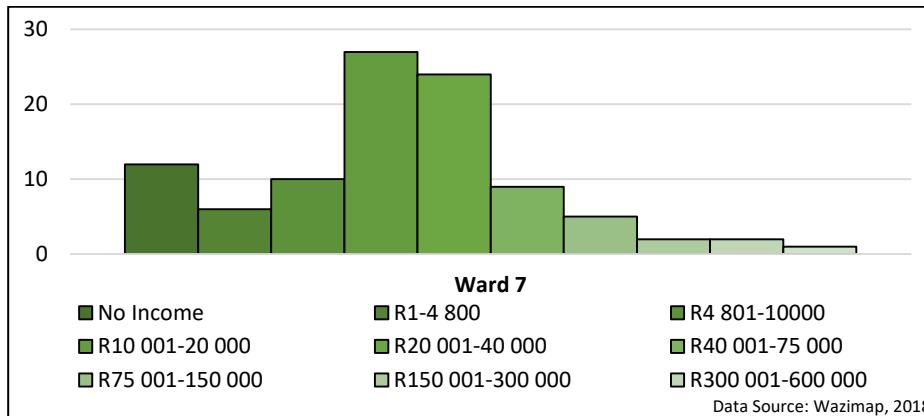
**Table 2: Languages spoken within Ward 7.**

Sesotho	isiXhosa	Afrikaans	isiZulu	English	Other
70%	13%	8%	2%	2%	4%

Data Source: Wazimap, 2018

**Households**

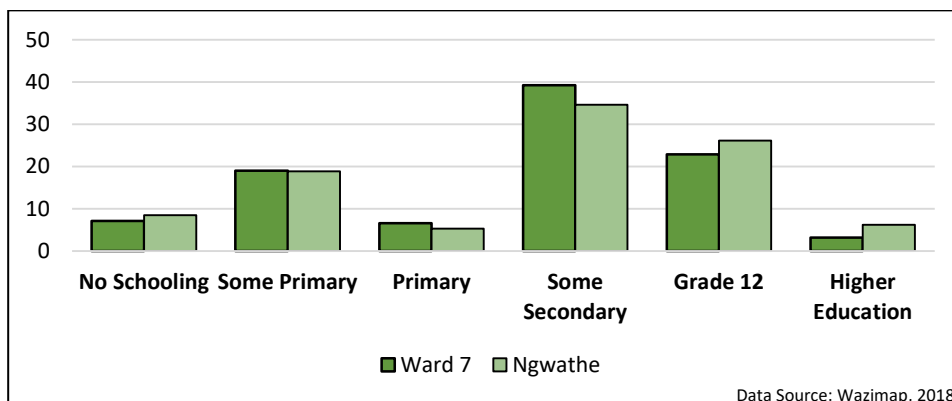
There are 3 346 households within Ward 7, the majority of which are ‘male-headed’, 65%. Average annual household incomes for Ward 7 are low, with approximately 80% of the population earning less than R40 000 per year, see **Figure 17**. As indicated by household incomes, Ward 7 is a fairly poor area in general, with 32% of households living in informal dwellings, more than double the percentage for the province and district.



**Figure 17: Average annual income for households in Ward 7.**

With regards to service delivery, 83% of households receive water via a service provider. 62.5% of households had access to flush or chemical toilets and only 57.1% had their refuse removed by a service provider on a regular basis.

Education levels for those over 20 years of age in Ward 7 are low with only 26% of the population achieving matric or higher. In comparison to the Ngwathe LM as a whole, Ward 7 has a higher percentage of the population achieving at least primary school level or some secondary education.



**Figure 18: Education level achieved for those 20 years and older.**

Ward 7 had a fairly high rate of employment when compared to that of the local and district municipality and the province. A considerably smaller percentage of the population are not economically active compared to Ngwathe LM as a whole, which had 42% of the population classified as not being economically active.

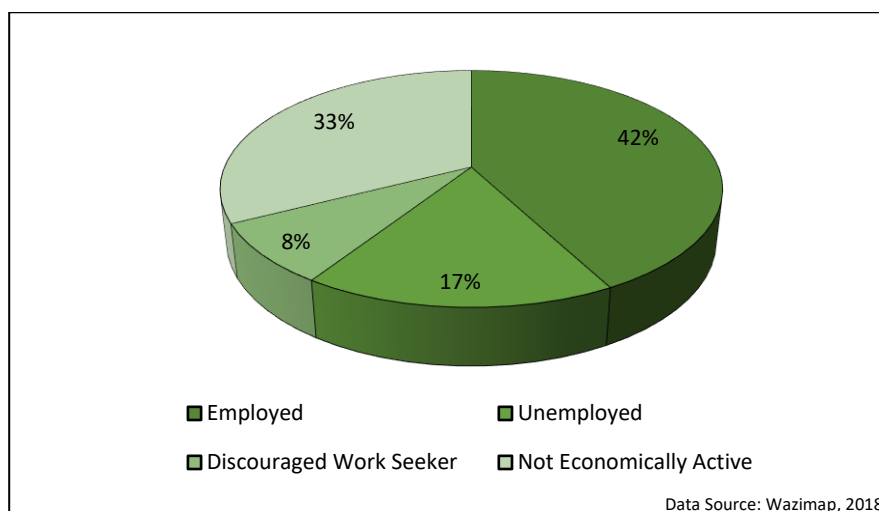


Figure 19: Employment status for Ward 7

## SECTION 4: CONSULTATION PROCESS

### 4.1 PUBLIC PARTICIPATION PROCESS FOLLOWED

Comments were obtained from Greenmined Environmental following their public participation process in the form of comments submitted via email and minutes from public meetings. Enviroworks notified various Interested and Affected Parties (I&APs) of the Socio-Economic Impact Assessment being conducted and provided opportunity for comments to be submitted.

A visit to the site of the mine and surrounding area was conducted over two days on the 26/11/2018 and 27/11/2018. During the visit various interviews were conducted as shown below:

Table 3: Interviews conducted by Enviroworks.

Date	Interested and Affected Parties	Affiliation	Time
26/11/2018	Gavin Aboud	Chair of the <i>Protect Vaal Eden Committee</i>	10:30
27/11/2018	Graeme Campbell, Rudi Labuschagne, Henk Barnard	SPH Kundalila (contractors responsible for the operation of Barrage)	9:30
27/11/2018	Craig Richardson	Neighbouring farmer	12:10
27/11/2018	Renee Hartslief, Ephraime Mosibi, Mduduzi, Tshabalala, Thabang Lenka, Samsom Mokoena	<i>The Savannah Vredefort Dome Tourism Association, Vaal Justice Alliance</i>	13:05

All comments received by I&APs were taken into consideration in the preparation of this report. Minutes of the above meetings can be found attached as **Appendix C**.

### 4.2 SUMMARY OF COMMENTS RECEIVED

The following comments, relating to the socio-economic impacts of the proposed amendment to the MR, were obtained from the Summary of Issues Raised by I&APs in the Final Basic Assessment Report (FBAR) as well as from comments received by Enviroworks, either via email or the interviews conducted. While numerous issues were raised, in particular issues relating to the Public Participation

Process of the original MR application, only those relating to the proposed Section 102 amendment will be addressed. However, all issues raised have been noted and will be kept in consideration. While all issues raised have been noted, only those relevant to BBSM have been assessed in Section 6. A summary of comments received is provided below:

#### **Mining Right Infringement**

- Equipment not listed within the current EMPr, including a mobile crusher, has been seen on the mining site. This causes a lack of confidence that Barrage Bulk Sand will adhere to the new mining plan.
- The mine is working outside of stipulated working hours.

#### **Rehabilitation**

- Rehabilitation is not taking place as promised, no guarantee that the mine will rehabilitate following future mining activities.
- The undertaking to do “Concurrent rehabilitation” occurs fewer times in the mining right amendment than it does in the previous mining right application. Feeling that the mine was downscaling on their commitment to rehabilitate.

#### **Access Road**

- The current state of the access road was raised. The road was not built to handle the traffic volumes and heavy vehicles. Upgrading of the road as well as speed limits and speed bumps was requested.
- Farmers and livestock regularly cross the road.

#### **Public Participation**

- The initial Public Participation Process conducted was not far reaching enough, and many I&APs were initially not notified of the proposed Section 102 amendment.
- Insufficient evidence of duty of care by mine owners, therefore a lack of confidence for future commitment.

#### **Social and Environmental Implications**

- The new mining techniques will result in an increase in dust. There surrounding residents are already subject to excessive dust.
- The dust will cause health impacts and could lead to cases of silicosis.
- Clients collecting sand from the mine do not cover loads with tarpaulins and sand is blown onto the roads.
- The type of equipment associated with the proposed mining operation will cause more noise than what is normal for a farming area.
- Equipment can be heard operating late into the night and early in the morning, as mines do not adhere to working hours.
- The issue of safety of surrounding residents was raised due to the increased number of workers at the mine.
- The increase in mining activities will disturb the sense of place.
- The Vaaloewer residential area is used for permanent, retirement, leisure living and investment purposes and the mine will affect unpolluted, non-industrial, tranquil and peaceful nature of the area.

#### **Pollution**

- The mine could cause pollution in the Vaal River, from which Vaaloewer residents extract water.
- The operation of machinery and vehicles will result in negatively affecting the air quality and cause a smell of chemical outlet gasses from vehicles.

- The dust from the mine may have cumulative impacts on air quality on the adjacent Vaal Triangle, which has been declared a high priority area in terms of air quality.

#### **Agriculture/Tourism**

- The proximity of the mine to the Vredefort Dome World Heritage Site was raised.
- Proximity of the mine to a National water source [Vaal River].
- Issues regarding the zoning of the land and the need to re-zone were raised.
- The mine expansion will result in negative socio-economic impacts and should rather be re-zoned for tourism.

#### **Economic Implications**

- The cumulative impacts of the mines in the area will negatively impact property values.
- The potential for local employment is very small and those that are employed will unlikely come from the Ngwathe area.
- Any negative effects on the local economy will in turn negatively affect the informal settlement adjacent to Vaaloever, which relies on the local economy.
- The community was not consulted with regards to the content of the Social and Labour Plan.
- An educational facility is planned on one of the neighbouring farms. This may be cancelled, should noise levels generated by the mine be deemed too high.

#### **Other**

- There are another two mines in the immediate area and the cumulative impacts of the mines may have major negative impacts on the sustainable development of the Vaal Eden area.
- The mining activities could negatively affect the bird and animal life along the river.

## **SECTION 5: KEY SOCIO-ECONOMIC ISSUES**

The socio-economic variables considered for the proposed amendment are grouped into seven main categories, in accordance with Vanclay's new list of social impact variables (Vanclay, 2002; Wong, 2013). The seven categories are as follows:

1. Health and social well-being impacts
2. Quality of the living environment impacts
3. Economic impacts and material well-being impacts
4. Cultural impacts
5. Family and community impacts
6. Institutional, legal, political and equity impacts
7. Gender relations impacts.

The categories listed above may, at times, overlap as certain impacts may affect more than one category. Due to the mine already being operational and the nature of the proposed amendment, there will be a negligible construction phase. Thus, impacts are primarily expected to occur during the operational and decommissioning phases. The seven categories will now be discussed as they apply to the proposed amendment as a whole.

### **5.1 HEALTH AND SOCIAL WELLBEING RELATED IMPACTS**

The health and social wellbeing impacts related to the proposed amendment include:

- Increased noise
- Increased dust
- Loss of sense of place
- Potential increase in crime

- Health implications
- Dangerous conditions on access road

#### **5.1.1 Increased noise**

The increase in noise is applicable to the operational phase. The operation of additional machinery such as crushers and screening equipment as well as a general increase in activity on the mine will lead to an increase in noise. The Vaal Eden area is fairly quiet with little ambient noise. Thus noise resulting from mining machinery is magnified and can be heard a substantial distance away from the source. Noise, not characteristic to the area affects the sense of place and creates a disturbance.

#### **5.1.2 Increased dust**

The area is already subject to substantial amounts of dust generation as a result of agricultural and mining activities, particularly during dry windy periods. The addition of activities such as crushing and screening will increase the dust generated by the mine. A lack of prompt rehabilitation will further increase the dust generated by the mine. Dust creates a nuisance impact as it settles within resident's dwellings and affects air quality. High levels of atmospheric dust can lead to health problems such as silicosis. Furthermore, the dust generated by the mine is cumulated with dust generated by agricultural activities and surrounding sand mines. Dust levels will be highest during the dry, windy months of the year, August to October.

#### **5.1.3 Potential increase in crime**

With additional workers being employed by the mine, the surrounding communities fear an increase in crime in the area. In addition, knowledge of the increased mining activities may lead to an influx of people seeking employment opportunities. This will likely have a psychological effect on some of the people living in the surrounding area, who will feel their safety is at risk. Once the activities associated with the amendment are in full effect and all the limited number of additional workers have been employed, this fear will likely subside.

#### **5.1.4 Health implications**

Mining activities associated with the proposed amendment will increase the amount of dust generated by the mine. High levels of atmospheric dust can potentially cause health problems such as silicosis. Dust levels will be at the highest during the dry, windy months of the year.

#### **5.1.5 Dangerous conditions on the S171 road**

The S171 road which is used as an access road to the mine is currently in a poor condition. The state of the road and heavy vehicles frequenting the mine pose a safety risk for the surrounding community using the road. This was evident in the inspection report conducted by the Provincial roads department (see Appendix B). The proposed amendment is likely to result in additional heavy vehicle traffic on the access road, further adding to the degradation of the road and increasing the risk of accidents.

### **5.2 QUALITY OF THE LIVING ENVIRONMENT IMPACTS**

Impacts associated with the quality of the living environment include:

- Disruption of daily living
- Loss of the area's sense of place

#### **5.2.1 Disruption of daily living**

An increase in noise generated by the mine will disturb those living and working in the area. High dust levels pose a potential health impact and are a nuisance. Increased traffic on the access road could interfere with farming activities.

### **5.2.2 Loss of sense of place**

Vaal Eden and surrounds are characterised by agricultural and nature based recreational activities. An increase in noise, dust and mining activities, as associated with the operational phase will conflict with the areas sense of place. Should the impacts be extreme, this could result in the area shifting from a 'rural feel' to a more 'industrial feel'.

## **5.3 ECONOMIC AND MATERIAL WELLBEING IMPACTS (NEGATIVE)**

Negative economic and material wellbeing impacts associated with the proposed amendment include:

- Decrease in property value
- Decreased tourism potential for the surrounding area
- Loss of potential educational facility

### **5.3.1 Decrease in property value**

Property values are affected by numerous factors, and quantifying the impact posed by the amendment of an existing mine on surrounding property values do any degree of certainty is near impossible. To add to the challenge, there are another two mines in the area as well agricultural activities, both of which generate dust and noise. Should the activities associated with the proposed mining right amendment result in an increase in dust and noise, a negative effect on property values could occur but quantifying this is difficult.

### **5.3.2 Decreased tourism potential for the surrounding area**

Disturbances to the area's sense of place will likely decrease the area's potential for tourism. Businesses that rely on visitors seeking a tranquil getaway venue with a 'rural feel' could experience fewer clients. A decrease in tourists to the area would negatively affect the local economy and likely lead to job losses.

### **5.3.3 Loss of potential educational facility**

A multi-billion Rand educational facility combined with an eco-estate is planned for on an adjacent farm, on the Gauteng side of the Vaal River. High levels of noise and dust emanating from the mine will negatively impact the viability of the proposed development, potentially even resulting in it being cancelled.

## **5.4 ECONOMIC AND MATERIAL WELL BEING IMPACTS (POSITIVE)**

Positive economic and material benefits associated with the proposed amendment include:

- Localised supply of building materials
- Increased employment opportunities
- Financial benefit for Applicant

### **5.4.1 Localised supply of building materials**

The mine will supply sand and aggregate to the regional construction, residential and manufacturing sectors, particularly those located in the growing urban areas of Gauteng where demand is greatest. Sand and aggregate are essential ingredients in the production of concrete for buildings, roads/paths and other infrastructure, and are also used for landscaping, glass production and filtering systems. The supply of sand is therefore seen as a valuable economic benefit.

### **5.4.2 Increased employment opportunities**

The mine currently employs three workers. These workers are bussed in from the contractor's site in Carletonville. Should the proposed amendment be approved, the mine will effectively hire an additional three fulltime employees. An examination of the mining application indicates that the

financial resources to be spent on labour include a salary for one senior manager, one skilled employee, and relatively minor budget for 6 semi-skilled employees. Analysis of the salary information indicates that the semi-skilled jobs would amount to at most 2 months of work for each semi-skilled labourer per annum. These are therefore not full-time or permanent jobs, but occasional or part-time employees. In total they amount to one additional full time job, which makes a total of three employees. While minimal, the proposed amendment will increase employment opportunities in the local area beyond what they currently are should the mine continue as current.

#### **5.4.3 Financial benefit for the Applicant**

The addition of aggregate will increase the profitability of the mine. The addition of the screening process will allow the contractor to be able to provide clients with a more refined product, furthermore increasing profitability.

### **5.5 CULTURAL IMPACTS**

Cultural impacts associated with the mine include the following:

- Negative influence on an area of tourism importance

#### **5.5.1 Negative influence on area of tourism importance**

The Vredefort Dome is recognised as a World Heritage site and is of significance culturally and as a tourist attraction. Barrage Bulk Sand mine, while falling out side of the buffer zone for the Vredefort Dome World Heritage Site (VDWHS) is situated in relative close proximity to the site. The area surrounding the VDWHS is important for maintaining the integrity of the site. Should the proposed amendment result in drastic increases in dust and noise, the integrity of the VDWHS may be negatively affected.

### **5.6 FAMILY AND COMMUNITY IMPACTS**

The proposed mining right amendment is unlikely to affect the surrounding area at a family level but will lead to negative impacts among the surrounding communities. These impacts are likely to include:

- Increased animosity towards the sand mines.
- Decreased level of satisfaction with the living environment

#### **5.6.1 Increased animosity towards the sand mines**

Due to an existing dislike of the surrounding mines and disputed Public Participation Processes, animosity may further develop between disgruntled community members and those involved with the mine. This may result in increased stress among community members.

#### **5.6.2 Decreased level of satisfaction with the living environment**

Many of the residents residing with in the area do so because of the tranquil and 'rural feel' associated with the area. Negative impacts associated, such as increased dust and noise will likely lead to community members no-longer experiencing the surrounding environment in the same positive way it currently is. This will result in increased dissatisfaction with the living environment and in extreme cases residents might consider re-locating.

### **5.7 INSTITUTIONAL, LEGAL, POLITICAL AND EQUITY IMPACTS**

Institutional, legal, political and equity impacts associated with the mine include the following:

- Increased demand on existing infrastructure
- Re-zoning issues
- Mining right infringement

### 5.7.1 Increased demand on existing infrastructure

The existing access road is already in a deteriorated state and is used by heavy vehicles daily, which it was not designed to accommodate. The proposed amendment will likely result in increased heavy vehicle traffic, which will threaten the structural soundness of the road. This impact is cumulated by surrounding mines. Mitigation measures will need to be put in place in order to ensure the road is adequately maintained.

## 5.8 GENDER RELATIONS

Gender refers to the characteristics that society attributes to males and females. These characteristics vary greatly between different cultures and will tend to change over time. Culture thus plays an important role on gender relations along with other factors such as the gender of the household head.

With regards to the proposed amendment, no impacts are expected to affect gender relations. Thus no aspects with regards to gender have been assessed.

## SECTION 6: ASSESSMENT OF IMPACTS

This Section presents the findings of the socio-economic impact assessment components and activities associated with the proposed Section 102 MR amendment. Activities associated with the proposed amendment that will be assessed include the addition of aggregate to the MR and the amendment of the EMPr to include processing (crushing and screening).

The No-Go Option has been included in the assessment. Should the No-Go Option be opted for, it would result in the Section 102 Amendment not being awarded and mining activities carrying on as they have been as of 2016. Thus the mine would only be allowed to mine silica sand, which would be loaded directly onto client's trucks without any form of processing or sorting.

Socio-economic impacts have been grouped according to the seven categories, and assessed for the Operational and Decommissioning Phases. Mitigation measures are recommended in order to reduce or eliminate negative impacts and to enhance positive impacts.

### 6.1 SOCIO-ECONOMIC IMPACTS ASSOCIATED WITH THE CONSTRUCTION PHASE

Due to the mine already being operational the Construction Phase will have very few impacts associated with it. During the construction phase new equipment will need to be brought to the site and installed. This could possibly cause a temporary increase in dust and noise. Other activities associated with the Construction Phase include advertising for the new jobs available. This advertising process may lead to an influx of work seekers and possibly an increase in crime.

The socio-economic categories assessed include:

1. Health and social well-being impacts

#### 6.1.1 Health and social wellbeing related impacts

The following health and social well-being impacts related to the Construction Phase of the proposed amendment include:

- Potential increase in crime

#### Potential Increase in Crime

**Impact:** An influx of job seekers could potentially result in increased crime in the area.



	Before Mitigation	After Mitigation
<b>Magnitude</b>	High	Medium
<b>Duration</b>	Medium term	Medium term
<b>Extent</b>	Local	Local
<b>Frequency</b>	Occasional	Occasional
<b>Probability</b>	Low probability	Improbably
<b>Significance Rating</b>	Low	Low
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No	No
<b>Mitigation opportunity?</b>	Yes	N/A
<b>Mitigation measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> No, provided losses are compensated.		

#### Assessment of the No-Go Option

If the proposed amendment is not approved, the Barrage Bulk Sand Mine will continue to operate as current. There will not be an advertising period and thus a less likely to be an influx of job seekers. Crime levels will thus not potentially be influenced by the proposed amendment.

#### Recommended mitigation measures

The potential increase in crime levels associated with onsite processing activities can be mitigated to a degree as follows:

- The Applicant needs to ensure that unrealistic expectations are not created during the advertising period.
- A substantial effort is made towards the upliftment of local communities and addressing their identified needs.
- The application process should be conducted at the expected source of local laborers, in order to avoid a potential influx of work seekers to the area immediately surrounding the mine.

## 6.2 SOCIO-ECONOMIC IMPACTS ASSOCIATED WITH THE OPERATIONAL PHASE

The majority of the impacts associated with the Section 102 amendment of the BBSM MR will occur during the operational phase. Activities associated with the Operational Phase include the extracting of aggregate. Processing would involve crushing of aggregate and screening of both aggregate and sand.

The socio-economic categories assessed include:

1. Health and social well-being impacts
2. Quality of the living environment impacts
3. Economic impacts and material well-being impacts
4. Cultural impacts
5. Family and community impacts
6. Institutional, legal, political and equity impacts
7. Gender relations impacts.

### 6.2.1 Health and social wellbeing related impacts

The following health and social well-being impacts related to the Operational Phase of the proposed amendment include:

- Increased noise
- Increased dust
- Dangerous conditions on the access road

#### Noise Impact

<b>Impact:</b> Increased noise from onsite crushing and screening.		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	Medium	Low
<b>Duration</b>	Medium term	Medium term
<b>Extent</b>	Local	Site-specific
<b>Frequency</b>	Very frequent	Very frequent
<b>Probability</b>	High probability	Medium probability
<b>Significance Rating</b>	Medium-high	Medium
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	N/A	N/A
<b>Mitigation opportunity?</b>	Yes	N/A
<b>Mitigation measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> Noise impacts will be cumulated with the noise emanating from surrounding mines in the area.		

#### Assessment of the No-Go Option

If the proposed amendment is not approved, the Barrage Bulk Sand Mine will continue to operate as current. There will be no increase in the amount of noise emitted by the mine.

#### Recommended mitigation measures

The impacts associated with onsite processing activities can be mitigated to a degree as follows:

- The sites selected for crushing activities should ideally have dense vegetation or trees surrounding them.
- Working hours are to be strictly adhered to. As stipulated in the Mine Works Programme working hours are from 7:30am to 4:00pm on weekdays. Preparation for the working day will take place between 7:30am and 8:00am. The mine may then only begin loading and selling sand from 8:00am.
- When required the mine will operate on Saturdays as well. When operating on a Saturday, working hours are from 7:30am to 4:00pm. Prior to a period of working on Saturdays is expected, the mine should notify surrounding residents of the expected duration of Saturday work.
- The mine will not operate on Sundays.
- All machinery to be fitted with silencers.
- Reverse beepers on all vehicles are to be replaced with white-noise reverse beepers or equivalent.
- Workers on site are to conduct themselves in an orderly manner on site.
- No loud music permitted on site.

#### Dust Impact

<b>Impact:</b> Increased dust resulting from onsite crushing and screening.		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	Medium	Low
<b>Duration</b>	Medium term	Medium term
<b>Extent</b>	Regional	Regional
<b>Frequency</b>	Frequent	Frequent
<b>Probability</b>	High probability	Medium probability
<b>Significance Rating</b>	Medium-high	Medium
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	N/A	N/A
<b>Mitigation opportunity?</b>	Yes	N/A
<b>Mitigation measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> Dust levels will be cumulated by dust resulting for the surrounding mines and agricultural activities.		

### Assessment of the No-Go Option

If the proposed amendment is not approved, the BBSM will continue to operate as current. There will be no increase in the amount of dust emitted by the mine, as crushing and screening activities will not occur.

### Recommended mitigation measures

The dust impacts associated with onsite processing activities can be mitigated to a degree as follows:

- All vehicles collecting sand are to cover sand loads with a tarpaulin prior to leaving Barrage Bulk Sand Mine. The contractors are to ensure that this is enforced, refusing to load client's trucks with sand should they not poses a tarpaulin to cover loads.
- Internal dirt roads are to be regularly sprayed to reduce dust. During the dry windy months, August to October, dust suppression measures should be conducted more frequently. Hourly application of water to internal dirt roads is recommended.
- Concurrent rehabilitation of mining strips has to be done without fail.
- Once mining of a strip is completed the topsoil should be replaced as according to the rehabilitation plan.
- If an adequate amount of re-growth has not occurred on mined areas, following two growing seasons, the mined areas should be re-seeded and watered until rehabilitation has been sufficiently initiated.
- Dust monitoring should be conducted regularly to ensure dust levels are within acceptable levels.

### Dangerous Conditions on the S171 Road

<b>Impact:</b> Heavy vehicles frequenting the S171 road could lead to increased traffic and accidents.		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	High	Very low
<b>Duration</b>	Medium term	Medium term
<b>Extent</b>	Local	Local
<b>Frequency</b>	Frequent	Occasional
<b>Probability</b>	Medium probability	Low probability
<b>Significance Rating</b>	Medium-High	Low
<b>Reversibility</b>	Yes, damages to the road surface can be repaired.	Yes, damages to the road surface can be repaired.
<b>Irreplaceable loss of resources?</b>	Yes, if fatal accidents occur.	Yes, if fatal accidents occur.
<b>Mitigation opportunity?</b>	Yes	N/A
<b>Mitigation measures:</b>	Explained below.	N/A

**Cumulative impacts:** Yes, heavy vehicles frequenting other mines will cumulate impacts.

### Assessment of the No-Go Option

If the proposed amendment is not approved, the S171 road will not see an increase in the number of heavy vehicles. Due to the mine making less revenue than could potentially be made if aggregate were also mined, fewer funds might be available for road maintenance. The road will likely remain in its current state and it is likely that the Applicant will feel less obligated to maintain the road.

### Recommended mitigation measures

The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:

- The Applicant, together with the other two mines, should create a fund and assume responsibility for the initial restoration of the S171 road and thereafter the upkeep of the road.
- Speed limits should be put in place.
- Crossing points should be put in place for farmers crossing the road with livestock.

### 6.2.2 Quality of the living environment impacts

The following quality of the living environment impacts related to the Operational Phase of the proposed amendment include:

- Disruption of daily living
- Loss of sense of place

#### Disruption of Daily Living

<b>Impact:</b> Increases in dust, noise, traffic and crime as a result of the mine expansion will disrupt the daily lives of those surrounding the mine.		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	Medium	Very low
<b>Duration</b>	Medium term	Medium term
<b>Extent</b>	Local	Local
<b>Frequency</b>	Frequent	Occasional
<b>Probability</b>	Medium probability	Low probability
<b>Significance Rating</b>	Medium	Low
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No.	No.
<b>Mitigation opportunity?</b>	Yes	N/A

<b>Mitigation measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> Yes, there are two other mines in the area which will cumulate the effects of dust, noise and heavy traffic.		

### Assessment of the No-Go Option

If the proposed amendment is not approved, the daily living conditions of the surrounding community will not be disturbed any more than they are by current mining activities. There will not be an increase in dust and noise emitted by the mine. Any disruptions as a result of the mine will continue as it currently does.

### Recommended mitigation measures

The negative impacts associated with a disruption to daily living can be mitigated to a degree as follows:

- Recommended mitigation measures for dust, noise and upkeep of the S171 need to be implemented.
- The Applicant needs to realise that the surrounding community are becoming increasingly disgruntled with mining activities in the area. The Applicant needs to make every effort to work with community members by keeping them fully informed of planned mining activities and doing everything possible to reduce negative impacts, in particular dust and noise.

### Loss of Sense of Place

<b>Impact:</b> Increases in dust, noise, traffic and crime as a result of the mine could lead to the 'tranquil feel' of the Vaal River being lost.		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	Medium	Low
<b>Duration</b>	Medium term	Medium term
<b>Extent</b>	Local	Local
<b>Frequency</b>	Very frequent	Frequent
<b>Probability</b>	Medium probability	Low probability
<b>Significance Rating</b>	Medium	Low
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No.	No.
<b>Mitigation opportunity?</b>	Yes	N/A
<b>Mitigation measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> Yes, there are two other mines in the area which will result in negative impacts being cumulated.		

### Assessment of the No-Go Option

If the proposed amendment is not approved, the Barrage Bulk Sand Mine will continue to operate as current. The sense of place of the surrounding area is already compromised by current mining activities. The current impact on the sense of place will not be increased by heightened noise and dust levels as a result of onsite processing.

### Recommended mitigation measures

The negative impacts associated with a disruption to daily living can be mitigated to a degree as follows:

- Recommended mitigation measures for dust, noise and upkeep of the S171 need to be implemented.

### 6.2.3 Economic and material well-being impacts (negative)

Due to the numerous factors influencing property values, a fair and accurate assessment of the proposed amendment on property values is not possible. Negative economic and material well-being impacts assessed include:

- Decreased tourism potential in the surrounding area
- Loss of property values

### Decreased Tourism Potential in the Surrounding Area

<b>Impact:</b> Negative impacts resulting from the mine could result in decreased value of the area for tourist activities.		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	High	Low
<b>Duration</b>	Medium term	Medium term
<b>Extent</b>	Local	Local
<b>Frequency</b>	Frequent	Frequent
<b>Probability</b>	Medium probability	Low probability
<b>Significance Rating</b>	Medium-High	Low
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No.	No.
<b>Mitigation opportunity?</b>	Yes	N/A
<b>Mitigation measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> Yes, there are two other mines in the area which will result in negative impacts being cumulated.		

**Assessment of the No-Go Option**

Should the proposed amendment not be approved, BBSM will continue to operate as current. Impacts such as noise and dust, which affect the sense of place will not increase and there will not be a further decrease in the tourism potential of the area.

**Recommended mitigation measures**

The negative impacts associated with a decrease in tourism potential can be mitigated to a degree as follows:

- Recommended mitigation measures for dust, noise and upkeep of the S171 need to be implemented.
- In order to screen mining activities vegetation situated along the edge of the S171 road, running through the property, should be maintained. Vegetation should be planted in sections where gaps occur.
- Machinery, such as the crusher, should be adequately screened so as not to be visible from the road.

<b>Impact: Loss of property values</b>		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	Medium	Low-Medium
<b>Duration</b>	Medium	Medium
<b>Extent</b>	Local	Local
<b>Frequency</b>	Continuous	Continuous
<b>Probability</b>	Medium	Medium
<b>Significance Rating</b>	Medium	Low
<b>Reversibility</b>	Yes	Yes
<b>Irreplaceable loss of resources?</b>	N/A	N/A
<b>Mitigation opportunity?</b>	Yes, but these will be counteracted by the cumulative impacts.	
<b>Mitigation measures:</b>	See proposed measures to mitigate visual, dust, noise and traffic impacts.	
<b>Cumulative impacts:</b>	The cumulative impact of all the mines will have a high impact on property values. The possibility of mitigating the cumulative impacts is doubtful due to the failure to identify the negative social and economic impacts and apply effective mitigation measures in the already authorised mine and the other application under assessment.	



### Assessment of the No-Go Option

Should the proposed amendment not be approved, BBSM will continue to operate as current and property values will not change as a result of increased nuisance impacts resulting from the BBSM expansion.

### Recommended mitigation measures

The negative impacts associated with a decrease in tourism potential can be mitigated to a degree as follows:

- Recommended mitigation measures for dust, noise and upkeep of the S171 need to be implemented.
- In order to screen mining activities, vegetation situated along the edge of the S171 road, where it runs through the property, should be maintained. Vegetation should be planted in sections where gaps in vegetation exist.
- Machinery such as the crusher should be adequately screened so as not to be visible from the road.

#### 6.2.4 Economic and material well-being impacts (positive)

Positive economic and material benefits associated with the proposed amendment include:

- Supply of building materials to the local building and construction industry.
- Job creation (minimal)

<b>Impact:</b> Supply of sand for construction sector (as per the Economic Impact Assessment Report, Appendix E).		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	Very Low	N/A
<b>Duration</b>	Med	N/A
<b>Extent</b>	Local	N/A
<b>Frequency</b>	Continuous	N/A
<b>Probability</b>	Definite	N/A
<b>Significance Rating</b>	Medium High	N/A
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	N/A	N/A
<b>Mitigation opportunity?</b>	N/A	N/A
<b>Mitigation measures:</b>	None.	N/A
<b>Cumulative impacts:</b>	The Cumulative impact of all the mines is rated as Medium.	

**Assessment of the No-Go Option**

Without the proposed amendment being approved, economic benefits associated with the supply of building materials to the area will be lost.

**Job Creation**

<b>Impact:</b> The proposed amendment will provide an additional three employment opportunities.		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	Low	Medium
<b>Duration</b>	Medium term	Medium term
<b>Extent</b>	Regional	Regional
<b>Frequency</b>	Continuous	Continuous
<b>Probability</b>	High probability	Medium probability
<b>Significance Rating</b>	Low (+)	Low (+)
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No.	No.
<b>Enhancement opportunity?</b>	Yes	N/A
<b>Enhancement measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> Possible positive knock-on effects for the local economy.		

**Assessment of the No-Go Option**

Without the proposed amendment being approved, economic benefits and potential job opportunities would be lost.

**Recommended mitigation measures**

The positive impacts associated with employment opportunities can be enhanced to a degree as follows:

- The Applicant should provide opportunities for skills development, ie. brick making.
- Conduct LED initiatives for the local community.

**6.2.5 Cultural impacts**

Cultural impacts associated with the MR amendment include the following:

- Negative influence on an area of tourism importance

**Negative Influence on an Area of Tourism Potential**

<b>Impact:</b> Negative impacts resulting from the mining activities may influence the tourism value of the nearby Vredefort Dome World Heritage Site.		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	Medium	Low
<b>Duration</b>	Medium term	Medium term
<b>Extent</b>	Local	Local
<b>Frequency</b>	Frequent	Frequent
<b>Probability</b>	Low probability	Low probability
<b>Significance Rating</b>	Low	Low
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No.	No.
<b>Mitigation opportunity?</b>	Yes	N/A
<b>Mitigation measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> Yes, there are two other mines in the area which will result in negative impacts being cumulated.		

**Assessment of the No-Go Option**

Should the proposed amendment not be approved, Barrage Bulk Sand Mine will continue to operate as current. Tourists passing through the area will not experience higher levels of dust and noise than would currently be experienced. The tourism potential of the area will not be further affected by increased mining impacts.

**Recommended mitigation measures**

The negative impacts associated with mine expansion that may influence the VDWHS can be mitigated to a degree as follows:

- Recommended mitigation measures for dust, noise and upkeep of the S171 need to be implemented.
- In order to screen mining activities, vegetation situated along the edge of the S171 road, where it runs through the property, should be maintained. Vegetation should be planted in sections where gaps in vegetation exist.
- Machinery such as the crusher should be adequately screened so as not to be visible from the road.

**6.2.6 Family and community impacts**

The proposed mining right amendment is unlikely to affect the surrounding area at a family level but will lead to negative impacts among the surrounding communities. These impacts are likely to include:

- Increased animosity towards the sand mines
- Decreased level of satisfaction with the living environment

#### Increased Animosity towards the Sand Mines

<b>Impact:</b> Negative impacts resulting from the mining activities and a lack of being consulted will result in the community becoming increasingly disgruntled and angry towards the mines.		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	High	Medium
<b>Duration</b>	Medium term	Medium term
<b>Extent</b>	Local	Local
<b>Frequency</b>	Frequent	Occasional
<b>Probability</b>	Medium probability	Low probability
<b>Significance Rating</b>	High	Medium
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No.	No.
<b>Mitigation opportunity?</b>	Yes	N/A
<b>Mitigation measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> Yes, there are two other mines in the area which will result in negative impacts being cumulated.		

#### Assessment of the No-Go Option

The feelings of the surrounding community towards the mine are already very negative. Should the proposed amendment not be approved, the surrounding community will feel relieved that negative impacts will not increase. The community will not be furthered angered, however negative feelings towards BBSM will remain.

#### Recommended mitigation measures

The negative impacts associated with the mine that may result in increased animosity and anger towards the mines can be mitigated to a degree as follows:

- Recommended mitigation measures for dust, noise and upkeep of the S171 need to be implemented.
- The Applicant needs to strictly adhere to all conditions stipulated within the EMPr.
- The Applicant needs to remain open with regard to information concerning the mine and be proactive in informing all I&APs of plans or changes.
- When a decision, that may possibly affect I&APs, needs to be made, all I&APs need to be consulted timeously and included in all decision-making processes.

- A procedure for receiving and responding to complaints should be put in place. Complaints received need to be addressed promptly where possible and the complainant informed of the measures taken to address the issue.

#### Decreased Level of Satisfaction with the Living Environment

<b>Impact:</b> Negative impacts resulting from the mining activities may result in the surrounding community becoming increasingly dissatisfied with their chosen living environment.		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	High	Low
<b>Duration</b>	Medium term	Medium term
<b>Extent</b>	Local	Local
<b>Frequency</b>	Very frequent	Frequent
<b>Probability</b>	High probability	Low probability
<b>Significance Rating</b>	High	Medium
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No.	No.
<b>Mitigation opportunity?</b>	Yes	N/A
<b>Mitigation measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> Yes, there are two other mines in the area which will result in negative impacts being cumulated.		

#### Assessment of the No-Go Option

Should the proposed amendment not be approved, BBSM will continue to operate as current. The area's sense of place will not be further impacted upon by an expansion of mining activities and thus the residents will not perceive their living environment to be further negatively affected. Satisfaction levels with regards the living environment will remain the same.

#### Recommended mitigation measures

The negative impacts associated with the mine that may result in a decreased level of satisfaction with the living environment can be mitigated to a degree as follows:

- Recommended mitigation measures for dust, noise and upkeep of the S171 need to be implemented.
- The Applicant needs to strictly adhere to all conditions stipulated within the EMPr.
- The Applicant needs to remain open with regard to information concerning the mine and be proactive in informing all I&APs of plans or changes.
- When a decision, that may possibly affect I&APs, needs to be made, all I&APs need to be consulted timeously and included in all decision making processes.

- A procedure for receiving and responding to complaints should be put in place. Complaints received need to be addressed promptly where possible and the complainant informed of the measures taken to address the issue.

### 6.2.7 Institutional, legal, political and equity impacts

Institutional, legal, political and equity impacts associated with the MR amendment include the following:

- Increased pressure on existing infrastructure

#### Increased Pressure on Existing Infrastructure

<b>Impact:</b> Increased frequency of heavy vehicles utilising the S171 road to access the mine will lead to further damage of a road already in an aged condition.		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	High	Low
<b>Duration</b>	Medium term	Medium term
<b>Extent</b>	Local	Local
<b>Frequency</b>	Very frequent	Occasional
<b>Probability</b>	High probability	Low probability
<b>Significance Rating</b>	High	Low
<b>Reversibility</b>	Yes, damages to the road surface can be repaired.	Yes, damages to the road surface can be repaired.
<b>Irreplaceable loss of resources?</b>	Yes, if fatal accidents occur.	Yes, if fatal accidents occur.
<b>Mitigation opportunity?</b>	Yes	N/A
<b>Mitigation measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> Yes, there are two other mines in the area both of which are frequented by heavy vehicles and will result in cumulative negative impacts on the structural integrity of the road.		

#### Assessment of the No-Go Option

If the proposed amendment is not approved, the mine's client base will not increase and the S171 road would thus not experience increased heavy vehicle traffic.

#### Recommended mitigation measures

The negative impacts associated with increased traffic levels can be mitigated to a degree as follows:

- The Applicant, together with the other two mines, should create a fund and assume responsibility for the initial restoration of the S171 road and thereafter the upkeep of the road.

- Damage to the road surface needs to be reported and repaired promptly.

### 6.3 SOCIO-ECONOMIC IMPACTS ASSOCIATED WITH THE DECOMMISSIONING PHASE

Decommissioning of the mine will take place once all relevant minerals have been extracted, as is economically viable. The expected life span of the mine is 10 years, irrespective of whether or not the Section 102 amendment is awarded. The decommissioning of the mine will involve removal of any existing structures. Any un-rehabilitated areas will be graded and revegetated to a satisfactory level. Following decommissioning of the mine, Portion 4 of Woodlands 407 will either be returned to agricultural purposes or another economically viable land use. BBSM is already operational and should the amendment be awarded, the new mining processes will have little effect on procedures for the Decommissioning Phase. Impacts associated with the Decommissioning Phase will thus vary minimally whether the amendment is awarded or not. The impacts assessed for the Decommissioning Phase take into account not only the ceasing of the proposed amendment but the closure of the entire mine. Impacts, both positive and negative are thus likely to be greater than if just the ceasing of the amendment was concerned. Assessment of the No-Go Option has not been included for the Decommissioning Phase.

The socio-economic categories assessed include:

1. Health and social well-being impacts
2. Quality of the living environment impacts
3. Economic impacts and material well-being impacts
4. Cultural impacts
5. Family and community impacts
6. Institutional, legal, political and equity impacts
7. Gender relations impacts

#### 6.3.1 Health and social wellbeing related impacts

The following health and social well-being impacts related to the Decommissioning Phase of the proposed amendment include:

- Noise
- Dust
- Potential increase in crime
- Dangerous conditions on the access road

#### Noise Impact

<b>Impact:</b> Crushing and screening will no longer take place and thus will no longer result in a noise impact.		
	<b>Before Mitigation</b>	<b>After Enhancement</b>
<b>Magnitude</b>	Medium	N/A
<b>Duration</b>	Permanent	N/A
<b>Extent</b>	Local	N/A
<b>Frequency</b>	No Impact	N/A
<b>Probability</b>	Definite	N/A

<b>Significance Rating</b>	Medium (+)	N/A
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	N/A	N/A
<b>Enhancement opportunity?</b>	No impact occurs.	N/A
<b>Enhancement measures:</b>	N/A	N/A
<b>Cumulative impacts:</b> None.		

### Dust Impact

<b>Impact:</b> Crushing, screening and excavating, activities which cause dust will no longer take place.		
	<b>Before Mitigation</b>	<b>After Enhancement</b>
<b>Magnitude</b>	Medium	Medium-high
<b>Duration</b>	Permanent	Permanent
<b>Extent</b>	Local	Local
<b>Frequency</b>	No Impact	No Impact
<b>Probability</b>	Definite	Definite
<b>Significance Rating</b>	Medium (+)	Medium-high (+)
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	N/A	N/A
<b>Enhancement opportunity?</b>	Yes	N/A
<b>Enhancement measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> None.		

### Recommended Enhancement Measures

- All areas cleared as a result of mining activities are to be adequately rehabilitated with indigenous vegetation, following closure of the mine.



**Potential Increase in Crime**

<b>Impact:</b> Closure of the mine may lead to increased crime in the area due to job losses.		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	Medium	Low
<b>Duration</b>	Short-term	Medium term
<b>Extent</b>	Local	Local
<b>Frequency</b>	Occasional	No Impact
<b>Probability</b>	Low probability	Medium probability
<b>Significance Rating</b>	Low	Low (+)
<b>Reversibility</b>	Yes, compensation for loss or damages.	N/A
<b>Irreplaceable loss of resources?</b>	No	No
<b>Mitigation opportunity?</b>	Yes	N/A
<b>Mitigation measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> None.		

**Recommended mitigation measures**

- Upon the closure of Barrage Bulk Sand mine, where possible, the Applicant should integrate those employed by the mine into the workforce of other projects operated by the Applicant.

**Dangerous Conditions on the S171 Road**

<b>Impact:</b> There will no longer be heavy vehicles using the S171 to access the mine. Decreased potential for traffic, accidents and road noise.		
	<b>Before Mitigation</b>	<b>After Enhancement</b>
<b>Magnitude</b>	Medium	N/A
<b>Duration</b>	Permanent	N/A
<b>Extent</b>	Local	N/A
<b>Frequency</b>	No impact	N/A
<b>Probability</b>	High probability	N/A

<b>Significance Rating</b>	Medium (+)	N/A
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	N/A	N/A
<b>Enhancement opportunity?</b>	No impact occurs.	N/A
<b>Enhancement measures:</b>	N/A	N/A
<b>Cumulative impacts:</b> None.		

### 6.3.2 Quality of the living environment impacts

The following quality of the living environment impacts related to the decommissioning phase of the proposed amendment include:

- Disruption of daily living
- Loss of sense of place

#### Disruption of Daily Living

<b>Impact:</b> The daily living conditions of those surrounding the mine will no longer be disrupted by dust, noise and traffic as a result of the mine.		
	<b>Before Mitigation</b>	<b>After Enhancement</b>
<b>Magnitude</b>	Medium	N/A
<b>Duration</b>	Permanent	N/A
<b>Extent</b>	Local	N/A
<b>Frequency</b>	No impact	N/A
<b>Probability</b>	Medium probability	N/A
<b>Significance Rating</b>	Medium-high (+)	N/A
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No	N/A
<b>Enhancement opportunity?</b>	No	N/A
<b>Enhancement measures:</b>	N/A	N/A
<b>Cumulative impacts:</b> None		

**Loss of Sense of Place**

<b>Impact:</b> Mining activities will no-longer disrupt the area's sense of place.		
	<b>Before Mitigation</b>	<b>After Enhancement</b>
<b>Magnitude</b>	Medium	N/A
<b>Duration</b>	Permanent	N/A
<b>Extent</b>	Local	N/A
<b>Frequency</b>	No impact	N/A
<b>Probability</b>	Definite	N/A
<b>Significance Rating</b>	Medium	N/A
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	N/A	N/A
<b>Enhancement opportunity?</b>	No.	N/A
<b>Enhancement measures:</b>	N/A	N/A
<b>Cumulative impacts:</b> None.		

**6.3.3 Economic and material well-being impacts (negative)**

Negative economic and material benefits associated with the proposed amendment include:

- Loss of employment opportunities

**Lost Employment Opportunities**

<b>Impact:</b> Upon closure of the mine, employment opportunities previously provided will be lost.		
	<b>Before Mitigation</b>	<b>After Mitigation</b>
<b>Magnitude</b>	Medium	Low
<b>Duration</b>	Short term	Medium term
<b>Extent</b>	Local	Local
<b>Frequency</b>	Very rare	No impact

<b>Probability</b>	High probability	Medium probability
<b>Significance Rating</b>	Medium	Low (+)
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No.	No.
<b>Mitigation opportunity?</b>	Yes	N/A
<b>Mitigation measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> None.		

#### Recommended mitigation measures

- Upon the closure of BBSM, where possible, the Applicant should integrate those employed by the mine into the workforce of other projects operated by the Applicant.

#### 6.3.4 Economic and material well-being impacts (positive)

- Increased tourism potential for the mined area and surrounds.

#### Increased tourism potential for the mined area and surrounds

<b>Impact:</b> Due to mining activities ceasing, the tourism potential of the mined area as well as the surrounds will be improved.		
	<b>Before Mitigation</b>	<b>After Enhancement</b>
<b>Magnitude</b>	Medium	N/A
<b>Duration</b>	Permanent	N/A
<b>Extent</b>	Local	N/A
<b>Frequency</b>	No impact	N/A
<b>Probability</b>	High probability	N/A
<b>Significance Rating</b>	Medium (+)	N/A
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No.	N/A
<b>Enhancement opportunity?</b>	No.	N/A
<b>Enhancement measures:</b>	N/A	N/A

**Cumulative impacts:** None.

### 6.3.5 Cultural impacts

Cultural impacts associated with the mine right amendment include the following:

- Ceasing of activities that could potentially have a negative influence on an area of tourism importance.

#### Ceasing of Activities That Could Negatively Influence on an Area of Tourism Potential

<b>Impact:</b> Ceasing of activities that could potentially have a negative influence on the tourism value of the nearby Vredefort Dome World Heritage Site.		
	<b>Before Mitigation</b>	<b>After Enhancement</b>
<b>Magnitude</b>	Low	N/A
<b>Duration</b>	Permanent	N/A
<b>Extent</b>	Local	N/A
<b>Frequency</b>	No impact	N/A
<b>Probability</b>	Medium probability	N/A
<b>Significance Rating</b>	Low (+)	N/A
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No.	N/A
<b>Enhancement opportunity?</b>	No.	N/A
<b>Enhancement measures:</b>	None	N/A
<b>Cumulative impacts:</b> None.		

### 6.3.6 Family and community impacts

Decommissioning of the mine is unlikely to affect the surrounding area at a family level. However, closure of the mine will lead to change in the way the living environment is perceived. Impacts are likely to include:

- Increased level of satisfaction with the living environment

#### Improved Satisfaction with the Living Environment

<b>Impact:</b> Negative impacts resulting from the mining activities will cease, which will potentially result in the community's satisfaction with the living environment improving.		
	<b>Before Mitigation</b>	<b>After Enhancement</b>

<b>Magnitude</b>	Medium	N/A
<b>Duration</b>	Permanent	N/A
<b>Extent</b>	Local	N/A
<b>Frequency</b>	No impact	N/A
<b>Probability</b>	Medium probability	N/A
<b>Significance Rating</b>	Medium (+)	N/A
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No.	N/A
<b>Enhancement opportunity?</b>	No.	N/A
<b>Enhancement measures:</b>	N/A	N/A
<b>Cumulative impacts:</b> None.		

### 6.3.7 Institutional, legal, political and equity impacts

Institutional, legal, political and equity impacts associated with the decommissioning of the mine include the following:

- Decreased demand on existing infrastructure

#### Decreased Demand on Existing Infrastructure

<b>Impact:</b> Closure of the mine will result in a decreased frequency of heavy vehicles utilising the S171 road to access the mine.		
	<b>Before Mitigation</b>	<b>After Enhancement</b>
<b>Magnitude</b>	Low	Low
<b>Duration</b>	Permanent	Permanent
<b>Extent</b>	Local	Local
<b>Frequency</b>	No impact	No impact
<b>Probability</b>	High probability	High probability
<b>Significance Rating</b>	Low (+)	Low (+)

<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No.	No.
<b>Enhancement opportunity?</b>	Yes	N/A
<b>Enhancement measures:</b>	Explained below.	N/A
<b>Cumulative impacts:</b> None.		

#### **Recommended enhancement measures**

- As part of the closure of the mine, the Applicant must ensure all damages to the road, as a result of the mine, are repaired.

## **SECTION 7: KEY FINDINGS AND RECOMMENDATIONS**

### **7.1 INTRODUCTION**

The key findings and recommendations of the study are listed here and are based on:

1. A review of issues identified during the Basic Assessment Process.
2. A review of relevant key policy and planning documents.
3. Interviews with I&APs.
4. A review of relevant literature on social and economic impacts.
5. The experience of the authors with other SIA's which are relevant to the proposed project.

### **7.1 SUMMARY OF KEY FINDINGS**

#### **7.2 Policy and planning issues**

The key documents reviewed can be found under Section 2 "Policy and Planning Environment".

A "one-sentence" is provided below, to explain the main aims of the different Policy documents reviewed during the SEIA study:

- The National Development Plan (NDP) (2011) contains a plan aimed at eliminating poverty and reducing inequality by 2030 making this one of the guiding objectives of the NDP over the next 20 years.
- The Department of Mineral Resources Strategic Plan (DMRSP) (2014/19) was developed with the vision of a mining and minerals sector that is globally competitive, sustainable and meaningfully transformed.
- The Free State PSDF aims to address the key challenges facing the Free State of needing to implement a 'developmental state' while ensuring global obligations to social, economic and environmental sustainability are achieved.
- Within the Fezile District Municipality Integrated Development Plan (IDP) strategic planning guiding is provided, aiming to guide all the planning within the municipality.

- Within the Ngwathe Local Municipality (NLM) Integrated Development Plan (IDP) an overview of the current status of the municipality along with development strategies, objectives and planned programmes and projects is provided.
- The Spatial Development Framework (SDF) classifies the area of the municipality according to Standard Planning Categories (SPCs), which include Core Conservation Areas, Natural Buffer Areas, Agricultural Areas, Urban Related Areas, Industrial Areas and Surface Infrastructure.

Within the NDP and DMRSP job creation is noted as an important factor for future development. As shown by the Economic Impact Assessment Report (Appendix E), the proposed amendment will result in additional jobs, however negative impacts could result in a greater number of jobs being lost in other industries, should impacts not be effectively mitigated. Due to this, the proposed amendment is not supported by the NDP and DMRSP. If however, negative impacts can be effectively mitigated and effective LED is pursued, then the proposed amendment may possibly align with the above mentioned planning documents.

The Free State PSDF supports the proposed amendment with regards to the amendment extending the life of an existing mine. The mine however, is situated within a tourism corridor, as per the PSDF, where efficient tourism should be encouraged and environmentally-disruptive land-uses considered with caution. Should the Applicant continue to not strictly adhere to the mining plan, the tourism potential of the area will be negatively affected by dust, noise and road deterioration. Should the proposed amendment be approved and the mining process still does not adhere to the mining plan, it will further negatively impact the tourism potential of the area. Thus, if the amendment is approved and mining is carried out without adhering to the approved mining methods and EMPr, it would not be in line with the PSDF. If compliance with the mining plan is improved, nuisances could be mitigated to acceptable levels.

The Social and Labour Plan (SLP) was perceived by I&APs to have a weak LED component and they felt that not enough was done in order to include input from the local communities. Furthermore, I&APs felt the number of extra jobs created by the proposed amendment is not significant. This needs to be addressed by the Applicant, coordinated by Greenmined Environmental.

According to the Fezile Dabi District Municipality Integrated Development Plan (2017-2022), Ngwathe Local Municipality Integrated Development Plan (2018/19) and the Ngwathe Local Municipality Environmental Management Framework Status Quo Report (2013), agriculture, manufacturing and tourism are important industries for the area. BBSM is situated on land that has potential for both agricultural and tourism activities and the activities carried out are in line with the IDP. Again, if any activity compromises the potential of another activity in the area, it is not supported by the IDP. The mine has a definite Life of Mine, and can be rehabilitated to an acceptable standard. Therefore, if the mining takes place in an environmentally responsible manner, and can be returned to another use, after closure, it is in line with the IDP's objectives.

In summary, both the NDP and DMRSP both uphold job creation. While the mine will create additional employment, this is likely to be outweighed by knock-on negative economic impacts. The proposed amendment will likely to be profitable on a national scale, the benefits are unlikely to be experienced locally.

Mining, agriculture and tourism are noted as important factors for economic growth. The area concerned has potential for agricultural, mining and tourism activities. As the area is classified as a tourism corridor in the PSDF, any land uses compromising the area's tourism integrity would be in contradiction to the PSDF. Current mining activities already compromise the tourism potential of the surrounding area (see Appendix E). Any impacts caused by the amendment that may further affect the surrounding sense of place will affect current and future tourism initiatives.



The findings from the reviewed literature, the findings from the Public Consultation Process and the findings from Site Investigations concluded that from a socio-economic perspective, the proposed mining amendment is not supported, as it currently stands. Current mining activities already compromise the tourism potential of the surrounding area. As the area is classified as a tourism corridor, any impacts caused by the amendment that may further affect the surrounding sense of place will affect current and future tourism initiatives. It must however be noted that the sand mines are not the only source of dust and noise as agricultural activities also generate impacts, particularly with regards to dust.

Should the LED, provided by the Municipality, be approved by the DMR be approved as providing a meaningful contribution and not compromise the ability of the surrounding landscape to realise its tourism potential, the proposed amendment may be considered to align to planning documents.

Furthermore, mining operations would need to take place in a sustainable way, that leaves the land in suitable condition for either agricultural or tourism activities following closure of the mine.

Mitigation measures are discussed in depth in Sections 6 and 7, and include among others, strict adherence to working hours.

### **7.2.1 Construction Phase**

The primary socio-economic issues associated with the Construction Phase include:

#### **Potential Negative Impacts**

1. Possible increase in crime

#### **Possible Increase in Crime**

While unlikely, it is possible that the proposed amendment might lead to increased crime levels.

An influx of job seekers may occur, as knowledge of possible job opportunities spreads. Should there be a large influx of work seekers, those that are unsuccessful may turn to crime.

It is therefore recommended to guard against creating unrealistic expectations, and that a substantial effort is made towards the upliftment of local communities and addressing their identified needs. Furthermore it is recommended that the application process be conducted at the expected source of local employment, in order to avoid a potential influx of work seekers to the area immediately surrounding the mine.

### **7.2.2 Operational Phase**

The primary socio-economic issues associated with the operational phase include:

#### **Potential Negative Impacts**

1. Increased dust and noise levels
2. Dangerous conditions of the access road
3. Angered community

#### **Increases Dust and Noise Levels**

The addition of minerals that can be mined and on-site processing (crushing and screening) will definitely lead to increased dust and noise levels emanating from the mine. Cumulating dust and noise impacts, due two adjacent mines, will further increase the impact on the surrounding area.

High atmospheric dust levels, pose a health risk as well as a nuisance factor, causing dust in people's homes. Potential health risks associated with long term high levels of exposure to crystalline silica include silicosis, lung cancer, bronchitis as well as autoimmune diseases. No studies that speak specifically to the risk, were observed in the FBAR. As discussed in the Conclusion as Strategic

Environmental Impact Assessment is recommended to accurately determine and assess cumulative impacts.

- This aspect needs to be investigated and a health risk statement from an expert must be included in the FBAR.

Noise emanating from the mine can be heard a surprising distance away. High levels of uncharacteristic noise disturb the tranquillity and sense of place of the area. Although the noise levels are within acceptable level range according to the DMR prescriptions, the river environment may affect the traveling of noise impacts and the local residents alongside the river, experience this aspect as very disturbing to the tranquility of the environment. Efforts were made by the Contractor to silence the reverse hooters to a level that still fulfills the safety aspect and he is also adhering to approved working times. The latter aspect needs to be proved by the Contractor as the complaints still suggest early start-up times.

While noise impacts can easily be traced back to the mine, there are numerous activities which add to the general dust levels in the area, such as ploughing of agricultural fields. Furthermore, during the dry season, agricultural fields are bare and provide a substantial surface area for wind to whip up dust. The numerous sources of dust make it difficult to determine the exact impact posed by the proposed amendment.

The Vaal River creates an environment ideal for tourism and nature-based activities, both of which rely heavily on the area's sense of place remaining unaltered. Should the proposed amendment increase dust and noise levels, the area's sense of place will be negatively impacted upon. This will affect areas such as Vaal Oewer, local residents and other tourism related activities. Aspects of the area's economy which rely on the 'sense of place' may see a decline. According to Mr. Craig Richardson, if nuisance impacts resulting from the mine are high, the value of a potential multi-million Rand educational facility planned on his farm may be compromised.

#### **Dangerous Conditions of the Access Road**

Access to the mine is gained via the S171 Road. The age of the road coupled with the frequent heavy vehicle traffic has resulted in the road being in an unsafe state. The unsafe state of the road and heavy vehicles visiting the sand mine put local road users at risk.

- The state of the road is an issue that will need to be addressed by the Applicant and surrounding mine owners. Based on discussions, the neighboring Pure Source Sand Mine is responsible for the initial rehabilitation of the road. Following this the Applicant, along with surrounding mine owners, need create a forum responsible for the upkeep of the road

#### **Angered Community**

The surrounding community will become increasingly angered should the amendment be approved and their animosity towards the sand mine will increase. This is as a result of nuisance impacts and distrust of the sand mines. Furthermore, a great distrust towards the mines has been fostered among the people. This is largely due to previous inadequate public participation process and misunderstandings in the absence of very clear factual information.

#### **Water**

Concern was raised with regards to water. Water will not be used as part of the screening process and will only be used for dust suppression and drinking water on site. Thus, the proposed amendment will not result in excessive use of water. As the water will be extracted from boreholes, the Vaal River will not be affected. A General Authorisation (GA) was obtained from Department of Water and Sanitation for the use of the amount of water needed on-site. No public participation is required for the obtaining of a GA. Due to trust issues, as mentioned below, the public felt they were supposed to be informed as they are worried about all aspects of the natural environment. In the event of silence, many

misperceptions can evolve. We therefore recommend a total open-book approach from the mine's side, to inform the public as clearly and thoroughly and on a regular basis of all mining and associated activities that may impact on the public's well-being. This can build trust and coexistence in a harmonious manner. This will also avoid unnecessary public speculation that may lead to exaggeration of possible impacts.

#### **Potential Positive Impacts**

1. Job creation
2. Economic benefits for the Applicant

#### **Job Creation**

The proposed amendment will create an additional three direct job opportunities. The possibility of further temporary jobs exists should future tenders be awarded to the Contractor. If Due to the nature of the mining industry, these job opportunities will likely be filled by local males. Job opportunities will include drivers for mining vehicles and operators of the additional mining equipment. Labour will be locally sourced.

While the amendment will not result in a substantial number of new jobs being created, more are created than if the mine continued to operate as current. While these jobs will have a positive knock-on effects on the local economy of the area, the effects will be minor.

#### **Economic Benefits for the Applicant**

The Applicant would benefit economically through the sale of an additional mineral, namely aggregate. In order for these positive impacts to be more widely felt, it is recommended that as the Applicants profits increase so should their contribution to LED. The Applicant should also only use local resources, for example, obtain fuel locally, and spares from the Free State.

#### **7.2.3 Decommissioning Phase**

Upon reaching the end of its life the mine will naturally have to close down. As the amendment would cease with the closure of the mine, the closure of the mine was assessed as a whole. Due to this, impacts may appear greater than if just the ceasing of the amendment was assessed. The primary socio-economic issues associated with the decommissioning phase include:

#### **Potential Negative Impacts**

1. Potential loss of jobs

#### **Potential Loss of Jobs**

Upon closure of the mine those employed face possible job losses. Again, this will only result in three jobs been lost. Job losses will have negative knock-on effects on the local economy and could potentially lead to crime. This can be mitigated by the contractor absorbing those employed by the mine into the rest of their work force and using them on other sites or alternatively to empower them by training and equipping them for other jobs after cessation of the mine.

#### **Potential Positive Impacts**

1. Decreased dust and noise levels
2. Decreased traffic on the access road

#### **Decreased Dust and Noise Levels**

Decreased dust and noise levels are likely to be the greatest positive impact and will have several positive knock-on effects. With the mine closing, BMSM mining activities that once created dust and noise will cease operations. A decrease in nuisance impacts will likely lead to improved satisfaction with the living environment among surrounding residents, due to the area's sense of place improving. Tourism potential for the area is likely to improve and the land once mined could be used for a tourism

related development. It needs to be kept in mind that Barrage Bulk Sand mine is not the only source of dust and noise. Closure of the mine will thus only result in a reduction in noise and dust levels, as agricultural and surrounding mining activities will still cause dust and noise.

#### **Decreased Traffic on the Access Road**

The S171 Road will no longer be frequented by trucks using it to access BBSM. With fewer trucks using the road, traffic levels and safety on the road will improve. This will benefit surrounding residents and farmers who use the road and cross it with their livestock.

#### **7.2.4 Cumulative Impacts**

Two other sand mines, Sweet Sensations and Pure Source, are operating adjacent to BBSM. The impacts resulting from these two mines, as well as the dust resulting from agricultural activities cumulate impacts resulting from BBSM. The cumulative impacts from mining and agricultural activities is significantly high.

- A Strategic Environmental Impact Assessment is recommended in order to address the cumulative impacts as a result of the above mentioned activities.

#### **7.2.5 Assessment of No-Go option**

##### **Potential Positive Impacts**

The No-Go option would result in the mine continuing to operate as it is currently. No additional noise and dust will be created as a result of additional minerals being mined and no on-site processing. As there will be no additional noise and dust created, any potential negative impacts affecting the areas sense of place will not occur. Surrounding residents' perception of the living environment will not be further negatively affected, but will still be as is, a negative perception and negative impacts will continue as it is currently. It is recommended, that in the event of a No-Go, that the recommendations contained in this report, still need to be implemented.

##### **Potential Negative Impacts**

The additional mineral, namely aggregate, will not be able to be mined and its economic benefits will not be realised.

No new job opportunities will be created.

### **7.3 CONCLUSIONS AND RECOMMENDATIONS**

#### **Conclusions**

This SEIA has found the surrounding community to be extremely concerned with the proposed mining right amendment. The community, namely Vaal Oewer and residents surrounding the mines, are already faced with high levels of dust and uncharacteristic noise, largely as a result of the three mines in the area. Furthermore, a flawed process for the BBSM's initial MR has further angered the community and created distrust towards the mines. Distrust towards the mine has created a very difficult situation, even if the mine undertakes to implement and adhere to the mitigation measures proposed. This can be resolved by written commitments approved as part of the EMPR, regular auditing by and independent ECO and communication to the dissatisfied community.

- It is suggested that a forum should be established where issues can be discussed and attend to, on a quarterly basis or a frequency agreed upon by all parties.

On a negative note, Noise is expected to be the most significant impact. Furthermore, dust will also increase, albeit only a slight increase. While these impacts are well below limits, they cause nuisance impacts. Determining the contribution to general dust levels by BBSM is difficult, as there are numerous sources of dust in the area. Dust and noise levels are expected to increase should the

proposed amendment be approved, without strict mitigation measures being adhered to. High dust and uncharacteristic noise levels will negatively affect the tourism potential of the area and cause the local residents to be increasingly dissatisfied with the living environment.

The tourism industry in this area is significant with many tourism resorts and residences, including the settlement of Vaaloewer, having been built along the river banks. This area is very popular as a weekend retreat for residents of the large urban centres of Gauteng. Negative impacts resulting from the mine could potentially lead to job losses within the tourism industry. The insignificant change in the number of persons employed on the mine (see Appendix E) as a result of the authorisation of the mining amendment application, is unlikely to outweigh job losses to the tourism industry. Other negative impacts include the possible loss of the proposed school and STEM campus on Mr. Craig Richardson's farm. While the proposed amendment will create local employment opportunities the effect of this will be minimal. Furthermore, as the product will be sold regionally, and the technical services sourced regionally, there will be virtually no economic benefits from the mine for the local economy.

There has been much speculation with regards to whether or not current mining activities adhere to the existing EMPr. Issues raised include the prefab offices on the site, as in the EMPr only a 'caravan' is allowed. This needs to be addressed by the Applicant and needs to be approved by the DMR. Should it be difficult for the applicant to adhere to the EMPr they need to apply for a formal amendment, which has to go through a formal Public Participation Process, as is required by law. Specific areas that will need to be addressed and mitigated are the condition of the S171 Road and the dust and noise resulting from the mine.

### **Cumulative Impacts**

When one only considers BBSM, the potential increase in impacts, as a result of the proposed amendment, will not be significantly high. However, the cumulative effect of these impacts is significantly higher due to other surrounding mines and agricultural activities. The degree to which impacts are experienced will vary depending on where those experiencing them are situated. Those residing closest to the mine will experience impacts to a greater degree than those situated further away.

In the meeting held on the 27/11/2018 (see Appendix C), the cumulative effects of the mines on air quality was raised as an issue and needs to be addressed by the municipality in an Air Quality Management Programme. Furthermore, the increase in heavy vehicles utilising the S171 Road has resulted in dangerous conditions for surrounding road users.

The comments submitted by the Federation for a Sustainable Environment (FSE) (see Appendix B), requesting a Strategic Environmental Impact Assessment cannot be taken lightly and needs to be considered.

- Enviroworks recommend that the DMR plays the role to enforce a strategic EIA for all the mines in the area to assess the cumulative impacts on the area. This study should be funded according to the 'polluter pays' principle.
- With regards to air quality, it is further suggested that not only should passive information be used from existing sources, but pro-active modelling should be undertaken by professional Air Quality Specialist to do a forecast of what the levels of dust holds for the future. This would need to be conducted at a District Municipality level and form part of their Air Quality Management Plan. The same applies to noise.

### **Recommendations**

Greenmined Environmental have already put forward mitigation measures in order to reduce negative impacts and improve positive impacts. Mitigation measures recommended by Enviroworks must be

included in these mitigation measures. In conjunction with the mitigation measures listed in Section 6, Enviroworks recommend the following:

#### **Trust and Communication**

- The community have little faith that the Applicant will adhere to any new mitigation measures. Should the Applicant wish to continue the application process for the amendment to their mining right, they are advised to only do so if all mitigation measures are strictly followed.
- The mine should adopt a total open-door approach, to inform the public clearly, thoroughly and on a regular basis of all mining and associated activities that may impact on the public's well-being.
- The use of a complaints register where complaints can be immediately recorded and corrected. This must be passed on to the DMR and community forum.
- The formation of a Forum that facilitates communication between the mine and the community. We suggest they meet on a quarterly basis or any other frequency agreed upon by them, where the mine make available their audit reports and where the public can give input.
- The community needs to be consulted and included in planning processes.
- The mine needs to draw up a map that clearly indicates areas that will be mined and those that will not be. Trees that will not be removed should also be indicated on the map.
- Open, honest and regular communication between the mine and the I&AP's is needed in order to establish trust and co-existence of all parties involved. This communication structure needs to be provided for in the BAR.

#### **Dust**

- Upon approval of the amendment, the Contractor is to investigate spraying the entrance road, up to the point where the vehicles turn, with a dust-allaying agent. This will aid in reducing dust.
- The Contractor must impose a rule that clients may only load sand on their trucks if they are in possession of a tarpaulin to cover it.
- Internal dirt roads are to be regularly sprayed to reduce dust. During the dry windy months, August to October, dust suppression measures should be conducted more frequently. Hourly application of water to internal dirt roads is recommended.
- Concurrent rehabilitation of mining strips must take place.
- Once mining of a strip is completed the topsoil is to be replaced should be replaced as according to the rehabilitation plan.
- If an adequate amount of re-growth has not occurred on mined areas, following two growing seasons, the mined areas should be re-seeded and watered until rehabilitation has been sufficiently initiated.
- Dust monitoring should be conducted regularly to ensure dust levels are within acceptable levels.
- A specialist statement should be provided as to the health risks posed by dust to residents living near the mine.

#### **Noise**

- The sites selected for crushing activities should ideally have dense vegetation or trees surrounding them.
- Working hours are to be strictly adhered to. As stipulated in the Mine Works Programme working hours are from 7:30am to 4:00pm on weekdays. Preparation for the working day will take place between 7:30am and 8:00am. The mine may then only begin loading and selling sand from 8:00am.
- When required the mine will operate on Saturdays as well. When operating on a Saturday, working hours are from 7:30am to 4:00pm. Prior to a period of working on Saturdays is

expected, the mine should notify surrounding residents of the expected duration of Saturday work.

- The mine will not operate on Sundays.
- All machinery to be fitted with silencers.
- Reverse beepers on all vehicles are to be replaced with white-noise reverse beepers or equivalent.
- Workers on site are to conduct themselves in an orderly manner on site.
- No loud music permitted on site.

#### **Visual**

- In order to screen mining activities vegetation situated along the edge of the S171 road, running through the property, should be maintained. Vegetation should be planted in sections where gaps occur.
- Machinery, such as the crusher, should be adequately screened so as not to be visible from the road.

#### **Condition of the S171 Road**

- The state of the road is an issue that will need to be addressed by the Applicant and surrounding mine owners. Based on discussions, the neighboring Pure Source mine is responsible for the initial rehabilitation of the road. Following this the Applicant, along with surrounding mine owners, need create a forum responsible for the upkeep of the road
- The Applicant, along with relevant authorities, should ensure that speed limits are put in place and enforced. Adequate signage needs to be put in place.
- Crossing points should be put in place for farmers crossing the road with livestock.

#### **Local Economic Development**

- LED initiatives, provided by the municipality, need to be looked at as a means of off-setting negative mine impacts. This must be actively pursued and included in the SLP. It is suggested that the mine consult the surrounding community in order to ascertain their needs and address these in LED initiatives.
- Upon the closure of Barrage Bulk Sand mine, where possible, the Applicant should integrate those employed by the mine into the workforce of other projects operated by the Applicant.

#### **Equipment**

- Any equipment on site that does not appear in the current EMPr should be removed. Any equipment required by the Applicant, that is not included within the existing MR, should be applied for.

#### **Rezoning**

- Re-zoning is an issue that will need to be resolved between the Applicant and municipality. The Applicant is currently underway with this process. The DMR needs to take cognisance of this when considering the application.

### **7.4 IMPACT STATEMENT**

The findings from the SEIA indicate that the socio-economic benefits associated with the proposed amendment will not out-weigh the negative impacts. Numerous negative impacts as a result of the sand mines in the area bother the surrounding community and the proposed amendment will compound this. While the amendment will result in some wider economic benefits, the local economy will see few of these benefits. Furthermore, the area's tourism sector faces will be impacted upon significantly.

Negative impacts associated with the proposed amendment can be reduced to acceptable levels only if stringent mitigation measures are applied and these measures strictly adhered to.

It is thus concluded that the proposed amendment, while providing jobs and small-scale economic benefits, will lead to great discontent among the local community and negatively affect the tourism potential of the area.

At this stage, with the information at hand, it is not possible for Enviroworks and CES to support the approval of the amendment from a socio-economic point of view, unless mitigation measures as proposed are implemented, adhered to and are strictly enforced.

The proposed amendment may be acceptable from a socio-economic impact point of view should the community approve mitigation measures and the Applicant ensure that these mitigation measures be strictly adhered to. Mitigation measures as provided in this document are to be incorporated in the FBAR conducted by Greenmined Environmental.



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