

TJA NALEDI BEAFASE INVESTMENT HOLDINGS (PTY) LTD

BARRAGE BULK SAND MINE

MINING OF SAND AND AGGREGATE ON PORTION 4 OF THE FARM WOODLANDS 407,
NGWATHE LOCAL MUNICIPALITY, FREE STATE PROVINCE

FINAL BASIC ASSESSMENT AMENDMENT REPORT



MARCH 2019

REFERENCE NUMBER: FS 30/5/1/1/2/10020MR
FS 30/5/1/1/2/10020EM

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EXECUTIVE SUMMARY

Tja Naledi Beafase Investment Holdings (Pty) Ltd currently holds a Mining Right and approved Environmental Management Programme (EMPR) over portion 4 of the farm Woodlands 407 (437.8330ha), which falls in the Ngwanthe Local Municipality in the Fezile Dabi Magisterial District, Free State Province. The project site falls within the quarter degree square 2627DC. Tja Naledi – Barrage Bulk Sand Mine, intends to apply for a Mining Right amendment, to include gravel into the mining right, and to amend the EMPR to include processing.

The farm Woodlands 407 is situated approximately 3.98km southwest of Vaal Oewer, 22.26km north-east of Parys, 21.6km east of Sasolburg, Free State Province. The area is currently being mined by SPH Kundalila (contractor), under the old mining right (FS30/5/1/2/2/10020MR). The mining method to be used on Barrage Bulk Sand Mine will be strip mining. Mining will take place via a contractor who will excavate the material, load and haul the material to the processing plant. From the plant, the material will be loaded via front-end loader directly onto client's trucks. The material will be mined in strips. The maximum depth of the excavations will be 10 meters in some areas. Aggregate will be crushed and screened before loaded onto client's trucks to remove any debris' contained in the aggregate. All activities will be contained within the boundaries of the site. Alluvial diamonds were included into the application previously, but it was decided by Tja Naledi to exclude the diamonds from the Mining Right amendment application, due to the comments that was received from the I&APS during the public participation process.

The proposed mining area is approximately 437.8330ha is extent and the applicant, Tja Naledi – Barrage Bulk Sand Mine, intends to win material from the area for at least 10 years. Silica Sand and Gravel (aggregate) to be removed from the mine will be used for building material in the vicinity. The proposed mine will therefore contribute to the building industry in and around Parys, Vanderbijlpark and Sasolburg area.

The mining activities will consist out of the following:

- Stripping and stockpiling of topsoil;
- Excavating;
- Crushing;
- Screening;
- Stockpiling and transporting;
- Sloping and landscaping upon closure of the site; and
- Replacing the topsoil and vegetation the disturbed area.

The mining site will contain the following:

- Excavating Equipment;
- Earthmoving Equipment;
- Mobile Crushing and Screening Plants;
- Temporary Offices;
- Weigh Bridge; and
- Storage Yard for storing of equipment.

A generator will be used to power the infrastructure on site until an Eskom connection can be secured. Water from the two boreholes on site (registered via the landowner) will be used for dust suppression and drinking water on site. See the requested map attached as Appendix B.

Neighbouring property activities includes the activities below:

- ✦ Northern Neighbour – Low density property development in the North West Province and on the banks of the Vaal river;
- ✦ North and North west neighbours – Sand mine and game farm owned by Goose Bay Developments (Pure Source Minerals);
- ✦ Southern Neighbour – Mixed farming;
- ✦ North-Eastern Neighbour – Mr. Craig Richardson, Planned school development and Tahiti Estates;
- ✦ Eastern Neighbour – Mixed farming by Mr. Lawrence Sher; and
- ✦ Vaal Eden- Barrage road runs to in an East-West direction through the property.

Positive Impacts:

- The mining site offers the mineral sought after;
- The proposed footprint area was previously used for mining therefore very little indigenous vegetation needs to be disturbed in order to establish the mining area;
- The site is located within neighbouring sand mines, and will minimally affect the community with regards to dust and noise;
- The mineral to be mined is already in sand form and will not need to be blasted in order to loosen the material;
- The mining area can be reached by an existing farm access road that connects to Vaal Eden-Barrage road. No new road infrastructure need to be constructed;
- Due to the small size of the activity and the remote location of the mining area the potential impacts on the surrounding environment, associated with mining is deemed to be of low significance; and
- No residual waste as a result of the mining activity will be produced that needs to be treated on site. Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site (Parys). The amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental leakage. Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site.

Negative Impacts:

- Due to the remote location of the mining area, very little negative impacts on the community could be identified that were deemed to be of significant importance. The dust and noise impacts that may emanate from the mining area during the operational phase could have a negative impact on the surrounding community if the mitigation measures proposed in this document is not implemented and managed on-site;
- Road integrity and bridge integrity might be affected if no upkeep is in place; and

- Negative impacts with regard to the environment include potential contamination of the area due to spillage of hydrocarbon products.

The BA process is being carried out in accordance with the NEMA 2014 EIA Regulations (as amended). Each of the specialists undertook a detailed BA assessment during their investigations. Potential impacts identified during the Basic Assessment was assessed by the specialists for each feasible development alternative and for each phase of the project. The BA and specialist studies have provided input into the EMPR which has provided the necessary action plans and management measures to mitigate the identified impacts.

Public Participation Process

The Public Participation Process (PPP) for the proposed project was undertaken in accordance with the requirements of the MPRDA, and NEMA in line with the principles of Integrated Environmental Management (IEM). IEM implies an open and transparent participatory process, whereby stakeholders and other Interested and Affected Parties (I&APs) are afforded an opportunity to comment on the project.

The PPP has provided stakeholders with information about the proposed project, and several opportunities to comment throughout the BAR/EMP process. This ensured public involvement at each key step in the process and allow for comments, concerns, suggestions, and objections to the proposed project to be included in each of the submissions to the relevant Government Authorities.

I&APs were able to register during the 30-day commenting and registration period that ended on the 9th of October 2017. Thereafter the Draft Basic Assessment Report was submitted for public review for another 30-day commenting period, ending 20 November 2017.

DMR requested, on the 11th of April 2018, that the Vaaloewer Ratepayers Association be consulted regarding the Section 102 application. The outcome of this consultation is described in detail below. The Vaaloewer Rate Payers Association meeting was held on the 21st of April 2018 at Stonewall Café in the Vaal-Oewer.

During the 2014 notification period, neighbours were personally visited to inform them of the proposed project and they were given consultation letter (Please refer to Appendix E). A Background Information Document (BID), for the project summary, was given to the neighbours highlighting the possible impacts from the proposed project and inform them that the EIA and EMPR is available at the Parys Library for perusal. A site notice was placed at the entrance of the farm and an advert in the Parys Gazette to inform the general public to view the EIA/EMPR and to invite comment or to be registered as and I&AP.

On-site notices were placed at the site entrance on the Vaal Eden – Barrage road and in Parys at the local public municipality. The project was also advertised in the Parys Gazette on 7 September 2017. The stakeholders and I&AP's was notified of the availability of the Draft Basic Assessment Report (DBAR) for their perusal. A 30 days commenting period was allowed for the perusal of the document that ended on the 20th of November 2017. Comments received on the document was added to the Final Basic Assessment Report (FBAR) for DMR to review. See attached as Appendix E proof that the stakeholders and I&AP's were contacted.

DMR requested, on the 11th of April, that the Vaaloewer Ratepayers Association be consulted regarding the Section 102 application. The outcome of this consultation is described in detail below. Please also refer to Appendix E for the DMR request letter as well as the meeting minutes that was taken during the meeting that was held between Vaaloewer Ratepayers Association, SPH / Tja Naledi and Greenmined Environmental.

DMR requested, on the 7th of August 2018 that the I&AP's in the Vaal Eden including residents of the Vaaloewer Informal Settlement be consulted regarding the Section 102 application. A public Participation meeting was held at the Parys Town Hall, in Parys at 9:00 am on the 27th of October 2018. The outcome of this consultation is described in detail below. Please also refer to **Error! Reference source not found.** for the DMR request letter as well as the meeting minutes that was taken during the meeting that was held between the resident of Vaal Eden/Vaaloewer Informal Settlement and SPH / Tja Naledi and Greenmined Environmental.

On-site notices were again placed at the site entrance on the Vaal Eden – Barrage road, Vaaloewer town, Vaaloewer Informal Settlement, Lindequesdrift shop and in Parys at the local public municipality. The project was advertised in the Parys Gazette on 19 September 2018 and in the Vaalweekblad on the 20th of September 2018. The stakeholders and I&AP's was notified of the availability of the Draft Basic Assessment Report (DBAR) for their perusal. A 30 days commenting period was allowed for the perusal of the document that ended on the 27 October 2018. Comments received on the document was added to the Final Basic Assessment Report (FBAR) for DMR to review. See attached as Appendix E proof that the stakeholders and I&AP's were contacted.

A public participation meeting was held on the 27th October 2018 where the project was explained to all I&AP'S and whereby the I&AP'S was given an opportunity to provide their comments and list all their concerns and comments.

Further to the public participation meeting held on the 27th of October 2018, a Socio-Economical Assessment was conducted from November 2018 – January 2019. Individual meetings were held with major role-players of the communities. The outcome of this assessment is summarised in Part H, IV) Socio Economic Assessment.

Conclusion

The first phase of a Basic Assessment is the Draft Basic Assessment (DBAR) Phase, which has been conducted during October 2017. Specialists were appointed to undertake assessments to describe the baseline receiving environment and potential impacts that may result if the proposed mining activities take place. Potential impacts identified during the DBAR was assessed by the specialists for each development alternative and for each phase of the project. A BAR, including an EMPR, was compiled and presented for public comment as the next step of the BA process.

ABBREVIATIONS

BBSM	Barrage Bulk Sand Mine
BA	Basic Assessment
BID	Background Information Document
DBAR	Draft Basic Assessment Report
DEAT	Department of Environment, Agriculture and Tourism
DMR	Department of Mineral and Resources
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPR	Environmental Management Programme
FBAR	Final Basic Assessment Report
FS	Free State Province
GN	Government Notice
GNR	Government Notice Regulation
HIA	Heritage Impact Assessment
I&AP's	Interested and Affected Parties
IWULA/IWMMP	Integrated Water Use Licence Application / Integrated Waste Water Management Plan
LED	Local Economic Development
LSU	Large Stock Unit
NEMA	National Environmental Management Act, 1998
NLM	Ngwathe Local Municipality
MHSA	Mine Health and Safety Act
MPRDA	Minerals and Petroleum Resources Development Act, 2002
MR	Mining Right
PPP	Public Participation Process
PPE	Personal Protective Equipment
Ptn	Portion
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SEIA	Socio-Economic Impact Assessment
SHE	Safety, Health and Environmental
SLP	Social and Labour Plan
SOM	Soil Organic Matter
Tja Naledi	Tja Naledi Beafase Investment Holdings (Pty) Ltd
WMA	Water Management Area

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BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT: *Tja Naledi Beafase Investment Holdings (Pty) Ltd*
TEL NO: *011 606 3116*
FAX NO: *011 608 2056*
POSTAL ADDRESS: *PO Box 11, Modderfontein, 1654*

FILE REFERENCE NUMBER SAMRAD: *FS 30/5/1/1/2/10020 MR*

I. Important Notice

In terms of the Mineral and Petroleum Resources Development Act (Act 29 of 2002) as amended), the Minister must grant a prospecting or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

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

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

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

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

2. Objective of the Basic Assessment Process

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

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives,
- (d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:
 - (i) The nature, signification, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) The degree to which these impacts –
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be managed, avoided or mitigated;
- (e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to –
 - (i) identify and motivate a preferred site, activity and technology alternative;
 - (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
 - (iii) identify residual risks that need to be managed and monitored.

PART A: SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

3. Contact Person and correspondence address

a) Details of

i) Details of the EAP

Name of the Practitioner: Greenmined Environmental
Yolandie Coetzee
Tel No.: 011 966 4390 / 082 734 5113
Fax No.: 086 546 0579
E-mail address: yolandie.c@greenmined.co.za

ii) Expertise of the EAP.

(1) The qualifications of the EAP

(with evidence).

Mrs. Yolandie Coetzee has a B.Sc. Degree in Microbiology and Biochemistry and an Honours Degree in Environmental Sciences. Please find full CV attached in Appendix I.

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

(In carrying out the Environmental Impact Assessment Procedure)

Yolandie Coetzee is an Environmental Consultant with 9 years' experience in the environmental sector. She specialized the last 5 years in the rehabilitation of mines where she conducted the conceptual rehabilitation and management designs and the closure plans and programs. She has also been involved in a number of other environmental projects including railway sidings, filling stations, abattoir's, logistics hub and mining sites where she compiled environmental management plans, environmental impact assessments, environmental audits, due diligences, IWULA's / IWWMP's and alien invasive encroachment programs. She studied at the University of Potchefstroom where she has successfully completed her undergraduate degree in microbiology and biochemistry and her Honours degree in environmental sciences. See a list of past project attached as Appendix I.

b) Location of the overall Activity.

Farm Name:	Portion 04 of the farm Woodlands 407, Ngwanthe Local Municipality, Free State Province.
Application area (Ha)	437.8330ha
Magisterial district:	Fezile Dabi District Municipality / Parys Magisterial District
Distance and direction from the nearest town	3.98 km southwest of Vaal Oewer, 22.26km northeast of Parys, 21.6km east of Sasolburg, Free State Province.
21 digit Surveyor General Code for each farm portion	F0250000000040700004

c) Locality map

(show nearest town, scale not smaller than 1:250000).

The requested map is attached as Appendix A.

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

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

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- ✦ North and North west neighbours – sand mine and game farm owned by Goose Bay Developments (Pure Source Minerals);
- ✦ Southern Neighbour – Mixed farming;
- ✦ North-Eastern Neighbour – Mr. Craig Richardson
- ✦ Eastern Neighbour – Mixed farming by Mr. Lawrence Sher; and
- ✦ Vaal Eden- Barrage road runs to in an East-West direction through the property.

i) Listed and specified activities

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE (GNR 324, GNR 325, GNR 326 OR GNR 327)
(E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc E.g. for mining – excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	Ha or m ²	Mark with an X where applicable or affected	
Amendment of EMPR – Include Processing of the minerals (Sand and Gravel)	437.8330ha	X	<u>GNR 326 Amendments to the Environmental Impact Assessment Regulations of 2017</u> <i>Part 2: Amendments where a change in scope occurs</i>

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE (GNR 324, GNR 325, GNR 326 OR GNR 327)
			<p>Amendments to be applied for in terms of Part 2</p> <p>31. <i>An environmental authorisation may be amended by following the process prescribed in this Part if the amendment will result in a change to the scope of a valid environmental authorisation where such change will result in an increased level or change in the nature of impact where such level or change in nature of impact was not—</i></p> <ul style="list-style-type: none"> <i>(a) assessed and included in the initial application for environmental authorisation; or</i> <i>(b) taken into consideration in the initial environmental authorisation;</i> <p><i>and the change does not, on its own, constitute a listed or specified activity.</i></p> <p>Process and consideration of application for amendment</p> <p>32. <i>(1) The applicant must within 90 days of receipt by the competent authority of the application made in terms of regulation 31, submit to the competent authority—</i></p> <ul style="list-style-type: none"> <i>(a) a report, reflecting—</i> <ul style="list-style-type: none"> <i>(i) an assessment of all impacts related to the proposed change;</i> <i>(ii) advantages and disadvantages associated with the proposed change; and</i> <i>(iii) measures to ensure avoidance, management and mitigation of impacts associated with such proposed change; and</i> <i>(iv) any changes to the EMPR;</i> <i>which report—</i> <ul style="list-style-type: none"> <i>(aa) had been subjected to a public participation process, which had been agreed to by the competent authority, and which was appropriate to bring the proposed change to the attention of potential and registered interested and affected parties, including organs of state, which have jurisdiction in respect of any aspect of the relevant activity, and the competent authority, and</i> <i>(bb) reflects the incorporation of comments received, including any comments of the competent authority; or</i> <i>(b) a notification in writing that the report will be submitted within 140 days of receipt of the application by the competent authority, as significant changes have been made or significant new information has been added to</i>

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE (GNR 324, GNR 325, GNR 326 OR GNR 327)
			<p><i>the report, which changes or information was not contained in the report consulted on during the initial public participation process contemplated in subregulation (1)(a) and that the revised report will be subjected to another public participation process of at least 30 days.</i></p> <p><i>(2) In the event where subregulation (1)(b) applies, the report, which reflects the incorporation of comments received, including any comments of the competent authority, must be submitted to the competent authority within 140 days of receipt of the application by the competent authority.</i></p> <p>Decision on amendment application</p> <p>33. (1) <i>The competent authority must within 107 days of receipt of the report contemplated in regulation 32, in writing, decide the application;</i></p> <p>(2) <i>On having reached a decision, the competent authority must comply with regulation 4(1), after which the holder applicant must comply with regulation 4(2).</i></p>

ii) Description of the activities to be undertaken

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

The farm Woodlands 407 is situated approximately 3.98km southwest of Vaal Oewer, 22.26km north-east of Parys, 21.6km east of Sasolburg, Free State Province. The area is currently being mined by SPH Kundalila (contractor), under the old mining right (FS30/5/1/2/2/10020MR). The mining method to be used on Barrage Bulk Sand Mine will be strip mining.

Mining will take place via a contractor who will excavate the material, load and haul the material to the processing plant. From the plant, the material will be loaded via front-end loader directly onto client's trucks. The material will be mined in strips. The maximum depth of the excavations will be 10 meters in some areas. All activities will be contained within the boundaries of the site.

The GPS coordinates of the proposed mining area are as follow:

- 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

An amendment of the Mining Right Application in terms of Section 102 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) has been submitted to the Department of Mineral Resource, to include gravel and processing into the Mining Right and EMPr.

The proposed project triggers the following listed activity in terms of the National Environmental Management Act, 1998 (Act No.107 of 1998) [NEMA] and the Environmental Impact Assessment (EIA) Regulations (as amended by GNR 326 effective 7 April 2017), and therefore requires a Basic Assessment process to obtain environmental authorisation:

GNR 326 Amendments to the Environmental Impact Assessment Regulations of 2014

Part 2: Amendments where a change in scope occurs

Amendments to be applied for in terms of Part 2

31. *An environmental authorisation may be amended by following the process prescribed in this Part if the amendment will result in a change to the scope of a valid environmental authorisation where such change will result in an increased level or change in the nature of impact where such level or change in nature of impact was not—*

- (a) assessed and included in the initial application for environmental authorisation; or*
- (b) taken into consideration in the initial environmental authorisation;*

and the change does not, on its own, constitute a listed or specified activity.

Process and consideration of application for amendment

32. (1) *The applicant must within 90 days of receipt by the competent authority of the application made in terms of regulation 31, submit to the competent authority—*

- (a) a report, reflecting—*
 - (i) an assessment of all impacts related to the proposed change;*
 - (ii) advantages and disadvantages associated with the proposed change; and*
 - (iii) measures to ensure avoidance, management and mitigation of impacts associated with such proposed change; and*
 - (iv) any changes to the EMPr;*

which report—

- (aa) had been subjected to a public participation process, which had been agreed to by the competent authority, and which was appropriate to bring the proposed change to the attention of potential and registered interested and affected parties, including organs of state, which have jurisdiction in respect of any aspect of the relevant activity, and the competent authority, and*

- (bb) reflects the incorporation of comments received, including any comments of the competent authority; or*

- (b) a notification in writing that the report will be submitted within 140 days of receipt of the application by the competent authority, as significant changes have been made or significant new information has been added to the report, which changes or information was not contained in the report consulted on during the initial public participation process contemplated in subregulation (1)(a) and that the revised report will be subjected to another public participation process of at least 30 days.
- (2) In the event where subregulation (1)(b) applies, the report, which reflects the incorporation of comments received, including any comments of the competent authority, must be submitted to the competent authority within 140 days of receipt of the application by the competent authority.

Decision on amendment application

33. (1) The competent authority must within 107 days of receipt of the report contemplated in regulation 32, in writing, decide the application;
- (2) On having reached a decision, the competent authority must comply with regulation 4(1), after which the holder applicant must comply with regulation 4(2).

Site Establishment / Construction phase:

During the site establishment phase the applicant have to fence the footprint area and clear the topsoil from the applied area. This has already been conducted, as SPH Kundalila is already mining in the area under the old mining right.

Previous mined out areas on the farm does not reflect on the Section 102 amendment application. The previous mining on the farm was mined before Tja Naledi applied for the current mining right. Rehabilitation for the current mining right has occurred in the first active cells that was opened in 2017. Rollover mining is be conducted in the mining area once the area has been mined (Please refer to Appendix D for the Rehabilitation Plan and Rehabilitation proof of concurrent rehabilitation).

Upon stripping, the topsoil will be stockpiled along the boundaries of the mining area to be used during the rehabilitation phase. Topsoil stripping will be restricted to the areas to be used for mineral stockpiling and mining. The complete A-horizon (topsoil – the top 100 – 200 mm of soil, which is generally darker coloured due to high organic matter content) will be removed. If it is unclear where the topsoil layer ends the top 300 mm of soil has to be stripped.

The topsoil will be stockpiled in the form of a berm alongside the boundary of the mining area where it will not be driven over, contaminated, flooded or moved during the operational phase. The topsoil berm will measure a maximum of 1.5 m high and must be planted with indigenous grass species if vegetation does not naturally establish within 6 months of stockpiling to prevent soil erosion and to discourage growth of weeds. The roots of the grass will also improve the viability of the soil for rehabilitation purposes.

The mine area does not need any specific or extra work to prepare the area for the recovery of sand.

The mining activities will consist out of the following:

- ✦ Stripping and stockpiling of topsoil;
- ✦ Excavating;
- ✦ Mobile Crushing and Screening Plants;
- ✦ Stockpiling and transporting;
- ✦ Sloping and landscaping upon closure of the site; and
- ✦ Replacing the topsoil and vegetation the disturbed area.

The mining site will contain the following:

- ✦ Excavating Equipment;
- ✦ Earthmoving Equipment;
- ✦ Mobile Crushing and Screening Plants;
- ✦ Temporary Offices;
- ✦ Weigh Bridge; and
- ✦ Storage Yard for storing of equipment.

Operational phase:

Active cells will be marked out and topsoil removed and stored for later use in rehabilitation. Two active cells will be open at any given time. Rehabilitation will be conducted concurrently and the open cell will be kept as small as practically possible (0.5ha each).

The mining method to be used on Barrage Bulk Sand Mine will be strip mining. Mining will take place via a contractor who will excavate the material, load and haul the material to the processing plant.

From the plant, the material will be loaded via front-end loader directly onto client's trucks. The material will be mined in strips. The maximum depth of the excavations will be 10 meters in some areas. Aggregate will be screened before loaded onto client's trucks to remove any debris' contained in the aggregate. All activities will be contained within the boundaries of the site.

The proposed mining area is approximately 437.8330ha is extent and the applicant, Tja Naledi – Barrage Bulk Sand Mine, intends to win material from the area for at least 10 years. Silica Sand and Gravel (aggregate) to be removed from the mine will be used for building material in the vicinity. The proposed mine will therefore contribute to the building industry in and around Parys, Vanderbijlpark and Sasolburg area.

A chemical toilet will be established on site to be used by the employees. The existing farm and provincial roads currently used to gain access to the property will be used to transport the aggregate from the mining site to the client. Haul trucks will travel along the existing farm road up to the Vaal Eden road.



Figure 1: Satellite view indicating the proposed access road to the mining site

Decommissioning phase:

The primary objective is to obtain a closure certificate at the end of the life of the mine at minimum cost and in as short a time period as possible whilst still complying with the requirements of the Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

The closure objectives for the mining area is to be made safe, and the remainder of the site to be returned to agricultural use. The perimeter of the site will be subject to top-dressed with topsoil and vegetated with an appropriate grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil.

Control of weeds and alien invasive plant species is an important aspect after topsoil replacement and seeding (if applicable) has been done in an area.

Site management will implement an alien invasive plant management plan during the 12 months' aftercare period to address germination of problem plants in the area (Please refer to Appendix K).

To realise this, the following objectives must be achieved:

- Remove all temporary infrastructure and waste from the site as per the requirements of this EMPr and of the Provincial Department of Mineral Regulation;
- Demolish / rehabilitate all roads with no post - mining use potential;
- Ensure that no threat to surface and underground water quality remains;

- Ensure that all permanent changes in topography are sustainable and do not cause erosion or the damming up of runoff;
- Shape and contour all disturbed areas in compliance with the EMPR;
- Make safe any dangerous excavations or subsidence on the surface;
- Rehabilitate all disturbed areas in compliance with the EMPR and of the Provincial Department of Mineral Regulation; and
- Ensure that all rehabilitated areas are safe, stable and self-sustaining in terms of vegetation.

The decommissioning activities will consist of the following:

- Landscaping during rehabilitation;
- Replacing of topsoil; and
- Implementation of an alien invader plant management plan.

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
(a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)		(E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
<p>Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996).</p> <p>The constitution of any country is the supreme law of that country. The Bill of Rights in Chapter 2 Section 24 of the Constitution of South Africa Act, 1996 (Act No. 108 of 1996) makes provisions for environmental issues and declares that:</p> <p><i>“Everyone has the right -</i></p> <ul style="list-style-type: none"> <i>(a) To an environment that is not harmful to their health or well-being.</i> <i>(b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:</i> <ul style="list-style-type: none"> <i>i. Prevent pollution and ecological degradation.</i> <i>ii. Promote conservation.</i> <i>iii. Secure ecologically sustainable development and use of natural resources</i> <i>iv. while promoting justifiable economic and social development”.</i> 	Throughout the BA process	BA is conducted to fulfil the requirements of the Bill of Rights.
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) - Section 102. Department of Mineral Resources Strategic Plan 2014/2019	Amendment of a Mining Right Ref No: FS 30/5/1/1/2/10020MR	Regulates the mining of minerals. Act No. 28 of 2002 Section 102
National Environmental Management Act, 1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2017	Application for environmental authorisation Ref No: FS 30/5/1/1/2/10020MR	GNR 326 Activity 31
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) and amendments	Biophysical Environment	Weed / Alien vegetation clearing. Protected species may occur on site. Specialist Biodiversity/Ecological impact studies have been undertaken in support of this application.
Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act No. 36 of 1947).	Biophysical Environment	Control and management of chemicals used on farms.
Mine Health and Safety Act, 1996 (Act No. 29 of 1996)	The mitigation measures proposed for the site includes specifications of the MHSA.	The operational phase of the site will trigger the MHSA
National Water Act, 1998 (Act No. 36 of 1998)	All water related	In terms of the National Water Act, an GA application has been made and was granted

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
	aspects.	on 24/07/2018 for the taking of water from a borehole for industrial purposes.
National Heritage Resources Act No. 25 of 1999	Cultural and Heritage Environment	No aspects of the project could be identified that triggers the NHRA. Specialist Heritage and Palaeontological impact studies have been undertaken in support of this application. A Heritage Specialist was also consulted regarding the Vredefort Dome Proximity.
National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004).	Air Quality and Noise aspects.	No aspects of the project could be identified that triggers the NEM: AQUA.
National Environmental Management Waste Act, 2004 (Act 26 of 2014).	Waste management on site.	No aspects of the project could be identified that triggers the NEM: WA. SAWIS registration is not required as the mine produces less than 10 Cubes of waste per month.
Free State Nature Conservation Ordinance 8 of 1969	Biophysical Environment	Protected species could occur on site. No aspects on site could be identified that needs protection.
National Environmental Management: Protected Areas Act, 2003 (NEMPAA – Act 57 of 2003)	Protected Areas	No protected areas within the proposed mining area.
Ngwanthe Local Municipality Spatial Planning and Land Use Management By-law 2015	Description of the current land uses	The applicant will submit an application for temporary departure from the zoning provisions in terms of the Land Use Planning Act 3/2014 and the Ngwanthe Local Municipal Land Use Bylaws prior to commencement of the proposed activities. A lawyer's letter has been compiled by Weavind & Weavind Attorneys stating that no land rezoning is needed for this Section 102 application (Appendix L). The land rezoning issue is currently being resolved between the Applicant (Tja Naledi) and the Municipality. The applicant is currently underway with the process. The DMR needs to take am cognizance of this when considering the application.
Free State Town Planning and Land Related By-Laws		
Free State Provincial Spatial Development Framework 2014.		
Ngwanthe Local Municipality Integrated Development Plan		
Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970),		
Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)		
Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA)		

f) Need and desirability of the proposed activities.

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

The increase in building, construction and road maintenance projects in the vicinity of the property triggered the need of the applicant to trade with the available sand and aggregate. The proposed mining will also contribute to the diversification of activities on the property, extending it from agriculture to include small scale mining.

The proposed BBSM is likely to contribute to the socio-economic status quo in the form of increased income and other benefits that would cascade through the local, regional and national levels.

The proposed amendment will result in several needs being met. The mine will supply sand and gravel 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 (ENVIROWORKS, 2019).

Sand and gravel 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 sell the mineral mined on the property and thus increase their source of income from the property (ENVIROWORKS, 2019).

g) Motivation for the overall preferred site, activities and technology alternative.

The proposed site earmarked for the mining of the sand and aggregate will entail an area previously used for mining. The proposed site was identified as the preferred alternative due to the following reasons:

- The mining site offers the mineral sought after;
- The proposed footprint area was previously used for mining therefore very little indigenous vegetation needs to be disturbed in order to establish the mining area;
- The site is located within neighbouring sand mines, and will minimally affect the community with regards to dust and noise;
- The mineral to be mined is already in sand form and will not need to be blasted in order to loosen the material;
- The mining area can be reached by an existing farm access road that connects to Vaal Eden-Barrage road. No new road infrastructure need to be constructed;
- Due to the small size of the activity and the remote location of the mining area the potential impacts on the surrounding environment, associated with mining is deemed to be of low significance; and
- No residual waste as a result of the mining activity will be produced that needs to be treated on site. Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site (Parys). The amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental leakage. Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site.

h) Full description of the process followed to reach the proposed preferred alternatives within the site.

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

i) Details of The Development Footprint Alternatives Considered.

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

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

The land is currently under cultivated grazing and mixed farming. Two farm houses, a barn and outbuildings are currently present on site. These buildings will not be impacted by mining and are situated in the exclusion zones on the mining plan.

The applicant identified only 1 alternative site for the proposed mining activity namely:

1. **Site Alternative 1 (S1) (Preferred Alternative):** The Applicant, Tja Naledi – Barrage Bulk Sand Mine, currently holds a mining right, 437.8330ha, on Portion 04 of the farm Woodlands 407.



Figure 2: Satellite view showing the position of the Tja Naledi – Barrage Bulk Sand

The site was identified during the assessment phase of the environmental impact assessment (2014 assessment), by the applicant and project team, and was therefore selected as the **preferred alternative** due to the following:

- The mining site offers the mineral sought after;
- The proposed footprint area was previously used for mining therefore very little indigenous vegetation needs to be disturbed in order to establish the mining area;
- The site is located within neighbouring sand mines, and will minimally affect the community with regards to dust and noise;
- The mineral to be mined is already in sand form and will not need to be blasted in order to loosen the material;
- The mining area can be reached by an existing farm access road that connects to Vaal Eden-Barrage road. No new road infrastructure need to be constructed;
- Due to the small size of the activity and the remote location of the mining area the potential impacts on the surrounding environment, associated with mining is deemed to be of low significance; and

- No residual waste as a result of the mining activity will be produced that needs to be treated on site. Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site (Parys). The amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental leakage. Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site.

No other alternative sites needed to be investigated as this is an amendment of the current EMPr.

2. No-go Alternative:

The 'No Go' option for development was considered. However, this was adjudged to not be the best land-use option for the following reasons: The grazing value of the land is at present considered to be extremely low due to the high level of disturbance, resulting in the area being characterized by non-palatable grasses and low biomass.

The proposed rehabilitation of the area that includes:

- The preservation of the topsoil to cover disturbed areas;
- Implementation of measures to monitor the natural establishment of plants growth and to re-vegetate with representative seed mixes in the case of poor plant establishment;
- The proposed program to combat invader weeds on a regular base; and
- Will ensure that the land use will remain almost the same when mining operations cease.

The 'No Go' option for development was considered. However, this was adjudged to not be the best land-use option for the following reasons: The grazing value of the land is at present considered to be extremely low due to the high level of disturbance, resulting in the area being characterized by non-palatable grasses and low biomass.

The no-go alternative was not deemed to be the preferred alternative as:

- The applicant will not be able to supply in the demand for building material in the vicinity;
- The application, if approved, would allow the applicant to utilize the available silica sand and gravel as well as provide employment opportunities to local employees. Should the no-go alternative be followed these opportunities will be lost to the applicant, potential employees and clients; and
- The applicant will not be able to diversify the income of the property.

Not proceeding with the proposed operation will entail that a mineral which if mined will contribute towards the local and provincial social and economic structures of the area, will not be mined, and that this opportunity will be lost. It is important to note that as previously discussed, that execution of the mining operation will not leave the land unproductive, so that the proposed mining operation can be considered to be a sustainable land-use option for the area. If the mining project does not go ahead, the farm will be used for cultivating grazing and mixed farming. This is also the current use of the land in question.

ii) **Details of the Public Participation Process Followed**

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

The applicant submitted an application for environmental authorisation in terms of NEMA, 1998 and the EIA Regulations, 2014 to the Department of Mineral Resources (DMR) in November 2014. DMR granted the applicant permission to apply for the Environmental Impact Assessment process. Initial public participation was done in terms of this application and the below mentioned stakeholders, the landowner and I&AP's were notified of the proposed project. The mining right was granted with reference number: FS 30/5/1/2/2/10020 MR.

An application for a mining right amendment in terms of Section 102 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) [MPRDA] was submitted to the Department of Mineral Resources (DMR), to include gravel into the mining right.

The proposed project triggers the following listed activity in terms of the National Environmental Management Act, 1998 (Act No.107 of 1998) [NEMA] and the Environmental Impact Assessment (EIA) Regulations (as amended by GNR 326 effective 7 April 2017), and therefore requires a basic assessment process to obtain environmental authorisation for the addition of the crushing and screening plant to the EMPr. I&APs were able to register during the 30-day commenting and registration period that ended on the 9th of October 2017. Thereafter the Draft Basic Assessment Report was submitted for public review for another 30-day commenting period, ending 20 November 2017.

The 2017 DEA Public Participation Guideline in Terms of National Environmental Management Act, 1998 Environmental Impact Assessment Regulations States provide guidance for deciding on the required level of PPP.

The table below list three main categories with 16 different situations that might be applicable in an area with regards to an Environmental Authorisation. Please refer to Table 1 for the aspect that where followed during the PPP that was conducted for Barrage Bulk Sand Mine.

Table 1: PPP guideline table.

Scale of anticipated impacts:	Recommended Response		Comments:
	If "yes"	If "No"	
Are the impacts of the project likely to extend beyond the boundaries of the local municipality?	Formal Consultation with other affected municipalities should be carried out during the PPP. No need to have a formal consultation with other municipalities during PPP.	Minimum requirements for public participation in accordance to EIA	No. District municipalities has been contacted.
Are the impacts of the project likely to extend beyond the boundaries of the province?	Formal Consultation with other affected provinces should be carried out during the PPP. No need to have a formal consultation with other provinces during PPP.	Minimum requirements for public participation in accordance to EIA must be met.	No. Dust and Noise Impacts will be minimum as mitigation measures will be applied during the mining process. The trees on the boarder of the mining area, and border of the farm boundary also act as a screen. The mining area is located 700m form the river.
Is the project a greenfields development (a new development in a previously undisturbed area)?	Extensive consultation with RI&APs might be required before a decision is taken on the project to in order to gather more information, and to ensure that there is minimal impact on the environment.	Minimum requirements for public participation in accordance to EIA Regulations must be met.	No.
Does the area already suffer from socio-economic problems (e.g. job losses) or environmental problems (e.g. pollution), and is the project likely to exacerbate these?	Extensive consultation with RI&APs within the area should be undertaken, to gather more information on both the socioeconomic and environmental problems.	Minimum requirements for public participation in accordance to EIA Regulations must be met.	Yes. This area suffers from environmental problems such as dust pollution. Socio-Economic Impact Assessment will be conducted.
Is the project expected to have a wide variety of impacts (e.g. socio-economic and ecological)?	Thorough consultation needs to be conducted with RI&APs, in order to address variety of impacts	Minimum requirements for public participation in accordance to EIA Regulations must be met.	Yes. Socio-Economic Impact Assessment will be conducted.
Public and environmental sensitivity of the project:			
Public and environmental sensitivity of the project: Are there widespread public concerns about the potential negative impacts of the project?	Broader consultation with all RI&APs will need to be undertaken.	Minimum requirements for public participation in accordance to EIA Regulations must be met	Yes. Socio-Economic Impact Assessment will be conducted.
Is there a high degree of conflict among RI&APs?	There might need to be more consultation to ensure that there is consensus reached among RI&APs.	Minimum requirements for public participation in accordance to EIA Regulations must be met.	No.
Will the project impact on private land other than that of the applicant?	Consultation with the private land owner must be done, and all their concerns need to be addressed.	Minimum requirements for public participation in accordance to EIA Regulations must be me	No. Except dust and noise, mitigation measures are in place.
Does the project have the	Thorough consultation that	Minimum requirements for	No.

Scale of anticipated impacts:	Recommended Response		Comments:
	If "yes"	If "No"	
potential to create unrealistic expectations (e.g. that a new factory would create a large number of jobs)?	addresses the perceptions of unrealistic expectations needs to be carried out.	public participation in accordance to EIA Regulations must be met.	Please refer to SLP. No reference or insinuation is given for work opportunities.
Potentially affected parties:			
Has very little previous public participation taken place in the area?	More thorough public participation should take place within the area, to ensure that all potential and RI&APs participate. Minimum requirements for public participation in accordance to EIA Regulations must be met.	Minimum requirements for public participation in accordance to EIA Regulations must be met.	No. In depth participation has taken place in the area over the years by various companies. Minimum requirements are met.
Did previous public participation processes in the area result in conflict?	Additional consultation might be needed to ensure that issues of conflict are addressed effectively.	Minimum requirements for public participation in accordance to EIA regulations must be met.	No. Minimum requirements are met.
Are there existing organisational structures (e.g. local forums) that can represent I&APs?	Organizational structures might minimise conflict whilst maximising the participation.	Minimum requirements for public participation in accordance to EIA Regulations must be met.	Yes. Conflict arose from the organisational structures.
Is the area characterised by high social diversity (i.t.o. socioeconomic status, language or culture)?	Proper consultations that address language and cultural diversity should be promoted.	Minimum requirements for public participation in accordance to EIA Regulations must be met.	No. 3.5km from the Vaalower.
Were people in the area victims of unfair expropriations or relocation in the past?	PPP should be extensive and address any unfair practices that occurred in the past.	Minimum requirements for public participation in accordance to EIA Regulations must be met.	No
Is there a high level of unemployment in the area?	The PPP should ensure that there are no unrealistic expectations created due to the project. The consultation should ensure that any unrealistic expectations are adequately addressed before the project starts	Minimum requirements for public participation in accordance to EIA Regulations must be met.	35% unemployment rate. No. Please refer to SLP. No jobs will be created as a skilled work force in needed.
Do the RI&APs have special needs (e.g. a lack of skills to read or write, disability, etc)?	Consultation should include mechanisms that will ensure full participation by people with special needs.	Minimum requirements for public participation in accordance to EIA Regulations must be met. Minimum requirements for PP in accordance to the Act and must be met as well as best practices relating to PP	N/A as no jobs will be created.

DMR requested, on the 11th of April 2018, that the Vaaloewer Ratepayers Association (Protect the Vaal Committee) be consulted regarding the Section 102 application. A meeting was held with the committee on the 21st of April 2018 at the Stonewall café at 9:00Am in the Vaal -Oewer. The outcome of this consultation is described in detail below. Please also refer to Appendix E for the DMR request letter as well as the meeting minutes that was taken during the meeting that was held between Vaaloewer Ratepayers Association, SPH / Tja Naledi and Greenmined Environmental.

The following I&APs and stakeholders were contacted to obtain their comments:

Table 2: Stakeholders

Department	Contact
1. Department of Economic Small Business Development, Tourism and Environmental Affairs (DETEA)	Ms. Gasela P/A Mr Thamela
2. Department of Public Works and Infrastructure	Mr. Mwseoke P/A Ms Kekeletso
3. Department of Agriculture and Rural Development	Mr Mbana Peter Thabethe P/A Ms Mamphona
4. Department of Labor	Mr Nomfundo Douwjack Janine Janse v Rensburg
5. Department of Police, Roads and Transport	Mr S Msibi P/A Timbe Mr. J.P.W Maree
6. Department of Water Affairs & Sanitation	Mr TP Ntli
7. Department of Mineral Resources	Ms Reshoketswe Mphaphuli
8. Ngwathe Local Municipality	Mr Pule Tshekedi (Acting) PA
9. Ngwathe Local Municipality WARD 7	Councillor SM Gobidolo.
10. Emfuleni Local Municipality	Mr Dithebe Nkoane PA Nadia v Rooyen
11. Emfuleni Local Municipality Ward 25	Bhekumuzi Elliot Ntsele
12. Fezile Dabi District Municipality	Municipal Manager MS LM Molibeli
13. Sedibeng District Municipality	Busisiwe Modisakeng
14. Human Settlements	Head of Department Mr N Mokhesi
15. Department of Co-operative Governance and Traditional Affairs	Head of Department Mr MV Duma
16. Culture, sport and recreation	Head of Department Mr RS Malope
17. SANRAL Regional Offices Eastern Region	Me Judy Marx
18. Eskom	Officer Environmental Management Earl Craig Daniels Land and Rights Officer Phindi Rapudungoane
19. Transnet	Me. Nokukhanya Gabela
20. South African Heritage Resource Agency (Upload on system)	Kathryn Smuts

Table 3: Interested and Affected Parties 2017 PPP Process

PROPERTY DESCRIPTION		I&AP	DESIGNATION
FARM	PTN		
Grysbank and Woodlands 407		Jonathan van Aswegen	Surrounding landowner
Vaal-Eden		Abrie Hannekom	Vaaloewer Ratepayers Association / Protect the Vaal
Wes Vaal		Manie Greef	Surrounding landowner
Onbekend		Trevor van Heerden	Surrounding landowner
		Goose Bay Developments	Manager: Robert Schimpers
		Pure Source Minerals Mining Co (Pty) Ltd	Contact persons: Venessa Bosman
Vaaldraai		C.J Terblanche Mr. Lawrence Sher	
Woodlands 407		Mark van Wyk	Owner
Winners Point, Woodlands 407		Robert Schimpers	
Woodlands 407, Parys	Portion 4	Mr. PJ van Rensburg	Farm manager
		Mr. Ivan Rensburg	Farm manager
Welbeedgicht 282		P.T.N van Heerden	
Plaas - Damlaagte		Sampie van Rooyen	
Vaal-Eden		Gavin Aboud	Chairperson (Vaaloewer Ratepayers Association / Protect the Vaal)
Vaal-Eden		Renee de Jong Hartsliet	Vredefort Dome Tourism Association. FS Private Nature Reserve Savannah. Wild Water Conservancy
Vaal-Eden		Tertius Wehmeyer	Protect the Vaal
Vaal-Eden		Warrin Flores	Dome Meteorite Park Conservancy. Vredefort Dome Tourism Association. Vaal Eden Land Care
Vaal-Eden		Mariette Lieferink	PEA and Federation of Sustainable Development
Vaal-Eden		M.A. Oberholzer	Private (ex DMR)
Lindequesdrift		Dina Henstock	Surrounding Landowner
Lindequesdrift & Oorbreetesfontein		Leon van Schalkwyk	Surrounding Landowner
Boschdraai 575-IQ, Kaalplaats 577-IQ, Zeekoefontein 573-IQ.	Portion 3,7,13, and the RE Portion 55 Portion	Craig Richardson	Surrounding Landowner
Erina	Portion 4 and Portion 9/2	Allister Cousins	Pont de Vaal Estates
Vaal-Eden		Michelle Warmback	Pont de Vaal Estates
Vaal-Eden		Jason Peter	Pont de Vaal Estates

During the 2014 notification period, neighbours were personally visited to inform them of the proposed project and they were given consultation letter (Please refer to Appendix E). A Background Information Document (BID), for the project summary, was given to the neighbours highlighting the possible impacts from the proposed project and inform them that the EIA and EMPr is available at the Parys Library for perusal. A site notice was placed at the entrance of the farm and an advert in the Parys Gazette to inform the general public to view the EIA/EMPr and to invite comment or to be registered as and I&AP.

On-site notices were placed again at the site entrance on the Vaal Eden – Barrage road and in Parys at the local public municipality. The project was also advertised in the Parys Gazette on 7 September 2017. The stakeholders and I&AP's was notified of the availability of the Draft Basic Assessment Report (DBAR) for their perusal. A 30 days commenting period was allowed for the perusal of the document that ended on the 20th of November 2017. Comments received on the document was added to the Final Basic Assessment Report (FBAR) for DMR to review. See attached as Appendix E proof that the stakeholders and I&AP's were contacted.

DMR requested, on the 11th of April 2018, that the Vaaloewer Ratepayers Association (Protect the Vaal Committee) be consulted regarding the Section 102 application. A meeting was held with the committee on the 21st of April 2018 at the Stonewall café at 9:00Am. The outcome of this consultation is described in detail below. Please also refer to Appendix E for the DMR request letter as well as the meeting minutes that was taken during the meeting that was held between Vaaloewer Ratepayers Association, SPH / Tja Naledi and Greenmined Environmental.

DMR requested, on the 7th of August 2018 that the I&AP's in the Vaal Eden including residents of the Vaaloewer Informal Settlement be consulted regarding the Section 102 application. A public Participation meeting was held at the Parys Town Hall, in Parys at 9:00 am on the 27th of October 2018. The outcome of this consultation is described in detail below. Please also refer to Appendix E for the DMR request letter as well as the meeting minutes that was taken during the meeting that was held between the resident of Vaal Eden/Vaaloewer Informal Settlement and SPH / Tja Naledi and Greenmined Environmental.

Table 4: Interested and Affected Parties 2018 September PPP Process

	Name	Surname	Email	Address	Phone number	Cell phone number
A						
1	Cindy & Gavin	Abound	cindy.abound@vodamail.co.za / gavinabound@vodamail.co.za / aboudgavin@gmail.com			083 281 5045
2	Ismail	Adams	anchorvillealuminium@gmail.com	Lindequesdrif 85		061 656 5990
3	Paulo	Afonso	Afonso@vodamail.co.za			
4	John & Peruska	Annandale	admin@izandratrading.co.za			
5	Jo	Athinareis	j.athinareis@gmail.com	Visitor		
6	Phillip	Austin	phillip@omegagroup.co.za			
B						
7	Estelle	Badenhorst	estelle.badenhorst@necsa.co.za			
8	Chris	Badenhorst	chrisbadenhorst5@gmail.com	Visitor	011 393 1328	076 806 1360
9	Jerome	Bagley	jeromebagley@gmail.com			
10	Kewan	Bagley				
11	Resona	Bagley	Resona.Bagley@fnb.co.za			
12	Lee	Bailey		Visitor		084 600 0954
13	Veronica	Bailey		Visitor		083 604 5521
14	Chalice & Mark	Baker	mark.baker@centralrandgold.com / rhodie.mark@gmail.com / bakerchalice@gmail.com			
15	Christopher	Baker		Visitor		073 372 5088
16	Sean	Baker	sean@ingwelife.co.za	Visitor		082 410 7193
17	Andrea	Bako	abako83@gmail.com			
18	Jason	Ball	jason@fibreca.com			
19	Sandra	Barbosa	sandrabarbosa@myconnection.co.za			
20	Alta	Barkhuizen	barkhuizenalta@gmail.com			

	Name	Surname	Email	Address	Phone number	Cell phone number
21	Hansie & Nadia	Barkhuizen	hansiebarkhuizen@yahoo.com			
22	Wallace	Barnard	wbarnard@intelcom.co.za			
23	Andre	Barnard	picputer@global.co.za			
24	Wendy	Bates				
25	Wendy	Bates	-	Vanderbijlpark	016 931 2700	084 470 2662
26	Corne	Bauermeister	bauermeistercorne@gmail.com	Lindequesdrif 233	016 987 7533	
27	Thea	Bcor				
28	Herman	Bear				
29	Dennis	Beech	dennisb@scientificgroup.com			
30	Adele	Begue		Lindequesdrif 60		060 997 5166
31	Cedric	Begue	c.begue@zandj.co.za			
32	B.K	Bengouer				
33	Christine	Benjamin				
34	Dave & Jean	Berry				
35	Jodie	Berry				
36	Gerda & Tom	Bester	tombester@outlook.com			
37	Diek	Beuken	beukenr@telkomsa.net			
38	Janet	Beukes	beukesjanet@gmail.com			
39	Riaan	Beukes		Lindequesdrif 55		081 593 6624
40	Fanie & Maria	Bezuidenhout	mariona@kgb.co.za			
41	Dirk & Hannlie	Bezuidenhout	hanliebezi@gmail.com			
42	Jake	Bezuidenhout				
43	Jurie	Bezuidenhout				
44	Jayesh Nana & Diane	Bhaga	frxsol@gmail.com			
45	Marianne	Bilsland				
46	Hennie	Binneman		Visitor	021 982 1717	072 216 3912
47	D	Bird				

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48	M	Bishoff				
49	Thomas & Susan	Bishop	tommie@tobis.co.za			
50	Marianne	Bisland	marianne@fixeng.co.za			
51	Frank	Black	frank.black@vodamail.co.za	Lindequesdrif 30		066 047 8995
52	Nico	Blignaut	blignaut.nico@gmail.com			
53	Angelique	Blignaut	angeliquem.blignaut@gmail.com			
54	Yolanda	Blignaut	potchefstroom@welwyn.co.za	Potchefstroom		082 319 1317
55	Sue	Blom		Parys	056 817 7294	083 347 8742
56	Leonardo Bird	Bomschlerd				
57	Angie	Booyse	angiebooyesen13@gmail.com			
58	Carlo & Rocky	Booyzen	carlobooyzen1@gmail.com			
59	Gisele	Bornschlegell				
60	Coen	Boshoff	coen.boshoff@cbi-electric.com			
61	Magda	Boshoff				
62	Piet & Sonja	Boshoff	sonja.b@lantic.net			
63	Monique	Botes	monna.botes@gmail.com			
64	Maureen	Botes	maureen.botes@gmail.com			
65	CPJ	Botha	cbothas1@yahoo.com	Vanderbijlpark	016 986 0159	072 838 6528
66	Frikkie	Botha	Frikkie@processpipejhb.co.za			
67	J.H.B	Botha		Parys	056 817 2418	
68	Joyce & Nico	Botha	jonc.botha@gmail.com			
69	FJ	Botha	fbotha@cinoplast.co.za			
70	Rika	Botha		Vanderbijlpark	016 931 2700	082 982 2547
71	Linda	Botha	linda1botha@gmail.com			
72	Stephan	Botha	botha.stephan@yahoo.com	Visitor		081 408 8975
73	Stephani Monique	Botha	botha.stephani@yahoo.com			
74	Chris & Bertha	Bothma	info@vaalowerriverprop.co.za			

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77	Sias	Bothma	sias.bothma@gmail.com			
78	Theo & Tahlita	Bothma	thalita.bothma@gmail.com			
79	Vannessa & Dave	Boucher	bouchervj@gmail.com			
80	Desiree	Bouwer	desirebouwer@gmail.com			
81	Linda	Bouwer	linda@expocentre.co.za			
82	Jannie	Bredenkamp				
83	Juan	Breitenbach				
84	Juan	Breytenbach	jalifts@gmail.com			
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86	Marna	Briel	marna@e-ditharollo.co.za			
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88	A.O	Brits				
89	Gerhard	Brits	localaxe@gmail.com			
90	Edwin	Bronehast	bronkieedwin@gmail.com	Visitor		076 779 3200
91	Juanita	Brooks	juanitaBrooks@webmail.co.za			
92	Erna	Broom	ernabroom@ymail.com			
93	Ken	Brown	kenbrown@vodamail.co.za			
94	Marie	Brown	mariebrown@vodamail.co.za	Visitor		
95	Franc	Brugman	fransbrugman@me.com		011 268 6090	083 457 4026
96	Hans Adolf	Brunsen	habrunsen@yahoo.de			
97	Luke	Bruzzard	luke672@gmail.com			
98	Drikus	Bubb				078 323 6750
99	H	Budia	budhiah@vodacom.co.za			
100	Clifton	Buitendag	clintonb@sp.africa.com	Visitor	011 393 1328	084 865 9167
101	Ria	Burger	ria.burger09@gmail.com			

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103	Hannes & Theresa	Burger	burgerjohannesjacobus@gmail.com / theresariver@gmail.com			
104	Schalk	Burger		Renee		082 653 4281
105	Aubrey	Burger	aubrey@aandw.co.za			
106	Theresa	Burger				
C						
107	Cindy	Camp				
108	Althea	Campbell				
109	Candice	Campbell				
110	Chris	Campbell	chrisc@cesa.co.za			
111	Roy	Campbell	rcampbell@pnp.co.za			
112	Rocco	Campbell				
113	Debbie & Geoff	Caplin	geoffcaplin@gmail.com			
114	Shaun	Caplin	shauncaplin@gmail.com			
115	Sunette	Caplin	caplinsunette@gmail.com			
115	G	Carlitz		Lindequesdrif 23		073 750 3375
117	PG & S	Catalo	souris.c@mweb.co.za			
118	Joseph	Cawood				
119	Victoria	Chabangu	ncntleleng3@gmail.com			
120	Betty	Chapman	growlybeargrumps@yahoo.uk			
121	Liz	Charles	liz.tuxx@gmail.com			
122	Piet	Cilliers				083 631 7903
123	Adriaan	Classen				
124	AE	Classen	trade34@telkomsa.net			
125	SJ	Classen				
126	Susan	Classen				

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128	WH	Cockeran		Lindequesdrif 287		076 579 5058
129	Louise Petro	Cockeran	louisecockeran@gmail.com	Lindequesdrif 287		071 327 9236
130	Annelize & Nico	Coetzee	dassie481@gmail.com			
131	Donald	Coetzee	donald.coetzee@abbott.com			
132	Danie	Coetzee	djcoetzee84@gmail.com	Visitor	083 444 7886	083 444 7886
133	Heleen	Coetzee				
134	M.	Coetzee		Lindequesdrif 2	016 987 5050	
135	Neil	Coetzee				
136	Nico	Coetzee	nicoasp@gmail.com			
137	RA	Coetzee		Lindequesdrif 2	016 987 5050	
138	Wouter & Adriaan	Coetzer & Janse van Rensburg	adriaanjvr@vodamail.co.za			
139	Andrew	Connold	andrew@connold.co.za			
140	Johan	Conraide	johan.conradie@ymail.com			
141	Teresa	Cook	mw-jcook@mweb.co.za			
142	Daniel	Cornelius		Wipkop 49	072 207 7610	072 207 7610
143	M & Koos & Petrus	Cornelius	tilycornelius@gmail.com	Wipkop 49	016 987 5977	082 257 5281
144	Andre	Cornelius	andre.cornelius@za.hsbc.com			
145	Allister	Cousins	allister@upriver.co.za			
146	Quinton & Alta	Cox	quintun.vicotec@gmail.com			
147	Elizna & Cobus	Crafford	cobus.crafford@sasol.com	Vaalpark	016 920 4610	082 465 7746
148	Derek	Crandon	derekc@loinetteleasing.com			
149	NJ	Crawshaw	ncrawshaw@coal.anglo.co.za			
150	Aletta	Cronje	alettacronje2@gmail.com	Witkop 55 / FKA	016 987 7533	
151	Mark	Cronje	kart@iafrica.com			

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D						
154	Adriaan	Davidson	clint.hatt@gmail.com	Visitor	061 755 3961	078 961 5511
155	Nicholas	Dawson	outofafrica.nc@gmail.com			
156	Arnold	de Beer				
157	Chantel	de Beer	channandale@gmail.com			
158	Christelle	de Beer				
159	Gideon	de Beer		Visitor		076 129 4063
160	Dean	de Beer				
170	Gloudi	de Beer	glaudi.debeer@gmail.com			
171	Piet & Koekie	de Beer	debeerpw@sasol.com			
172	Johan	de Beer				
173	Jacques	de Beer	jdbeer100@gmail.com			
174	Kobus	de Beer				
175	Maggie	de Beer				
176	Rochelle	de Beer		Visitor		074 743 0356
177	Willie	de Beer	willie@bingo.co.za			
178	Henk & Valerie	de Bruyn	val@utlfs.co.za			
179	Jacques	de Bruyn				
180	Michelle	de Bruyn	michelledbcloete@gmail.com			
181	Nichollette	de Bruyn				
182	Pieter	de Bruyn		Riverspray		082 300 7015
183	Roxanne	de Bruyn	roxannevdm@gmail.com			
184	Steven	de Bruyn				
185	Tyler	de Bruyn	tylerhdb169@gmail.com			

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187	Zandria	de Bruyn				
188	Linda	De Gouveia	linda@labourworkshop.co.za	Riverspray		082 551 2096
189	Corne	de Jager		Vanderbijlpark	016 931 1130	071 323 1923
190	Marcel	de Jager				
191	Anna Elizabeth	De Jong				
192	Jop	De Jong				
193	Ilse	De Klerk				
194	Ilze	De Klerk				
195	Helena	de Koker	helena.dekoker@gmail.com / helena.dekoker@co-nair.co.za	Visitor	011 393 7649	083 294 7468
196	Stephen	de la Harpe				
197	Charmaine & Danie	De Lange	danie@xcontent.com			
198	Dr	De Lange	jodel@axxess.co.za			
199	Willie & Heleen	De Lange	moelie662@gmail.com			
200	Wynand	de Lange				
201	Bartina	de Meyer	bsrkie@wesrandrentals.co.za	Visitor		084 308 4396
202	Louise	de Ru	louisederu@mweb.co.za			
203	Brian	De Scally				
204	Brian	de Scally	brain4x4@gmail.com	Bronkhorstspuit		084 585 7774
205	Clinton & Marina	De Triou	CDuTriou@investec.co.za			
206	Annie Sophie	de Villiers		Lindequesdrif 39	060 620 5809	060 620 5809
207	Jaques	De Villiers	jfdevilliers@omnia.co.za			
208	Estelle	de Witt	sambit.dewitt@gmail.com			
209	E.M.	de Witt		Vredefort / Lindequesdrif	016 987 7299	083 523 2047

	Name	Surname	Email	Address	Phone number	Cell phone number
210	Robert	De Witt	rhde Witt@sambit.co.za	Schuilplaas, Lindequesdrif	016 987 7299	082 442 6907
211	CD & Maria	Decina	aldodecina@absamail.co.za			
212	Paul	Dedlow	pidedlow@gmail.com / pjdedlow@gmail.com	Visitor	072 206 3935	072 206 3935
213	J.	Dekocker		Lindequesdrif 71		081 275 3017
214	Hennie & Joan	Den Blaken	joandenblanken@webmail.co.za			
215	Adele	den Blanken				
216	Mark	Dent	markde101@gmail.com			
217	Pauline	Dent				
218	D.V.G	Devan	dev@3dprojects.co.za			
219	Desire	Dhliwayo			03 856 9325	073 856 9325
220	Johan	Diedericks	jhdiedericks@gmail.com			
221	Antoinette	Diedericks	antoinettediedericks@gmail.com			
222	Gert	Diederik	toinette.kruger@gmail.com			
223	Peter & Sandy	Drew	t181@mweb.co.za			
224	Andries Gerhardus	du Plessis	keraklebba@gmail.com			
225	Basie	du Plessis	basiedup@gmail.com			
226	Dick	du Plessis				
227	Diederik	du Plessis	dickdup@vodamail.co.za	Oorbietjesfontein 26		060 988 6302
228	Francois	du Plessis	fduplessis1945@gmail.com / fanie.remaxparys@gmail.com	Wipkop 49	016 987 5977	072 237 5792
229	Danie	du Plessis	danie@rackinstall.co.za			
230	Nico & Lenette	du Plooy	duplooynico515@gmail.com			
231	Quinton	du Preez	Quintondupreez77@gmail.com			
232	FW & Stella	du Toit	stella.ridgard@gmail.com	Lindequesdrif 30		074 157 2955
233	Ilecia	du Toit	ileciadt@icloud.com	Visitor		082 907 3071

	Name	Surname	Email	Address	Phone number	Cell phone number
234	Jat	du Toit	jat.dutoit@nwu.ac.za	Visitor	011 958 1316	083 271 7492
235	Karen	du Toit	dutoitkaren@rocketmail.com			
236	Borman	du Toit	bornmandutoit@gmail.com			
237	Abraham	du Toit	abraham@mtpsa.co.za			
238	Danie & Monica	du Toit	monicadutoit206@gmail.com			
239	MB	du Toit				
240	Soggo	Duval	sesolo@worldonline.co.za			
241	Siggi	Duval	sylviavale@heritagemuseum.co.za			
242	Catherine	Dwyer	cathy.dwyer01@gmail.com			
E						
243	Volker	Eggert	volker.eggert@senmin.co.za			
244	Pierre	Eksteen	pxtn@pxtn.co.za	Visitor		082 600 8663
245	Evan	Elias				
246	Magda	Elias				
247	Riaan	Els				
248	Deon	Elsworth	deon@advit.co.za			
249	Marinda	Engelbrecht		Visitor	016 977 1152	083 977 1152
250	Arno	Engelbrecht		Visitor		076 619 5144
251	Judise	Enslin	judenslin@gmail.com			
252	Braam	Erasmus				
253	Kobus	Erasmus	k9bousera@gmail.com			
254	Steven	Erasmus	steven@traxun.co.za			
255	Rone	Erasmus	rone.erasmus@sasol.com			
256	Steven	Erasmus	steven@traxun.co.za			
257	Adrie	Erlank				
258	Greg	Esterhuysen	gregoryest@yahoo.co.vk	Visitor		076 090 1643
259	Martin	Estruizene	076 900 1356	Visitor		

	Name	Surname	Email	Address	Phone number	Cell phone number
260	Ken	Evans	soutieken@gmail.com	Lindequesdrif 30	071 246 4711	071 246 4711
F						
261	Gani	Ferouz	ganiferouz@yahoo.com			
262	David	Ferreira	david.tugela@gmail.com	Lindequesdrif 195		
263	Marius & Petra	Ferreira	marius.s.fer@gmail.com		015 981 6900	
264	Jurie	Ferreira	jurie.f@fkv.co.za	Lindequesdrif 53	083 592 8884	03 592 8884
265	PS	Ferreira				
266	Christian	Figenschou	fig@zebrasafari.co.za	Lindequesdrif 39		082 463 4720
267	Warrin	Flores	warrinf@gmail.com			
268	Paul	forrie				
269	Hendrien & Peet	Fouche	peethen.fouche@gmail.com			
270	Tersia	Fouche	ftersiaf144@ymail.com			
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273	Paul	Foulkes				
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275	Estienne	Fourie	estiennefourie@hotmail.com			
276	Nina	Fourie				
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279	Elmarie	Fourie				
280	J.W.	Fourie		Oorbietjiesfontein 28		084 252 5096
281	JC	Fourie	jcfourie13@gmail.com	Visitor		076 423 7041
282	Pottie	Frederik	PottieFrederik@hotmail.com			
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284	Ina	Froneman		Witkop 49	072 095 4550	072 095 4550
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287	Marshall	Gericke	tugela.michelle@gmail.com	Lindequesdrif 195		066 204 3024
288	Quintin	Germanus	quintin@divestranddiesel.co.za	Visitor	011 762 4251	082 925 2872
289	Sharne	Germanus	sharneg@telkomsa.net	Visitor	072 360 1162	072 360 1162
290	Victor	Germanus		Visitor	011 762 4251	082 924 5918
291	Brandon	Gess				
292	Brandon	Gess	brandongess@gmail.com			
293	Cobus	Gloy				
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298	Anna	Goosen	-	Lindequesdrif 65		073 598 6782
299	Annetjie	Goosen				
300	Leon	Goosen				
301	Michelle	Goosen				
302	Linda	Gouveia	l.hart@mweb.co.za			
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304	Paul	Gouws	gouws.paul@gmail.com	Lindequesdrif 23		082 543 0955
305	Kevi	Govender	trishanap@mweb.co.za	Visitor		079 438 2043
306	Trishana	Govender	trishanap@mweb.co.za	Visitor		081 025 5928
307	Family	Govender	govender.family@gmail.com			
308	Emma	Green				
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310	Eloise	Greyling	eloisegreyling6@gmail.com	Lindequesdrif 287	016 430 4321	071 490 1258
311	Catherina	Greyvenstein				

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322	Charlotte	Hanekom				
323	Donald	Hanneman	donald.hanneman@vodamail.co.za	Lindequesdrif 86	-	083 286 1048
324	Jutta	Hanneman	jutta.hanneman@gmail.com	Lindequesdrif 86		071 612 0886
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326	LF	Hansen				
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332	Chantelle	Hattingh	-	Visitor		061 755 3961
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345	Brian Clifford	Hingley	brain@transitgroup.co.za	Visitor	082 650 5300	082 650 5300
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353	Miriette	Hoogendyk				
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356	Mike	Horne				
357	Sonette	Horne				
358	Carol Ann	Hughes	hughes.carolann@gmail.com	Visitor	011 393 1328	084 776 5389
359	Koos	Hugo				
360	B	Human		Vanderbijlpark		082 808 3236
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362	Louise	Human	leonorawolfaardth@gmail.com	Oorbietjiefontein 27		071 500 0307
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379	Elizabeth Anne	Janse van Rensburg				
380	Gerrie	Janse van Rensburg				
381	Jaco	Janse van Rensburg				
382	Piet	Janse van Rensburg				
383	L.	Janse van Rensburg				

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458	Catherina Maria	Kruger				

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463	Louis Angus	Kruger				
464	Louis Angus (Snr)	Kruger				
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475	R K	Lavery				
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477	Deon Allan	Lawrence		Visitor		084 770 0955
478	Chrissie	Le Roux		Lindequesdrif 234	082 382 0721	081 382 0721
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491	Christopher	Liebenberg		Visitor		081 770 7663
492	Chantell	Liebenberg				
493	Debbie	Liebenberg				
494	Rudi	Liebenberg				
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497	M.	Lindeque				
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503	Jacobus	Lombard				
504	Morne	Lombard		Vanderbijlpark		082 930 4374
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574	Mohadi	Moahi				
575	Mojalefa	Moahi				
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580	Shimi	Mokoka				
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587	Sean James	Moore				
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590	CVD	Morawe				

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592	Thys	Morten				
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605	Manzo	Muller				
606	Marietjii	Muller				
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808	Lee	Smith				
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974	Anton	van Deventer	antonvd7@gmail.com	Visitor	010 004 3337	079 089 9240
975	Juuhan	van Deventer		Visitor		072 2555 878
976	Lynet	van Deventer	lynetvd@gmail.com	Visitor	010 007 3337	084 333 6106
977	Maria	van Driel				
978	B.J.J	van Dyk	lianabennie@gmail.com	Lindequesdrif 61		082 680 9766
979	Mariette & Pieter	van Dyk	pvanniek@absamail.co.za			
980	Johan	Van Eden	chris@accware.co.za			
981	Chris	Van Eeden	chris@accware.co.za			
982	Gert & Catharina	Van Eeden	chris@accware.co.za			
983	Riette	Van Heerden	vaheerden50@gmail.com	Lindequesdrif 293		074 903 1518
984	Johannes	Van Heerden	johannes.vanheerden@sasol.com	-	-	-
985	F	van Heerden		Visitor		084 651 8000
986	Izak	van Heerden		Lindequesdrif 293		074 455 7157
987	Izette	van Heerden		Lindequesdrif 294		064 798 6873
988	Wayne	Van Heerden	wayne@aandw.co.za			
989	Maryna	Van Heerden		Visitor		
990	Anna & Andries	Van Jaarsveld	diezzell@gmail.com			

	Name	Surname	Email	Address	Phone number	Cell phone number
991	Cecile Letitia	van Loggerenberg				
992	Johann	van Loggerenberg	jvanloggerenberg@oldmutualpfa.com			
993	Richard	van Loggerenberg				
994	Gert	Van Niekerk	logcabincomf@lantic.net	Lindequesdrif 1		082 854 3042
995	Ian	Van Niekerk	ivanniekerk@mweb.co.za			
996	Ilze	van Niekerk	ilzevanniek@gmail.com	Lindequesdrif 1		078 207 9898
997	Piet	Van Niekerk				
998	Dirk	van Pletzen	estiehenstock@gmail.com	Visitor	076 395 9342	082 723 7238
999	Estie	van Pletzen		Visitor	076 395 9342	082 723 7238
1000	Robert	van Reenen		Vaalpark	016 931 1130	083 635 7760
1001	Terrance	van Reenen		Visitor		
1002	Jacques	Van Rensburg	jacques.van.rensburg@merck.com			
1003	Michael	van Rensburg				
1004	Lindie	Van Rensburg	lindieoscar@gmail.com			
1005	Andrew	van Rooyen		Vanderbijlpark		079 912 7127
1006	Lizette	Van Rooyen	info@vaaloewerriverprop.co.za			
1007	P	van Rooyen	silentstrikerpeet@gmail.com			
1008	Petro	van Rooyen	vanrooyenps@saps.gov.za	Parys	056 818 1602	060 975 3918
1009	Roelef	van Rooyen				
1010	Sampie	van Rooyen	svr.hystrix@gmail.com	Renee	051 412 6351	083 678 3032
1011	Sampie	van Rooyen		Renee		082 853 5192
1012	Annette Mathilda	Van Schalkwyk		Oorbietjesfontein 30	016 931 2700	076 751 9065
1013	Baron	Van Schalkwyk		Vanderbijlpark		
1014	Leon	Van Schalkwyk	ginde@telkomsa.net	Oorbietjesfontein 30	016 931 1130	082 559 7989
1015	Leonie	Van Schalkwyk	lmvs@telkomsa.net	Oorbietjesfontein 30	016 931 1130	082 758 2513

	Name	Surname	Email	Address	Phone number	Cell phone number
1016	Lionel	Van Schalkwyk	lionel.vanschalkwyk@gmail.com	Oorbietjesfontein 30		083 567 2822
1017	Ockert	Van Schalwyk	vsocket@vodamail.co.za			
1018	Gerald & Chanel	Van Staden	chanelvs@mweb.co.za			
1019	Chantelle	Van Staden		Visitor		081 241 2708
1020	Anna	van Straaten				
1021	Harry & Mari	Van Straaten	harryvstraaten@gmail.com vanstraatenmari@gmail.com			
1022	Juan	Van Tonder	juvanvan940@gmail.com	Lindequesdrif 244		072 293 1900
1023	Juanita	Van Tonder	juanita@sambit.co.za	Lindequesdrif 244		071 336 5826
1024	Albertus	Van Tonder	avt@absamail.co.za			
1025	Amllo	van Vuuren				
1026	A.M.M	Van Vuuren		Lindequesdrif 141	016 987 7148	071 336 5827
1027	Freddy & Landi	Van Vuuren	wfyvanvuuren@gmail.com			
1028	Jacobus	van Vuuren		Lindequesdrif 127		066 203 5473
1029	Jacomiena	van Vuuren		Lindequesdrif 261	016 987 7533	
1030	Peter	van Vuuren	peter@ellies.co.bw			
1031	Johan	van Vuuren	Johan.vanvuuren@murrob.com			
1032	Johannes Petrus	Van Vuuren				
1033	Maryna	van Vuuren				
1034	Mr	van Vuuren				
1035	Mrs	van Vuuren				
1036	Nico	van Vuuren		Vaalview		078 004 6311
1037	Paul	van Vuuren				
1038	Paul J	van Vuuren	jp@pbd.co.za	Lindequesdrif 141	016 987 7148	071 336 5827
1039	Petrus	van Vuuren		Lindequesdrif 168		071 498 0095
1040	Johan	Van Vuuren	info@mailamillion.co.za			
1041	Renier	Van Vuuren	vanvuurenrenier71@gmail.com			

	Name	Surname	Email	Address	Phone number	Cell phone number
1042	Jolandi	Van Vuuren	jolpieterse@gmail.com			
1043	Yolandi	van Vuuren				
1044	Marie & Piet	van Waveren	alcobeton@yahoo.com	Farm Bokfontein		082 491 5707
1045	Al-Johndro	van Wyk		Visitor		060 603 6219
1046	Estelle	Van Wyk				
1047	Fred	Van Wyk				
1048	JC	van Wyk				
1049	Willie	van Wyk	whvanwyk@yahoo.com			
1050	Rene	Van Zwijndrecht	renevanzwijndrecht@gmail.com			
1051	Anton	Van Zyl	anton@smithcapital.co.za	Lindequesdrif 26	011 589 4200	082 458 6242
1052	Charmaine	van Zyl		Vanderbijlpark		082 776 7519
1053	Elsabe	van Zyl	elsvzyl@gmail.com	Visitor		083 306 8337
1054	Mias & Daleen	Van Zyl	dal1vanzyl@gmail.com			
1055	Hennie	van Zyl	hvzpro@gmail.com	Visitor		083 378 4834
1056	Teneal	van Zyl	tenealvanzyl1234@gmail.com	Vanderbijlpark	016 931 1130	082 388 0444
1057	Janette	Van Zyl	janettevanzyl32@gmail.com	Lindequesdrif 26	016 931 1156	
1058	Ana	Vasconcelos	ana.vasconcelos57@gmail.com			
1059	Hannes	Venter	hansvenf@yahoo.com.au			
1060	Bren	Venter				
1061	Elsje & Tobie	Venter	sales@vtctrailers.co.za elsjeventer@gmail.com	/		
1062	Erna Loïuse	Venter				
1063	JJ	Venter	martie.mjv@gmail.com	Lindequesdrif 248		082 375 6109
1064	Martin	Venter	martin.venter@telkomsa.net			
1065	Chris	Venter	venter_jc@mweb.co.za			
1066	Erna	Venter	elven@telkomsa.net			
1067	Willie	Venter				

	Name	Surname	Email	Address	Phone number	Cell phone number
1068	Nina	Vermaak		Visitor		061 481 7402
1069	Nolan	Vernon	nolan.vernon@live.co.za			
1070	Nolan	Vernon				
1071	Alfred John	Verster	john.verster123@gmail.com			
1072	Clive	Versveld	clive.versveld@orafol.com	Lindequesdrif 80	011 972 2920	082 562 7575
1073	Clive	Versveld				
1074	Sharon	Versveld		Lindequesdrif 80	011 972 2920	082 562 7575
1075	Francois	Viljoen		Lindequesdrif 133		071 572 8628
1076	I.	Viljoen	dee@netdial.co.za			
1077	Andre	Visagie	andre.visagie@absa.co.za			
1078	Werner	Visagie	wernervisagie1@gmail.com			
1079	Mariette	Visagie	mariette@tas.co.za			
1080	Loezy-Marie	Visser	visseloezy21@gmail.com	Visitor		076 892 4087
1081	Dirkie	Visser	dv8p@gmail.com	Visitor	011 740 7071	083 675 8522
1082	Jenny	Vlok	-	Lindequesdrif 19		083 308 2932
1083	Philip & Annie	Voight	carlien30@gmail.com			
1084	AH	Voigt				
1085	Charmaine	Volschenk		Fochville		083 466 2410
1086	Lizel	Volschenk	volschenkws@mweb.co.za			
1087	Tina	Von Wietersheim				
1088	LD (Dot)	Vorster	d.vorster@vox.co.za	Lindequesdrif 268	076 708 5925	076 727 5636
1089	PL	Vorster		Lindequesdrif 268		076 727 5638
1090	Magriet	Vosloo	magriet.vosloo@gmail.com			
1091	Margareta	Vosloo	magriet.vosloo@gmail.com	Bronkhorstfontein		082 339 0035
W						
1092	Riaan	Wagenaar	riaan@creatingmemories.co.za			

	Name	Surname	Email	Address	Phone number	Cell phone number
1093	Fred	Waite	jackie1@telkomsa.net			
1094	Mark	Wakeford	mark@gbt.co.za			
1095	Helen	Wansbury	helenwansbury@gmail.com			
1096	Jason	Ward	jward162@gmail.com	Visitor		078 946 1209
1097	Dudley	Warne	dudleyw@nedbank.co.za			
1098	Ursula	Wearing	uwearing@gmail.com			
1099	Tertius	Wehmeyer	tertiusw@gmail.com	Lindequesdrif 62		071 288 3742
1100	JGH	Welthagen				
1101	Elmar	Wentzel	colleen.wentzel@kentz.com			
1102	Jan	Wepener	jhnwepener@gmail.com wilmasewepener@yahoo.com	/		
1103	William	Wepener	willawepener@gmail.com			
1104	Wilma	Wepener				
1105	Anton	Wessels		Lindequesdrif 247		060 883 4317
1106	Danie	Wessels	dwessels1224@gmail.com			
1107	Lezelle	Wessels		Lindequesdrif 247		074 400 6478
1108	RJ	Wessels				
1109	SM	Wessels				
1110	Errol	White	erroljw@msn.com			
1111	G	Widan				
1112	T.V	Wietersheim				
1113	Anne & Dennis	Wilson	candyz@iafrica.com	Candy's Lodge, Vaaloewer PO BOX 13772, Zuurfontein, 1912		082 775 8524 0862107880
1114	Andrew & Caitlin	Wilson	apwilson15@putlook.com			
1115	S	Wilson				
1116	Bruce	Withers	bawithers@gmail.com	Lindequesdrif 62		083 456 4025
1117	Katherine	Withers	ktwithers@gmail.com	Visitor		083 696 3717
1118	Tarryn	Withers		Lindequesdrif 62		082 973 6199

	Name	Surname	Email	Address	Phone number	Cell phone number
1119	Veronica	Withers	nickiwithers@gmail.com	Lindequesdrif 62		083 452 0474
1120	Louisa	Wolmerans				
Z						
1121	Tanya & Leonid	Zager	zager@webmail.co.za			
BESIGHEDE						
1122	AJS Investment Trust					
1123	Friends of Vredefort Dome World Heritage Site					
1124	Goose Bay Canyon Recreation and Power Boat Club					
1125	Goose Bay Canyon Share Block (Pty) Ltd					
1126	Goosebay Canyon Country Club (Pty) Limited		goosebay@mweb.co.za			
1127	Goosebay Developments					
1128	Grysbank & Woodlands / Jonathan van Aswegen					082 554 9030
1129	Heavenly Events Venue					
1130	Davel H/A Syfrets Trust		odettek@boe.co.za			
1131	King Fisher Bend Property owners Association					
1132	Leafy Glade Props 4 (Pty) Limited					
1133	Midnight Express		Inkuna@hotmail.com			
1134	Khusego Trading & Projects		admin@sapropertybargains.co.za			
1135	Parys Plumbing Shop		parysplumbing@telkomsa.net			

	Name	Surname	Email	Address	Phone number	Cell phone number
1136	Porcupine Ridge Eco Estate Home Owners' Association (35 Members)					
1137	The Savannah Africa		TheSavannahAfrica@gmail.com			
1138	Vaaloewer Ratepayers Association					
1139	Vredefort Dome Tourism Association					
1140	Parys ACD Workshop		parys@acdworkshop.co.za			
1141	Plaas Damlaagte / Sampie van Rooyen					0828535193
1142	Wes Vaal / Manie Greef					084 688 5305
1143	Onbekend / Trevor van Heerden					082 856 9662
1144	Pure Source Minerals Mining Co (Pty) Ltd				011 913 1719	
1145	Vaaldraai / CJ Terblanche					083 652 5555
1146	Vaaldraai / L Sher					
1147	Woodlands / M van Wyk					076 532 3937
1148	Woodlands / R Schimpers					073 793 2781
1149	Woodlands / PJ van Rensburg					
1150	Woodlands / I Hannekom				016 986 1752	
1151	Woodlands / PC van Rensburg					083 504 9440
1152	Welbeedgicht / PTN van Heerden					083 371 2555
EMAIL ADRESSE & SELFOON NOMMERS						
1153	rminaar@sars.gov.za					
1154	ProtectVaalEden@gmail.com					
1155	martin@vaaloewer.co.za					
1156	lynette@cbsbloom.co.za					

	Name	Surname	Email	Address	Phone number	Cell phone number
1157	jpvanventer@gmail.com					
1158	johnstonekerron@gmail.com					
1159	irimacd@gmail.com					
1160	inkosi.med@gmail.com					
1161	heinrich@r-aa.co.za					
1162	goggas@gmail.co.za					
1163	dinamicpc@yahoo.com					
1164	ddlottering@gmail.com					
1165	charneg@telkomsa.net					
1166	brains4X4@gmail.com					
1167	brain@lmbrett.com					
1168	bernard.coins@gmail.com					
1169	bmvaaladmin@telkomsa.net					
1170	admindutoit@bulk.co.za					
1171	vlieendevis@gmail.com					
1172	hubbycat39@gmail.com					
1173	andrep@jendre.co.za					
1174	financemidway@gmail.com					
1175	karen@loveoflaser.co.za					
1176	nicocasp@gmail.com					
1177	reception@parsek.co.za					
1178	creditors@parsek.co.za					
1179	louise.kenny78@gmail.com					
1180	annabella@forsterattorneys.co.za					
1181	annikavdw@yahoo.com					
1182	henkwh@mweb.co.za					
1183	marai711@gmail.com					

	Name	Surname	Email	Address	Phone number	Cell phone number
1184	hennie@paradigm-sa.co.za					
1185	chantellieb@gmail.com					
1186	johan@prodnet.co.za					
1187	earthazurite@gmail.com					
1188	fishonfly@polka.co.za					
1189	vanbovisvangoord@gmail.com					
1190	chris@fnb.co.za					
1191	cindys@att-tyres.co.za					
1192	danie@tginfra.co.za					
1193	evn@vodamail.co.za					
1194	irmab@uj.ac.za					
1195	louise@woelwaters.co.za					
1196	dirchelle@live.co.za					
1197	datadude101@gmail.com					
1198	baybreeze@vodamail.co.za					
1199	3@gmail.com					
1200	icebengineers@gmail.com					
1201	dansnr@yahoo.com					
1202	ferrarisakkie@gmail.com					
1203	sarelv@live.co.za					
1204	waynevb.remaxparys@gmail.com					
1205	eliset@24.com					
1206	mutiman7@gmail.com					
1207	marion@presidenthyper.co.za					
1208	grimsdellm@gmail.com					
1209	rasheed6551@gmail.com					
1210	tyronkrgl@gmail.com					

	Name	Surname	Email	Address	Phone number	Cell phone number
1211	vicky@iafrica.com					
1212	vincent@hljunction.co.za					
1213	chanette99@gmail.com					
1214	vpro@mwen.co.za					
1215	hantie.hj@gmail.com					
1216	barkie@weststrandrentals.co.za					
1217	ch.audio.excellence@gmail.com					
1218	hanlie@gmail.com					
1219	genk@gmail.com					
1220	rachelle@protankerrepairs.co.za					
1221	dv81@gmail.com					
1222	cprmevd4@gmail.com					
1223	yolandielaidem@gmail.com					
1224	sweetiemaster@gmail.com					
1225	mailbox.erna@gmail.com					
1226	leo@dynafogafrica.co.za					
1227	thorpeclinton@yahoo.com					
1228	dennis@birdhaven.co.za					
1229	gisele@dynafogafrica.co.za					
1230	stg2980@gmail.com					
1231	gertjengelb@gmail.com					
1232	waft60@gmail.com					
1233	mariaannakoi@gmail.com					
1234	Jacobs			Lindequesdrif 134		078 486 1618
1235	Graig			Vanderbijlpark		064 651 9853
1236	Gary			Visitor		082 314 9132
1237	Jonathan		Bradenput@gmail.com	Renee		082 554 9030

On-site notices were placed at the site entrance on the Vaal Eden – Barrage road, Vaaloewer town, Vaaloewer Informal Settlement, Lindequesdrift shop and in Parys at the local public municipality. The project was advertised in the Parys Gazette on 19 September 2018 and in the Vaalweekblad on the 20th of September 2018. The stakeholders and I&AP's was notified of the availability of the Draft Basic Assessment Report (DBAR) for their perusal. A 30 days commenting period was allowed for the perusal of the document that ended on the 27 October 2018. Comments received on the document was added to the Final Basic Assessment Report (FBAR) for DMR to review. See attached as Appendix E proof that the stakeholders and I&AP's were contacted.

A public participation meeting was held on the 27th October 2018 where the project was explained to all I&AP'S and whereby the I&AP'S was given an opportunity to provide their comments and list all their concerns and comments.

Further to the public participation meeting held on the 27th of October 2018, a Socio-Economical Assessment was conducted from November 2018 – January 2019. Individual meetings were held with major role-players of the communities. The outcome of this assessment is summarised in Part H, IV) Socio Economic Assessment. Please also refer to the SEIA as included in Appendix H.

iii) Summary of issues raised by I&APs

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

During the first public participation process that was conducted in 2014 for the current mining right application, various means of consultation was used to consult and get I&APs to register as such, only one letter was received back indicating no objection to the proposed mine form the neighbouring farm manager. Two phone calls were received on the first day after the placement of the advertisement these two calls related to a person looking for sand to buy (potential client) and a person looking for employment. Please refer to the table below for the current PPP.

During the 2017 public participation, only comment was received on the 22nd of November by Sampie van Rooyen. This comment was not included into the first submission of the FBAR to DMR, as this comment was late and out of the allowed commenting period. However, this comment has now been included and addressed in the report, together with the comments received from Vaaloewer Ratepayers Association.

Comments that where received from the Vaaloewer Ratepayers Association was regarding the previous PPP (current mining right application of 2014) that was flawed, as well as other comments that where raised during the consultation meeting with Vaaloewer Ratepayers Association (Protect the Vaal) where listed below. Comments that where received during the meeting with the association was addressed in the comments and responses report as well as in the Final BAR. The comments and response report was circulated to all association members where changes were made where needed.

A fourth phase public participation was conducted that started on the 20th of September 2018. Comments that where raised during the fourth public participation are listed below. A Socio-Economic Impact Assessment (SEIA) was undertaken in November 2018 –January 2019, whereby the comments received during this process is indicated below.

Interested and Affected Parties	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
<p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>				
AFFECTED PARTIES				
Landowner/s				
Dr. S Jacobs	N/A	N/A	N/A	N/A
Lawful occupier/s of the land				
Mr. PJ van Rensburg Mr Ivan van Rensburg	N/A	N/A	N/A	N/A
Landowners or lawful occupiers on adjacent properties				
Johnathan van Aswegen	N/A	N/A	N/A	N/A
Manie Greeff	N/A	N/A	N/A	N/A
Trevor van Heerden	N/A	N/A	N/A	N/A
Goose Bay Developments / Pure Source Minerals Mining Co (Pty) Ltd	N/A	N/A	N/A	N/A
Municipal councillor				
Ngwathe Local Municipality Ward (7) Councillor	N/A	N/A	N/A	N/A
Municipality				
Ngwathe Local Municipality – Mr. Pule Tshekedi	N/A	N/A	N/A	N/A
Fezile Dabi District Municipality – Ms LM Molibedi	N/A	N/A	N/A	N/A
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e				
Department of Public Works and Infrastructure – Mr, Mwseoke	N/A	N/A	N/A	N/A
Department of Police, Roads and Transport – Mr. S Msibi	N/A	N/A	N/A	N/A
SANRAL – Me Judy Marx	N/A	N/A	N/A	N/A

Interested and Affected Parties	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted				
Eskom – Mr. Earl Craig Daniels	N/A	N/A	N/A	N/A
Transnet – Mr. Nokukhanya Gabela	N/A	N/A	N/A	N/A
Communities				
	N/A	N/A	N/A	N/A
Dept. Land Affairs				
Commission of restitution of Land Rights – Vuyane Tshawane	21/09/2017	No land claims on Woodlands 407.	N/A	N/A
Traditional Leaders				
	N/A	N/A	N/A	N/A
Dept. Environmental Affairs				
Department of Economic Small Business Development, Tourism and Environmental Affairs (DETEA) – Ms Gasela	N/A	N/A	N/A	N/A
Other Competent Authorities affected				
Department of Agriculture and Rural Development – Mr. Mbana Thabethe	5/10/2017	No objections to the amendment of the existing mining right. The following must be taken into consideration during and after the mining activities: <ul style="list-style-type: none"> • Soil erosion must be prevented • All disturbed parts of the farm must be rehabilitated after mining has been completed. 	Noted Management measures will be incorporated into the management plan	N/A
Department of Rural Development and Land Reform – Mr. RA Ryan	13/10/2017	No objections as this is not State Land. Conditions is that the approval is granted by other State organs in this regards.	Noted.	N/A
Department of Labour – Mr. Nomfundo Douwjack	N/A	N/A	N/A	N/A
Department of Water Affairs and Sanitation – Mr.	N/A	N/A	N/A	N/A

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
TP Ntuli				
Department of Water and Sanitation	26/09/2018	Contact needs to be made regarding the GA on the Ewulaas system	An application has been made to DWS that was approved on 24/07/2018. GA was approved for taking water from the borehole for industrial purposes of 33 065 m ³ /a	
Department of Human Settlements – Mr. N Mokhesi	N/A	N/A	N/A	N/A
Department of Co-Operative Governance and Traditional Affairs – Mr. MV Duma	N/A	N/A	N/A	N/A
Department of Culture, Sport and Recreation – Mr. RS Malope	N/A	N/A	N/A	N/A
SAHRA – Ms. Kathryn Smuts	N/A	N/A	N/A	N/A
OTHER AFFECTED PARTIES				
Vaal Oewer Ratepayers Association	6/04/2018 – 11/05/2018	<p><u>Gavin Aboud:</u> There is already a screening plant onsite, and not in the current mining plan. Hence your current application. This is extremely presumptuous, and you are requested to remove said equipment until this process is completed.</p>	<p>Screening Plant: Quintin van der Merwe (QM) explained during the Meeting held on the 21st of April why the screen plant was there, QM states that as Dr. Stephen Jacobz (SJ) mentioned, we are all business men and woman here. Therefore, the screen plant being there was a business decision. QM states that the screen plant came from a project called Aggenys, the screen plant was placed at this mine and will sit there until the amendment has been approved. QM states that as the safety officer, he stopped any use of the screening plant in order to remain compliant and prevent DMR from closing them down or receiving any fines. QM states that he followed the EMP and said that no screening may take place at that point.</p>	N/A
		<p><u>Tertius Wehmeyer and Renee Hartsliel:</u> Please be so kind as to provide the other documentation Tertius requested. I am particularly interested in the consultation and public participation documentation:</p> <p>Please be so kind to forward:</p> <ol style="list-style-type: none"> 1. The number of the mining permit or mining right for this mine. 2. A copy of mining permit / right 3. A copy of the Section 10 Notice for this mine sent out by your office. 	<p>Document Request: The FBAR documentation was supplied to the committee on 11 April that included all the requested documentation.</p> <p>Registration: Please refer to Appendix A, Tertius Wehmeyer Email that also answers all the questions Tertius</p>	N/A

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
		<p>4. Copies of public documents such as the EIA, EMP, EMPR, Proof of Consultation and Public Participation, Scoping Report and Heritage Assessment.</p> <p>If they, SPH, have been contracted by any other mine to provide services for them, please provide detail requested above for that mine as well as the registered mine name and mine owner.</p> <p>On 29 November 2014, I registered myself, the FS Private Nature Reserve Savannah, and the Wild Water Conservancy as IAPs with the consultant Monty van Eeden of Dorean in the Tja Naledi mine application. Due to the comprehensive rehabilitation plan, distance from the Vaal River, and small scale of the operation, as contained in the BID document we received, we did not object at that time to the mining.</p> <p>However, it appears that the rehabilitation did not take place as promised. Further, the scale is proposed to be greatly increased and the highly-stressed Vaal River is being encroached upon. I question the efficacy of your dust mitigation proposal, your statements about noise pollution and whether due diligence has been paid to the road and bridge capacities for transport trucks. Also, has a proper public participation process been followed regarding the rezoning of the land? It would be helpful to receive answers to these questions in advance of any meeting with the Protect Vaal Eden committee or the public.</p> <p>Finally, please note that the registered IAP's mentioned above were NEVER contacted regarding the new application and I hereby object in the strongest terms to any new application, on those grounds alone.</p>	<p>Wehmeyer brought up on 17 April. This has also been discussed telephonically on the 20th of April 2018</p> <p>Please note that your registration was not listed in the current approved EMP for Tja Naledi, therefore you have not been consulted during the Section 102 Amendment. There was no proof of correspondence with you in the current mining right application. It seems that you have not been registered during the 2014 mining right. After the meeting held on the 21st of April, Yolandie Coetzee, the EAP for Greenmined Environmental consulted with Dorean Environmental. Monty from Dorean confirmed that Renee was never registered as she did not respond to the Tja Naledi project. Monty and Renee Hartsliet had telephonic conversations regarding the Tja Naledi Project. She did however respond to the Sweet Sensations project and registered word that Mining Right. The only comment that was made by Renee for Tja Naledi was to determine if trucks will drive past her property. Whereby Dorean replied that they will not. He asked her to put everything in writing and no response was received.</p> <p>Rehabilitation: This issue has also been addressed in the meeting presentation. This is not applicable to the Section 102 application.</p> <p>Dust: Dust monitoring will be conducted on a monthly basis together with wind roses. A dust management plan will be compiled for this project. A 10 000l water cart is on site to be used for dust suppression and a water canon is suppressing the stockpiles. SPH have appointed an occupation hygienist as per the OHS to conduct the gravimetric noise testing done. This has been addressed during the meeting.</p> <p>Noise: Noise monitoring station will be set up at Craig Richardson farm to measure the levels of noise from Tja Naledi. Personal dust and noise</p>	<p>N/A to Section 102 Amendment.</p> <p>N/A to Section 102 Amendment.</p> <p>Addressed in Part A – 3(h) iv), (ix) (j) and Part B – 1(d, e, and Ff))</p> <p>Addressed in Part A – 3(h) iv), (x) (j) and Part B – 1(d, e, and Ff)). SPH and Dr. Stephen Jacobs</p>

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			<p>monitoring is being conducted, which forms part of the Mine Health and Safety Act. SPH have appointed an occupation hygienist as per the OHS to conduct the gravimetric noise testing done. This concern will be investigated further to minimise noise in the mining area.</p> <p>Road Integrity: Going forward, together with other sand mines in the area, which will be using the same road (Sweet Sensation and Pure Source Minerals), a strategy will be developed to assist in road repairs once the Section 102 mining right has been approved for Barrage Bulk Sand Mine. Roads Department is currently busy with an analysis of the road integrity and the sand mines. Once finalized a negotiated plan between BBSM, Pure Source Minerals, Sweet Sensations and the roads department will be discussed and a plan implemented.</p> <p>Bridge: The Roads Department informed SPH Kundalila that the Barrage Bridge was built to hold the capacity of the heaviest legal load on national roads, as the bridge is built over a national road. - 120 tons' maximum payload. Vaal-Eden Bridge loads will be investigated.</p> <p>Rezoning: Dr. S Jacobs is awaiting documentation from lawyers stating that no rezoning needs to be conducted.</p>	<p>went to Craig Richardson's farm after the meeting to investigate the noise concerns. SPH added noise muffler systems on all the reverse hooters of the mining equipment. A noise monitoring system will be added to Mr. Richardson's farm to conduct noise monitoring in the future if the noise continues on his farm.</p> <p>Addressed in Part A – 3(h) iv), (x) (j) and Part B – 1(d, e, and Ff))</p> <p>Addressed in Part A – 3(h) iv), (x) (j) and (b) Part B – 1(d, e, and Ff))</p> <p>Addressed in Part A – 3(h) iv), (x) (j) and (b) Part B – 1(d, e, and Ff))</p>
		<p>Gavin Aboud: At this point my only comment is that the public participation process was flawed, and that given the required amendments in terms of minerals to be mined and the amendment in the Mining Plan, the PPP must be redone.</p> <p>You are not meeting with the Vaaloewer Ratepayers Association, you are meeting with the Protect Vaal Eden Committee, and we represent the complete area around the mine, which incorporates three provinces, Gauteng, Free State, and North West.</p>	<p>The PPP that reference was made to was regarding the mining right. This is not applicable to the Section 102 amendment.</p> <p>Noted. As per DMR's request.</p>	N/A to Section 102 Amendment.
		Surrounding neighbours of the Vaal-Oewer where invited to the meeting.	In terms of Regulation 41(2)(b)(ii) of the Amendments to the Environmental Impact Assessment Regulations, 2014 the person conducting a public participation process must give notice to all potential interested and affected parties of an application or proposed application which is	N/A to Section 102 Amendment.

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			<p>subjected to public participation by giving written notice, in any manners provided for in section 47D of the Act (NEMA), to <u>owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken.</u></p> <p>Therefore, in terms of the regulations, we were not obliged to contact you, as your land is not adjacent to the site. However, you have been registered as and I&AP during this current PPP with the Vaal Oewer Association.</p>	
		<p>Tertius Wehmeyer: At the outset I want to state that the public participation process conducted by yourself and your company Greenmined, is in my view not in line with the NEMA act, regulations and guidelines and I will set out my reasons in the email below. Just ask yourself this question: "Why would an international Environmental Consultancy like SLR Consulting (https://slrconsulting.com/za/ & https://slrconsulting.com/za/slr-documents/goosebay-sand-gravel-and-diamond-project-1-1-1) have a list of over 800 I&APs excluding government departments and Greenmined, a small local environmental consultancy with a website under construction (http://www.greenmined.com/index.php), have an I&AP list of only 10 people (excluding government departments) which includes at least 2 owners of Tja Naledi Beafase Holdings, the applicant, and also owners / employees of the two other sand mines, for the public participation process of two neighbouring sand mines with a very similar profile?" Was that because SLR followed the latest (2017) DEA Public Participation Guideline which encourages the public participation process to be as inclusive as possible (https://www.environment.gov.za/sites/default/files/docs/publicparticipationguideline_intermsofnemaEIAregulations.pdf) and possibly followed the Funnel Approach as outlined in this paper at http://www.thegreenconnection.org.za/dmdocuments/Public_Participation_in_EIAs.pdf by Liz McDaid (Green Connections) and Lynette Kruger (Environmental Evaluation Unit, UCT)? In contrast, it seems to me as if Greenmined spoke to as few members of the public as possible and then also to only people who welcomed the changes to TNB's mining right. But of course, size does not always matter and possibly Greenmined and not SLR followed the correct approach. However, it is my contention that SLR's approach is more correct, although not flawless in our experience. I give my reasons below.</p> <p>Firstly, for those who are not aware of what Regulation 41 of the NEMA act is about, it regulates the Public Participation process with regards to interested and affected parties. In subsection (2) of regulation 41 it states that "The person conducting a public participation process <u>must</u> take into account <u>any relevant guidelines applicable to public participation as contemplated in section 24J</u> of the Act and <u>must give notice to all potential interested and affected parties</u> of an application or proposed application which is subjected to public participation by ..." and then list 5 main categories of methods of giving notice summarised below: - Regulation 41 (2) (a) - fixing a notice board in a place accessible and conspicuous to the public at mining site. (Not shown in FBAR document) - Regulation 41 (2) (b) - written notices to at least 6 categories of individuals / organisations (FBAR only alludes to written notices to residents / owners of farm on the mining site itself and some adjacent farms, examples of written notices are not provided) - Regulation 41 (2) (c) - placing an advertisement in a local newspaper or an official gazette published specifically to provide public notice of applications or other submissions made in terms of these regulations (the FBAR document Appendix E lists Parys Gazette of 7 September 2017 but does not provide a copy of the advertisement) - Regulation 41 (2) (d) - placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is (PLEASE NOTE that due to the fact that the mine lies in a tripoint area where THREE provinces (Free State, Gauteng & North-West) meet and the fact that the mining activity may impact on these areas, this subsection IS relevant)</p>	<p>Please refer to Appendix E for the letter to address the comments made by Tertius Wehmeyer. Diamond mining is no longer applicable as described above.</p>	<p>Appendix E</p>

<p>Interested and Affected Parties</p> <p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>	<p>Date Comments Received</p>	<p>Issues raised</p>	<p>EAPs response to issues as mandated by the applicant</p>	<p>Section and paragraph reference in this report where the issues and or response were incorporated.</p>
		<p>- Regulation 41 (2) (e) - using reasonable alternative methods, as agreed to by the CA, in those instances where a person is desirous of but unable to participate in the process due to illiteracy, disability or any other disadvantage (there is an informal settlement next to Vaaloewer which may fall in this category).</p> <p>Furthermore, the definitions of "interested and affected party" and the "public participation process" are also critical in interpreting the NEMA act, regulations and guidelines. In the NEMA act, these concepts are defined as follows: "interested and affected party", for the purposes of Chapter 5 and in relation to the assessment of the environmental impact of a listed activity or related activity, means an interested and affected party contemplated in section 24(4)(a)(v), and which includes- (a) any person, group of persons or organisation <u>interested in or affected by</u> such operation or activity; and (b) <u>any organ of state</u> that may have jurisdiction over any aspect of the operation or activity; "public participation process", in relation to the assessment of the environmental impact of any application for an environmental authorisation, means a process by which potential interested and affected parties are given opportunity to comment on, or raise issues relevant to, the application Section 24 deals with Environmental Authorisation. Section 24(4)(a)(v) mentioned in the definition of "interested and affected parties" above, reads as follows: "Section 24 (4) Procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment – (a) must ensure, with respect to every application for an environmental authorisation— (v) public information and participation procedures which provide <u>all interested and affected parties</u>, including <u>all organs of state in all spheres of government</u> that <u>may have jurisdiction over any aspect of the activity</u>, with a <u>reasonable opportunity to participate</u> in those information and participation procedures; and</p> <p>Yolandie, in your reply to Allister Cousins from Pont de Val, you stated (text in blue and "" below) that you were not obliged to contact him through a written notice. "In terms of Regulation 41(2)(b)(ii) of the Amendments to the Environmental Impact Assessment Regulations, 2014 the person conducting a public participation process must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by giving written notice, in any manners provided for in section 47D of the Act (NEMA), to <u>owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken.</u> Therefore, in terms of the regulations, we were not obliged to contact you, as your land is not adjacent to the site. However, you have been registered as and I&AP during this current PPP with the Vaal Oewer Association." Although your statement is correct in a minimalist approach to the NEMA act and regulations with regards to a WRITTEN notice to Pont de Val residents / owners, as Pont de Val on farm Erina is not a neighbouring property, this is only 1 of all the methods of notification listed in Regulation 41! Also, written notices had to be issued to other neighbouring properties to Woodlands 407 (like Vaaloewer and other neighbouring farms across the Vaal River adjacent to Woodlands 407, Mr Abrie Hanekom of farm De Fonteine 189 (between De Pont and Woodlands 407)) AS WELL AS any organisation of ratepayers (see Regulation 41(2) (b) (iii)) that represent the community in the area. This was clearly not done. If Greenmined used the 2017 DEA "PUBLIC PARTICIPATION GUIDELINE IN TERMS OF NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS" as CLEARLY instructed in the introductory part of Section 41 (2), then you would have been familiar with Section 6 of the Guideline quoted below: "6. GUIDANCE ON THE LEVEL OF PUBLIC PARTICIPATION The <u>minimum requirements</u> for <u>public participation outlined in the EIA Regulations</u> will not necessarily be sufficient for all applications. This is because the circumstances of each application are different, and it may be necessary in some situations to incorporate extra steps in the PPP. The table below provides guidance for deciding on the required level of PP." Table 1 list 3 main categories with 16 different situations that might be applicable in an area with regards to an Environmental Authorisation. In my view, only 2 of the situations are not applicable to our area and your current environmental authorisation process. So that indicates to me</p>		

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.																				
		<p>that the public participation process should be as wide and as inclusive as possible. The public participation process outlined in the FBAR document supplied, fails dismally in this respect. Noticeable omissions were known I&APs such as Mr Abrie Hanekom on a neighbouring farm, who you alleged to have contacted but who cannot recall any such contact and you do not provide proof of it. I Renee de Jong Hartsliet owner of farm Savannah and co-chair of Friends of the Vredefort Dome was also a registered I&AP for the application for a mining right of Tja Naledi Beafase who should have been contacted. Others are the residents of Vaal Eden (those not contacted), Vaaloewer and Lindequesdrift as well as government structures in North-West province, Tlokwe LM, Gauteng province and Emfuleni LM as these mines falls close to the border of 3 provinces.</p> <p>Lastly, please respond to the following:</p> <ol style="list-style-type: none"> 1. Provide copies or photographs of all notices (e.g. notice boards, newspaper adverts, letters to I&APs etc) that were used in the public participation process for the Basic Assessment Report required for TNBH Section 102 application. In the FBAR document, it is stated (see screenshot below) that these documents are contained in Appendix A which only contains maps! If you have copies, also copies of all section 10 notices 2. How did you contact Mr Abrie Hanekom on 8 September 2017 as stated in 1st table of Appendix E (Comments and Response Report)? He is a member of our committee and was completely unaware of this Environmental Authorisation until he noticed the Barrage Bulk Sands board (which contains NO information about the owners of the mine, Tja Naledi Beafase Holdings) a week before my email to Mr Mulaudzi. Please provide proof of contact. See 2nd screenshot below of 1st table in Appendix E. 3. Mining Right Number, and copy of the Mining Right 4. Copy of the EIA/EMP as well as annexures (to include the PPP and specialist studies) <p>Items 3 and 4 were offered in your first email to me but I haven't received any yet. The rest of the issues raised we can discuss in our meeting on Saturday although you are welcome to respond before the meeting.</p>																						
		<p>Bob Hartsliet: For the sake of clarity and in preparation for Saturdays meeting with you.</p> <p>1.Are these 9 listed parties below the ONLY affected parties you contacted with regard to this license application:</p> <p style="text-align: center;">NOTIFICATION OF LANDOWNER AND NEIGHBOURS AND OTHER I&AP'S</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Organisation</th> </tr> </thead> <tbody> <tr> <td>Mr Jonathan van Aswegen</td> <td>Grysbank and Woodlands 407 Surrounding Land Owner</td> </tr> <tr> <td>Mr Abrie Hanekom</td> <td>Surrounding Land Owner</td> </tr> <tr> <td>Mr Marie Greef</td> <td>Willow Grange Surrounding Land Owner</td> </tr> <tr> <td>Mr Trevor van Heerden</td> <td>Welbedagt Surrounding Land Owner</td> </tr> <tr> <td>Ms Venessa Bosman</td> <td>Pure Source Minerals Mining Co (Pty) Ltd</td> </tr> <tr> <td>Mr SE van Rooyen</td> <td>Damlaagte Surrounding Land Owner</td> </tr> <tr> <td>Mr PJ van Renaburg</td> <td>Woodlands 407 Surrounding Land Owner</td> </tr> <tr> <td>Mr PC Renaburg</td> <td>Woodlands 407 Surrounding Land Owner</td> </tr> <tr> <td>Mr L. Koekemoer</td> <td>Woodlands 407 Surrounding Land Owner</td> </tr> </tbody> </table> <ol style="list-style-type: none"> 2. <u>Did</u> you contact the local Ngwathe ward councillor or inform him in any way of this application and if so please provide proof thereof? 3. <u>Did</u> you contact the Ngwathe Mayor or inform her in any way of this application and if so please provide proof thereof? 4. <u>Did</u> you contact the local Fezile Dabi ward councillor or inform him in any way of this application and if so please provide proof thereof? 5. <u>Did</u> you contact the Fezile Dabi Mayor or inform her in any way of this application and if so please provide proof thereof? 	Name	Organisation	Mr Jonathan van Aswegen	Grysbank and Woodlands 407 Surrounding Land Owner	Mr Abrie Hanekom	Surrounding Land Owner	Mr Marie Greef	Willow Grange Surrounding Land Owner	Mr Trevor van Heerden	Welbedagt Surrounding Land Owner	Ms Venessa Bosman	Pure Source Minerals Mining Co (Pty) Ltd	Mr SE van Rooyen	Damlaagte Surrounding Land Owner	Mr PJ van Renaburg	Woodlands 407 Surrounding Land Owner	Mr PC Renaburg	Woodlands 407 Surrounding Land Owner	Mr L. Koekemoer	Woodlands 407 Surrounding Land Owner	<p>Please refer to Appendix E for the letter that was send to Bob Hartsliet.</p>	<p>Appendix E</p>
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		<p>PLEASE BE ADVISED THAT ALL FOUR OF THE ABOVE MENTIONED PERSONS HAVE BEEN INVITED TO OUR MEETING SATURDAY</p> <p>6. Which of the following Members of the Free State Executive Council did you inform of this application:</p> <ul style="list-style-type: none"> a. MEC of TOURISM b. MEC of FINANCE c. MEC of AGRICULTURE d. MEC of ROADS e. MEC of ENVIRONMENTAL AFFAIRS f. MEC of ECONOMIC AFFAIRS <p>Please submit copies of the notifications you sent these MEC; s prior to our meeting on SATURDAY.</p> <p>7. Did you or anyone from your firm advise or contact the FREE STATE Premier in any way in regard to this application and if so please send copy of such advices.</p> <p>8. Did you or anyone from your firm advice or contact M/s Seipati Dlamini of DMR about this application in any way?</p> <p>9. What is the present land zoning of your client's property?</p> <p>10. Are you and/or anyone in your firm aware of the Constitutional Court Ruling of April 12. 2012 in the case of Mac Sands VS Cape Town City?</p> <p>11. What is the relationship between Mr PJ van Rensburg -Mr PC Rensburg -Mr L Koekemoer - Mr Jonathan van Aswegan ? Listed IAPS? They all seem to be owners of Woodlands 407??</p> <p>I have not been able to ascertain who your clients 26% community/BEE partner is (as per mining Charter requirement)—could you please advise us who that is?</p>		
		<p>1. Why do the mining applicants not apply for rezoning first? The Vaal Eden Road S171 is in our IDP / SDF as a scenic route and Gauteng gateway to the Vredefort Dome World Heritage Site. Sand and gravel mining is supposed to take place near Sasolburg, along the R59...</p> <p>2. Why do the water use applications seem to also lag behind? The critically-stressed Vaal River and its water table is the lifeline of Parys and VDWHS.</p> <p>3. Why is rehabilitation of prior mining activity seemingly not taken into account before a new permit is issued?</p> <p>4. Why do the applicants change their company names?</p>	<p>1. Why do the mining applicants not apply for rezoning first? The Vaal Eden Road S171 is in our IDP / SDF as a scenic route and Gauteng gateway to the Vredefort Dome World Heritage Site. Sand and gravel mining is supposed to take place near Sasolburg, along the R59...</p> <p>This is a process that is follow by the local municipality's guidelines and spatial planning. During PPP the municipality will inform the applicant that rezoning needs to be conducted. This is an historical mine. So the IDP needs to accommodate historic mines.</p> <p>2. Why do the water use applications seem to also lag behind? The critically-stressed Vaal River and its water table is the lifeline of Parys and VDWHS.</p> <p>We cannot answer for any delays in the Departments.</p> <p>3. Why is rehabilitation of prior mining activity seemingly not taken into account before a new permit is issued?</p> <p>We cannot answer for any other mining</p>	<p>N/A to Section 102 amendment.</p>

<p>Interested and Affected Parties</p> <p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>	<p>Date Comments Received</p>	<p>Issues raised</p>	<p>EAPs response to issues as mandated by the applicant</p>	<p>Section and paragraph reference in this report where the issues and or response were incorporated.</p>
			<p>companies. This is not applicable to the Section 102 amendment.</p> <p>4. Why do the applicants change their company names?</p> <p>This is not applicable to the Section 102 amendment.</p>	
		<p>Reference is made to the BID. Page 4 Heading Noise refers. Here you cover the issue regarding blasting, yet in the meeting you said there would be nothing.</p>	<p>Blasting:</p> <p>The BID (Background Information Document, the reference to the document that was made) was compiled to cover all the basis for the project. During the Basic Assessment that was conducted for the site numerous sample holes were dug and no rock beds were encountered. Therefore, no blasting will take place at Tja Naledi. There will be no explosives magazine on site. This is also the reason that no reference is made to blasting in the Basic Assessment Report.</p>	
		<p>Allow me to subjoin hereunder preliminary comments prior to the proposed public participation process pursuant to our meeting on Saturday.</p> <p>Land Use</p> <p>I have transmitted a document on Saturday to the above e-mail address. I received a notification that it miscarried. It is the legal opinion we obtained regarding the legal requirements for the rezoning of agricultural land within the Free State Province to mining land. Kindly confirm whether you have received it. I nonetheless attach it hereto.</p> <p>Sense of Place</p> <p>During our discussion on Saturday, I referred to sense of place and the legal precedent which was established in DIRECTOR: MINERAL DEVELOPMENT, GAUTENG REGION, AND ANOTHER v SAVE THE VAAL ENVIRONMENT AND OTHERS 1999 (2) SA 709 (SCA). I attach a summary of the judgment hereto as well as the guideline document on "Sense of Place". I am of the considered opinion that it has particular relevance to the current application under consideration.</p> <p>Biodiversity Priority Area</p> <p>May I furthermore kindly request whether the mining area falls within a 1:100-year flood line or within 500 meters of a water course (that is the delineated wetland area) or within a FEPA and a 1 km buffer around the FEPA, critical biodiversity area (or equivalent areas) from the provincial spatial biodiversity plans or critically endangered and endangered ecosystems in terms of the Mining and Biodiversity Guideline? I infer from the SANBI Map that it falls within a River FEPA & associated sub-quaternary catchment.</p> <p>If my inference is correct the mining application is within a highest biodiversity importance area with the highest risk for mining. The likelihood of a fatal flaw for mining is very high because of the significance of the biodiversity features in this area and the associated ecosystem services.</p> <p>This mining application under consideration therefore resolves around the issue of mining in a sensitive area. This must be dealt in accordance with the <u>Mining Biodiversity Guidelines</u> and must be utilised in the evaluation of the <u>Best Practicable Environmental Option</u> (BPEO).</p>	<p>Land Use:</p> <p>Received thank you.</p> <p>Sense of Place:</p> <p>Noted.</p> <p>Biodiversity Priority area:</p> <p>The mining area does not fall within the 1:100 year floodline, or is located within 500m from the watercourse. Therefore, this is not applicable. The mining area is located 900m from the watercourse.</p>	<p>Addressed in Part A – 3(h) iv), (1) (a), (b), (d) and Appendix H</p> <p>Addressed in Part A – 3(i)</p> <p>N/A</p>

<p>Interested and Affected Parties</p> <p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>	<p>Date Comments Received</p>	<p>Issues raised</p>	<p>EAPs response to issues as mandated by the applicant</p>	<p>Section and paragraph reference in this report where the issues and or response were incorporated.</p>
		<p>The balancing of the negative environmental impacts versus the alleged short term social benefits and the economic advantages can only be assessed if the loss to the environment is evaluated. This appraisal ought to be conducted with the guidance of <i>inter alia</i> the Mining Biodiversity Guideline and the taking into consideration of the opportunity costs.</p> <p>According to the Mining and Biodiversity Guideline the importance of the biodiversity features in these areas and the associated ecosystem services is sufficiently high to prohibit mining in these areas. Given the very high biodiversity importance, the Guideline states that an EIA conducted in respect of such an area should include the strategic assessment of optimum, sustainable land-use for a particular area which should determine the significance of the impact on biodiversity. The EIA must take into account the environmental sensitivity of the area, the overall environmental and socio-economic costs and benefits of mining as well as the potential strategic importance of the minerals to the country.</p> <p>The Guideline states that the EIA “needs to identify whether mining is the optimal land use, whether it is in the national interest for that deposit to the mined in that area and whether the significance of unavoidable impacts on biodiversity are justified. It is important that a risk averse and cautious approach is adopted. This implies strongly avoiding these biodiversity priority areas, given the importance of the receiving environment and the probability that the proposed activity would have significant negative impacts”.</p> <p>When considering mining within these biodiversity priority areas, the Guideline prescribes a set of filters that should be sequentially applied and “mining should only be considered if:</p> <ol style="list-style-type: none"> It can be clearly shown that the biodiversity priority area coincides with mineral or petroleum reserves that are strategically in the national interest to exploit. There are no alternative deposits or reserves that could be exploited in areas that are not biodiversity priority areas or less environmentally sensitive areas. It can be demonstrated that they are spatial options in the landscape that could provide substitute areas of the same habitat conservation, to ensure that biodiversity targets would be met. A full economic evaluation of mining compared with other reasonable/feasible alternative land uses, undertaken as a necessary component of the EIA, shows that mining would be the optimum sustainable land use in the proposed area. A detailed assessment and evaluation of the potential direct, indirect and cumulative impacts of mining on biodiversity and ecosystem services shows that there would be no irreplaceable loss or irreversible deterioration, and that minimising, rehabilitating, and offsetting or fully compensating for probable residual impacts would be feasible and assured, taking into account associated risks and time lags. A risk averse and cautious approach, taking into account the limits of current knowledge about the consequences of decisions and actions, can be demonstrated both in the assessment and evaluation of environmental impacts, and in the design of proposed mitigation and management measures.” <p>The Guideline states further that “the above filters should form the basis for deciding on whether or not, and how and where, to permit mining. This means that based on the significance of the impact, some authorisations may well not be granted. If granted, authorisation may set limits on allowed activities and impacts, and may specify biodiversity offsets that would be written into licence agreements and/or authorisations.</p> <p>The original (2014) EIA/EMP ought to have been compiled so as to give effect to the Guideline and the decision maker should have considered the Guideline in deciding whether or not to grant environmental authorisation. Since we were not consulted during the 2014 process, I am unsure whether or not the Guidelines were considered by the decision maker.</p> <p>The fact is that sand is plentiful on South Africa, it is overproduced and the sensitive environment is neither of the aforesaid. It would not have been possible to make an informed decision if this information, dealing specifically with the matters raised in the Mining Biodiversity Guideline, was lacking.</p>	<p>An Environmental Impact Assessment has been conducted for the Barrage Bulk Sand Mine.</p> <p>These guidelines where considered both during the 2014 and 2017 assessment.</p> <p>DMR is the decision maker.</p>	<p>Please refer to Part A, 3, v)</p>

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		<p>This includes an assessment of the opportunity costs, e.g.:</p> <ul style="list-style-type: none"> o Understanding the value of the foregone opportunity; o The achievement of the desired aim/goal for the specific area; o Optimising of positive impacts; o Minimising of negative impacts; o Equitable distribution of impacts; and o The maintenance of ecological integrity and environmental quality. <p>Applying the “opportunity cost” principle would change the question being asked, namely, by placing a positive duty upon the decision maker to consider if the development constituted the best use of the resources (i.e. the best practicable environmental option).</p> <p>The decision maker must make a decision based upon the following premise:</p> <p>a. If we, as a country, are to mine all minerals (and in the case under consideration, sand) in the ground, then there should be no regard for the environment since all of South Africa, as a resource rich country, will in any event be mined.</p> <p>b. If, however, not all minerals are to be mined and some will be left in the ground, then a decision on which areas to mine and the areas in which to leave the minerals in the ground, should be made.</p> <p>It is our submission that the first scenario is not sustainable and thus not an option. The second scenario is of direct application in this matter under consideration. The decision must reflect the guidelines in such a situation, as well as the lack of information before the decision maker in the documentation dealing with such a scenario.</p> <p>The decision will have to balance the above-mentioned factors at the hand of the EIA Regulations and other guidelines, including the Mining Biodiversity Guideline.</p> <p>The reasons for the decision maker's decision will have to address these issues in detail in order to justify the decision.</p> <p>In order to ripen our judgement, may I kindly request an electronic copy of the 2014 EIA/EMP and the environmental authorisation?</p> <p>Water Use Licence And finally, during our meeting on Saturday it was stated that an application for a Water Use License (WUL) was submitted in 2017. I recollect that it was also stated during the meeting that the water uses in terms of section 21 of the National Water Act (36 of 1998) (NWA) will not be triggered by the mine's activities. If my recollection is correct, it begs the question why the Application considered it necessary to apply for a WUL?</p>	<p>Noted and send.</p> <p>Water Use Licence: An application has been made to DWS that was approved on 24/07/2018. GA was approved for taking water from the borehole for industrial purposes of 33 065 m³/a</p>	
INTERESTED PARTIES				
Sampie van Rooyen	20/09/2017 – Registration as I&AP5 22/11/2017	<ul style="list-style-type: none"> ■ The condition of the tar road leading to Vaal Eden is considered to be heavily degraded, on account of potholes. This road however is used by both the mine, as well as the local farming community. This specific tar road is not constructed to handle the current traffic volumes, consisting mainly of heavy vehicles. Prior to upgrading of the mine, the local farming community requests the mine to upgrade the road to such a state that it will be able to handle the traffic volumes, especially heavy vehicle quantities. Speeding limits and speed bumps should form part of this upgrade, as several farmers own land on both sides of the tar road. Road crossing for both farmers and their livestock occurs daily. Thus, the safety of the farmers and their livestock needs to be assured by the mine. ■ The local farmers request the mine to incorporate dust and noise suppression methods at all times, as heavy dust and noise volumes negatively affect the livelihoods of the surrounding landowners. 	<p>Please refer to comment above regarding roads.</p> <p>Please refer to comment above regarding dust and noise. The mine will employ no external workers.</p>	N/A

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		<ul style="list-style-type: none"> ■ Safety of the local farming community is regarded as high priority and needs to be addressed by the mine. With the large volume of workers employed by the mine, the farmer community's safety of their families and livestock are compromised. Thus, the farming community requests that a regulated system be implemented at the entrance of the Vaal Eden road, which will regulate and inspect all peoples and equipment entering and exiting this specific road. ■ Since Greenmined Environmental did not receive any comments from the Interested and affected parties, we suggest that the public participation process was not adequate and request that a stakeholders' engagement session should be held, informing all of the I&AP's about the project. The local farming community will assist in locating a venue, as well as a specific date for this meeting. 	Meeting with the Vaaloewer Ratepayers Association	Refer to the SLP. Refer to Appendix E.
Joy Rabotapi (BEE Partner of Tja Naledi Beafase Investment)	24/10/2017	The only concern is that the DBAR states that the Groundwater is deeper than 5m, and Excavations can be as deep as 10m in some areas. Will there be mitigation measure.	Groundwater will be managed and mitigated as described in Part A – 3(h) iii), (j) and Part A – 3(h) iii) Part B – 1(e)	Part A – 3(h) iii), (j) and Part A – 3(h) iii) Part B – 1(e)
Mariette Lieferick	20/09/2018	<p>In order to ripen our judgment, we kindly request:</p> <ol style="list-style-type: none"> 1. Whether a full economic evaluation of the mining of sand and gravel compared with other reasonable/feasible alternative land uses, was undertaken showing that the mining of sand, gravel, etc. would be the optimum sustainable land use in the proposed area. 2. Whether the mining is the Best Practical Environmental Option in terms of the NEMA's principles and that there are no alternative deposits or reserves of sand and gravel that could be exploited in areas that less sensitive. 3. An assessment of the opportunity costs, e.g. <ol style="list-style-type: none"> a. Understanding the value of the foregone opportunities; b. The achievement of the desired aim/goal for the specific area; c. Optimising of positive impacts; d. Minimising of negative impacts; e. Equitable distribution of impacts; and f. The maintenance of ecological integrity and environmental quality 4. Whether a cost/benefit analysis has been undertaken, which ought to take into account the loss to the environment, the impact on sense of place, the impacts upon eco-tourism and tourism and an evaluation of the financial costs of these impacts. 5. A detailed assessment and evaluation of the potential direct, indirect and cumulative impacts of sand mining in this area since this application is one of many. 6. Whether mining in this area is the optimal land use and whether the significance of unavoidable impacts on biodiversity and current land use and sense of place are justified. <p>We reserve our right to submit comprehensive comments on this application.</p>	<ol style="list-style-type: none"> 1. Comparative land use assessment included into Appendix I2 and in Part A – 3(h) iv), (j) and Part A – 3(h) iii) Part B – 1(e) 2. The area is not classified as sensitive according to the Mining and Biodiversity Guidelines by SANBI. Please refer to Part A – 3(h) (vi), Part B – 1(e) 3. This assessment was included as part of the Environmental Impact Assessment. Part A – 3(h) (v). 4. Please refer to Part A – 3(v) and Appendix F for the impact assessment and cumulative impact assessment that was completed for this report. 5. The area is not classified as sensitive according to the Mining and Biodiversity Guidelines by SANBI. Please refer to Part A – 3(h) (vi), Part B – 1(e) 	<ol style="list-style-type: none"> 1. Comparative land use assessment included into Appendix I2 and in Part A – 3(h) iv), (j) and Part A – 3(h) iii) Part B – 1(e) 2. The area is not classified as sensitive according to the Mining and Biodiversity Guidelines by SANBI. Please refer to Part A – 3(h) (vi), Part B – 1(e) 3. This assessment was included as part of the Environmental Impact Assessment. Part A – 3(h) (v). 4. Please refer to Part A – 3(v) and Appendix F for the impact assessment and cumulative impact assessment that was completed for this report. 5. The area is not classified as sensitive according to the Mining and Biodiversity Guidelines by SANBI. Please refer to Part A – 3(h) (vi), Part B – 1(e)
Carl Scholtz	25/09/2018 27/09/2018	Please send the aerial map of where the site is located. Please note my objection and concerns below as a I&AP.	Maps where send to I&AP.	N/A

Interested and Affected Parties	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
<p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>		<p>Objection</p> <p>I object to any mining activity that is planned in an area of high eco-tourism and located in close proximity to a UNESCO World Heritage Site and a National water resource namely the Vaal River. Furthermore, to my knowledge sand, gravel and alluvial diamonds are not classified as strategic important minerals. It therefore begs the question whether the significant impacts on the natural environment, tourism, eco-tourism, and heritage are justified? As a resident In Vaaloewer the proposed mining activity will have a major visual impact and a disturbance of the sense of place within this serene area. Noise and dust pollution will be another impact which is in general challenge to manage for any surface mining operation. I further object in that this activity will negatively impact on the value of my property and the other properties in Vaaloewer and surrounding areas.</p> <p>Concerns</p> <p>Notwithstanding the above mentioned objection, I also have serious concerns in how the consultant and through its specialist studies will assess and evaluate the potential direct, indirect, cumulative impacts and opportunity costs of this application on the natural environment, tourism and eco-tourism in the area and that how will the EMP guarantee the elimination and or minimising of these impacts. Furthermore the previous EAP appointed by the proponent could not reasonably defend nor motivate the response to the above objection and concerns- what will make Greenmined Environmental contribution any different?</p>	<p><u>Vredefort Heritage site</u></p> <ul style="list-style-type: none"> As from the letter received from the Heritage consultant, the mining area is not located within the Vredefort Heritage Site, which is classified by UNESCO as a Heritage site, but not by SAHRA. <p><u>Socio-Economic Study</u></p> <ul style="list-style-type: none"> A socio –economic study was conducted to address any issues that the I&AP'S have regarding the proposed mining right amendment. Impacts on tourism was addresses in the SEIA and Economic Impact Assessment that was conducted. <p><u>Noise Pollution</u></p> <ul style="list-style-type: none"> The noise in the area will be kept to a minimum during operational hours. Noise suppressors have been place on the equipment to minimizes the noise in the area SPH and Dr. Stephen Jacobs went to Craig Richardson's farm after the meeting to investigate the noise concerns. SPH added noise muffler systems on all the reverse hooters of the mining equipment. a noise monitoring system will be added to Mr. Richardson's farm to conduct noise monitoring in the future if the noise continues on his farm. <p>Diamond mining is no longer applicable as described above.</p>	<p>Please refer to Part A – 3(h) (iv) for Archaeological and Heritage Sites.</p> <p>Please refer to Part A – 3(h) (xiii) for Socio-Economic Study.</p> <p>Please refer to Part A – 3(h) (iv) for Noise and Dust</p>
Susan Malcolmess	E 27/09/2018	<p>No Objection. Would like to know the rehabilitation undertaking are going to be enforced. This mining application is for land in an agricultural area that has a fast growing tourism industry. It is also within the Vredefort Word Heritage Site. I do not believe that continues mining vehicles equal to the noise levels of tractors that are not used every day. The noise pollution will be far more.</p>	<p><u>Rehabilitation</u></p> <ul style="list-style-type: none"> Previously mined areas do not reflect on the Section 102 amendment currently undertaken by SPH Kundalila. The previous mined area was mined before Tja Naledi applied for their mining right. The rehabilitation for the current mine has not taken place, as the plan is to still mine the area, therefore the Section 102 application was brought to include the screening plant into the Mining Right area. Rehabilitation of the mining area will be conducted once mining is complete. The new mining right application (Section 102) is for the same property and same size as the current mining area. <p><u>Agricultural land</u></p>	<p>Please refer to Part A – 3(h) (iv) for Rehabilitation and land use</p> <p>Please refer to Part A – 3(h) (iv) for Archaeological and Heritage Sites</p> <p>Please refer to Part A – 3(h) (iv) for Noise</p>

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			<ul style="list-style-type: none"> The proposed section 102 amendment area falls within an area that has been used for previous mining activities. <p><u>Vredefort Heritage site</u></p> <ul style="list-style-type: none"> As from the letter received from the Heritage consultant, the mining area is not located within the Vredefort Heritage Site, which is classified by UNESCO as an Heritage site, but not by SAHRA. <p><u>Noise Pollution</u></p> <ul style="list-style-type: none"> The noise in the area will be kept to a minimum during operational hours. Noise suppressors have been place on the equipment to minimizes the noise in the area SPH and Dr. Stephen Jacobs went to Craig Richardson's farm after the meeting to investigate the noise concerns. SPH added noise muffler systems on all the reverse hooters of the mining equipment. a noise monitoring system will be added to Mr. Richardson's farm to conduct noise monitoring in the future if the noise continues on his farm. 	
Martin Struwig	27/09/2018	<p>Yolandie,</p> <p>Please find this email as my info as an affected & concerned party to the application to include gravel and diamond mining. I reside on portion 80 Zeekoefontein on the river which is just opposite Woodlands farm portions and next to Vaaloewer (see some pic's for info). I have been living in Vaaloewer area since 1980 and selling property here since 1990. We are probable less than 1km from the mine as the crow flies and due to the landscape we can hear the movement of heavy equipment from the mine until very late at night and early morning hours (I do not see any working hours indicated on your documents).</p> <p>Vaaloewer including Goose Bay Canyon township and the Zeekoefontein farm portions represent a total market value of ±R456 679 000 representing well over 1000 properties on which owners are paying rates and taxes to Emfuleni Municipal Council. Large scale mining in the area will have a negative impact on property values, noise & air pollution, further future development and also impact on job creation in the area. These properties are used for permanent, retirement, leisure living and also investment purposes and owners purchase here to be in an unpolluted, non-industrial, tranquil peace and quiet area as most come from cities and want to be away of the hustle and bustle.</p> <p>The mining can also have an effect on the pollution of the river and Vaaloewer extract water from the river to purify for household consumption. Although you mention that the area is mainly a agricultural area and therefor there are noise factors such as tractors and farming equipment so this will not be a problem. The type of equipment including large tipper trucks, excavators, crushers or other diamond related machinery will make more noise than that of normal farming in the area.</p> <p>As this is now the first time that we become aware of your existing mining and further planned operations we have never been party to any public participation which we find very strange as with any google search you would be able to see the developments in our area which are in close proximity to mining area. We will attend the public meeting to be held in Parys on 27th October 2018.</p>	<p><u>Operational Hours.</u></p> <p>The nuisance value of noise generated by heavy earthmoving equipment for residence in the near vicinity is deemed to be of low – medium significance, as the mine is will only be operational during daylight hours, 6 days a week. The distance of residents from the mining area (>2km) will however assist in the mitigation of the noise impact. All mining vehicles will also be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No. 93 of 1996). The mine will not be operational at night, so any noise in the area will not be from the BBSM operation.</p> <p>Please refer to statement above regarding <u>noise</u>.</p> <p>Greenmined Environmental cannot be held responsible for any previous PPP that was conducted. We were instructed by the DMR to consult with all parties around the mining area, the Vaal Oewer town, and Vaaloewer Settlement, therefore you were listed as an I&AP and where involved into this Public Participation Process.</p> <p>Diamond mining is no longer applicable as</p>	Please refer to Part A – 3(h) (iv) for Noise

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Marianne Bilsland	9/10/2018	<p>"I, M Bilsland, owner of 11 Kingfisher Bend, Vaaloewer, object to the development of the Tja Naledi Beafase Investment Holding (Pty) Ltd Mining Project as detailed under reference DMR Reference Number FS30/5/1/1/2/10020MR.</p> <p>My property is situated on the Vaal River and was purchased solely for the peace and tranquillity that the area offered. This particular stretch of the river allows me to enjoy the quietness of country living and experience the abundant birdlife, fish and animal life of the habitat that is associated with the river. My property will be directly affected by the proposed mining operation with regard to, but not limited to, the following: (kindly note that Italic font has been used for information taken directly from the 'Background Information Document'</p> <p>Vague information</p> <p>It is my opinion that the 'Background Information Document' dtd 25/09/2018 is vague in numerous aspects. I am not able to comment or verify a portion of the document as it refers to legalese, acts and mining rights that, as a layman, I am not in a position to interpret or confirm. However, I draw attention to the following extracts from the document that are concerning:</p> <ul style="list-style-type: none"> • 'The farm Woodlands 407 is situated approximately 3.98 km southwest of Vaal Oewer, 22.26km north-east of Parys, 21.6km east of Sasolburg, Free State Province.' <ul style="list-style-type: none"> ○ Which reference point are these distances measured from? ○ The accompanying map with the 'Background Information Document' doesn't show the area of Vaaloewer in the enlarged section. It is therefore difficult to ascertain distances using the scaling information on the map. ○ The accompanying map with the 'Background Information Document' shows the area of Vaaloewer in the minimised section but makes no reference to the fact that it is an existing township. As I live here, I am able to recognise the small portion of Vaaloewer. However, anyone not familiar with area could overlook the fact that the township exists. →' • The proposed mining area is approximately 437.8330ha is extent and the applicant, Tja Naledi Beafase Investment Holdings (Pty) Ltd, intends to win material from the area for at least 10 years.' <ul style="list-style-type: none"> ○ It is unacceptable that only a minimum period is stated. • The mining area was identified to constitute the lowest possible visual impact on the surrounding environment.' <ul style="list-style-type: none"> ○ Who would have been qualified to make this identification? • The surrounding area has previously been disturbed by mining activities.' <ul style="list-style-type: none"> ○ It is my understanding that a large portion of this referenced 'mining activity' is illegal and under investigation. • 'All disturbed or exposed areas will be re-vegetated as soon as possible during mining to prevent any dust source from being created.' <ul style="list-style-type: none"> ○ The phrase 'as soon as possible' is vague and unenforceable. • → 'Regional Manager'. <ul style="list-style-type: none"> ○ Who would this person be? ○ Would he be a government employee? ○ Would I, as an affected person, be able to freely contact him/her? ○ Would I be guaranteed of a response and action, should the mining company be in contravention? <p>Dust:</p> <ul style="list-style-type: none"> • 'Speed on the access road will be limited to 30 km/h to prevent the generation of excess dust.' Roads will be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. <ul style="list-style-type: none"> ○ Who will be responsible for determining acceptable limits of dust? ○ The very nature of the mining proposed will incur dust, yet no mention is made in the report of how this will be controlled and minimised. ○ It is well documented that current mining activities have caused dust problems. • Excavators, Loaders and Trucks will operate and idle continuously and the resultant pollution and smell of fuel fumes will have a negative impact on ambient air quality and in turn will affect me. <p>Noise</p>	<p>described above.</p> <p>Vague Information</p> <ul style="list-style-type: none"> • As per the BID that was submitted to all I&APs "Further information is available on Greenmined Environmental website at www.greenmined.com. Please contact... and would like to receive a copy of the Basic Assessment Report (BAR)... An electronic copy of the report will be published on the Greenmined Environmental website (www.greenmined.com). • The locations are measured from the entire point of where the mining will be located. The map in the BID indicated the Regulation 2.2 map that is required as per legislation. As mentioned above, the Vaal Oewer is situated 3.98km, as the crow flies north of the proposed mining area. Please refer to all maps that was published on our Greenmined website. • A Mining Right is granted for a minimum of 10 years, where after it will be renewed. • The EAP as well as the appointment specialist are qualified to make this identification. • Not applicable to the Section 102 application. • "As soon as possible" indicated as soon as mining has completed in that sections where vegetation has been removed and mining has completed. • The Regional Manger refers to the DMR's regional manager that is appointed. Any I&AP may contact the RM during the process of mining. <p>Dust</p> <ul style="list-style-type: none"> • Dust limits are set by the SANS and NEM"QA legislation and standards • Please refer to the DBAR for the management measures <p>Noise</p> <ul style="list-style-type: none"> • Please refer to previous comments regarding Noise and operational hours. • Noise levels will be kept within the legal limit. • Site management to ensure that staff and employees conduct themselves in acceptable manner 	<p>Please refer to Part A – 3(h) (ix) for Air Quality.</p> <p>Please refer to Part A – 3(h) (x)</p>

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		<p>As previously stated, my property was bought for the seclusion and quietness that Vaaloewer offered. The water sport activity on the river is controlled and infrequent and I was fully aware that there would be water activity on the river when my property was purchased. Traffic noise is less than minimal. At the time of purchasing my property, there was no sign of mining activity. The proposed mining activity will cause noise pollution through the presence of noise generating infrastructure and activities. Due to the non-urban configuration of the area, noise travels far distances and will not be contained in the area demarcated for mining. Proposed operating times have not been addressed.</p> <ul style="list-style-type: none"> • ‘The project environment is located within an agricultural setting in which heavy equipment, e.g. tractors, already operate.’ <ul style="list-style-type: none"> ○ The only heavy equipment noted and referenced is tractors, and this is by no means comparable to the noise that will be generated by mining equipment. ○ It is stated that the following equipment will be used for mining, which will incur noise: <ul style="list-style-type: none"> ○ Excavating equipment; ○ Earthmoving equipment; ○ Mobile crushing and screening plants; • The activities noted cannot be carried quietly and will incur unacceptable noise: <ul style="list-style-type: none"> • Excavating; • Crushing and Screening; • Stockpiling and transporting; <ul style="list-style-type: none"> ○ It will be ensured that employees and staff conduct themselves in an acceptable manner while on site. • Who and how would this be monitored and enforced? <ul style="list-style-type: none"> ○ ‘The noise generated from (sic) the mining machinery will be similar to noise generated along the Vaal Eden road by public vehicles, ‘ <ul style="list-style-type: none"> • This statement is untrue. The Vaal Eden road generates minimal public vehicles and the noise is therefore negligible and cannot be equated to the noise that will be generated due to mining activity. ○ ‘..... and by the adjacent sand mine (Pure Source Minerals Mining Co (Pty) Ltd. ‘ ○ It is my understanding that a large portion of referenced ‘mining activity’ is illegal and under investigation. The above statement is an unacceptable attempt to quantify an increase in noise. <p><u>Surface and Ground Water:</u></p> <ul style="list-style-type: none"> • ‘The proposed activities are not expected to have a negative impact on any surface and ground water of the area.’ <ul style="list-style-type: none"> ○ The above statement does not specifically preclude the sourcing of water from the Vaal River. Should water be sourced from the river, the resultant noise from the pumps will be an added noise disturbance. • ‘The proposed activities are not expected to have a negative impact on any surface and ground water of the area.’ <ul style="list-style-type: none"> ○ The above statement does not specifically preclude the sourcing of water from the Vaal River. Should water be sourced from the river, the resultant noise from the pumps will be an added noise factor. <p><u>Fauna</u></p> <ul style="list-style-type: none"> • ‘Birds commonly associated with the area include Guinea fowl, plovers, pigeons swallows’s francolin amongst other common airborne species.’ • The birdlife along the river is prolific, the following names just a few of the birds species that are sighted and enjoyed, and there will be no guarantee that these birds will remain in the area: African Fish Eagle, Goliath Heron, Squacco Heron, Brown Hooded Kingfisher, Giant Kingfisher, Malachite Kingfisher, Pied Kingfisher, Western Osprey, African Spoonbill, Caspian Tern, Golden Tailed Woodpecker, Spotted Eagle Owl. • ‘Workers should be educated and managed to ensure that no fauna at the site is harmed. ‘ • The use of the word ‘should’ in the above statement gives no guarantee that workers will be educated. <p><u>Visual Exposure</u></p> <ul style="list-style-type: none"> • ‘The mining area was identified to constitute the lowest possible visual impact on the surrounding environment. The surrounding area has previously been disturbed by mining activities. ‘ 	<p><u>Surface and Groundwater:</u></p> <ul style="list-style-type: none"> • No water will be abstracted from the Vaal River, a GA has been granted for the abstraction from the borehole for Dust Suppression. <p><u>Fauna</u></p> <ul style="list-style-type: none"> • Fauna is able to move away from the mining activities. Will return after mining ceased. • Proof of induction, as indicated in the Environmental Awareness Plan the induction will be included. <p><u>Visual Exposure</u></p> <ul style="list-style-type: none"> • Please refer to statement above • Vaaloewer residents is located 3.98km north of the proposed site. The site is visually barricaded by eucalyptus trees. <p><u>Ablution, Waste water & Waste Disposal.</u></p>	<p>for Noise.</p> <p>Please refer to Part A – 3(h) (vii and viii) for Surface and Ground Water.</p> <p>Please refer to Part A – 3(h) (v) for Fauna</p> <p>Please refer to Part A – 3(h) (xii) for Visual Exposure</p>

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
		<ul style="list-style-type: none"> o I again ask the question who qualified to identify the area for the ‘...lowest possible visual impact...’ and I reiterate that it is my understanding that a large portion of referenced ‘mining activity’ is illegal and under investigation. • ‘The site will be visible from the Vaal Eden road.’ <ul style="list-style-type: none"> o The site will be highly visible to many Vaaloewer residents. Why was this fact omitted from the report? • The applicant should however ensure that housekeeping is managed to standard, as this will mitigate the visual impacts during the operational phase of the mine. <ul style="list-style-type: none"> o Again, the use of the word ‘should’ in the above statement gives no guarantee that housekeeping will be done. <p><u>Ablution, Waste Water & Waste Disposal</u></p> <ul style="list-style-type: none"> • The information in the ‘Background Information Document’ under this heading gives no guarantee or time limit for the referenced actions to be done. • Which ‘facility’ and ‘land-fill site’ has been earmarked for the disposal of the various items mentioned in the paragraph? • ‘General waste will be disposed at the authorised Parys or Vanderbijlpark Disposal facility.’ <ul style="list-style-type: none"> o The distances noted are ‘...22.26km north-east of Parys, 21.6km east of Sasolburg 22.26km...’ How often will general waste be removed from site, considering the kms quoted above are not exactly in close proximity to the site. <p><u>Financial implications</u></p> <ul style="list-style-type: none"> • The establishment of mining operations in such close proximity to my property will have a direct financial implication to me in that I will not be able to realise the true value of property should I decide to sell. This has been corroborated by several Estate Agents that service the area. <p><u>General:</u></p> <ul style="list-style-type: none"> • I have objected to the mining rights that the neighbouring Goosebay Farm (Pty) Ltd have under application. In 2008, the owner of Goosebay Farm, under the auspices of Van Wyk Land Development Corporation (Pty) Ltd, marketed his property as an eco estate area. I find it incongruous that the land is now being mooted for mining as opposed to an eco estate. • My question is what factors were used to market an eco-estate which are now being disregarded in favour of mining? • I would like to draw your attention to the following: • Section 1 of the MPRDA, in terms of which this application is administered gives effect to the definition of the environment as such is defined under NEMA and which is as follows: “environment” means the surroundings within which humans exist and that are made up of – <ul style="list-style-type: none"> (i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing;” • Section 2(h) of the MPRDA refers to the over-riding requirement for application to be consistent with Section 24 of the Constitution and which states: “Everyone has the right - (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that - (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.” In closing, I oppose the mining application in the strongest possible manner and, in addition, I am of the opinion that in terms of the MPRDA sections noted above, my rights are being violated. 	<ul style="list-style-type: none"> • Please refer to the DBAR document for mitigation and management measures • Parys landfill has been earmarked for the disposal of the various item. • General waste will be disposed of on a weekly basis. <p><u>Financial Implications</u></p> <ul style="list-style-type: none"> • From the SEIA that was conducted the 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. <p><u>General</u></p> <ul style="list-style-type: none"> • This is not relevant to the Section 102 application. 	<p>Please refer to Part B – 1(e) for the management of waste.</p>
Bob Hartslief	15/10/2018	<p>Article forwarded from electronic source dated 19th November 2012.</p> <p>The obligation to rezone land and its impact on mining and prospecting rights in South Africa - 19TH NOVEMBER 2012</p> <p>The necessity to rezone land for mining or prospecting purposes has been confirmed by a series of recent judgements. If this obligation is ignored by holders of mining rights, mining permits or prospecting rights, it could have severe consequences for the holder, such as the forced legal closure of operations by municipal authorities or other affected persons, including local communities. Holders of rights or permits who have not applied for the rezoning should do so now, or where necessary, negotiate with landowners to rezone the land as a matter of extreme urgency, or face the consequences.</p>	<p>Noted. Please refer to comment above regarding zoning.</p>	<p>Please refer to section reference above regarding rezoning.</p>

<p>Interested and Affected Parties</p> <p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>	<p>Date Comments Received</p>	<p>Issues raised</p>	<p>EAPs response to issues as mandated by the applicant</p>	<p>Section and paragraph reference in this report where the issues and or response were incorporated.</p>
		<p>In April 2012, the Constitutional Court (ConCourt) delivered judgement in Maccsand (Pty) Ltd v City of Cape Town and Others 2012 (7) BCLR 690 ("Maccsand Case"). Maccsand is the holder of a mining right and mining permit issued to it by the South African Department of Mineral Resources (DMR) in terms of the Mineral and Petroleum Resources Development Act (MPRDA). The land over which the mining right and mining permit was granted is zoned as public open space. The City of Cape Town informed Maccsand that it would not be permitted to exercise the mining right or mining permit unless the land was rezoned for mining purposes in terms of the Land Use Planning Ordinance 15 of 1985 (Cape) (LUPO). Maccsand and the DMR submitted that mining fell under the exclusive competence of the national sphere and that LUPO therefore does not apply as it only regulates a municipal functional area.</p> <p>LUPO applies in three provinces, the Western Cape, parts of the Eastern Cape and parts of the North-West. There are similar provincial laws in the other provinces including the Orange Free State's Townships Ordinance 9 of 1969 and the Transvaal Province's Town-Planning and Townships Ordinance 15 of 1986, applying in Gauteng, Limpopo and Mpumalanga (Ordinances).</p> <p>The Ordinances authorise the preparation of structure plans and zoning schemes or regulations. A zoning scheme or regulation is a legal document which records all land-use rights on properties in an area of jurisdiction. It includes regulations and restrictions on such rights and how they can be exercised. Under the different Ordinances, every municipality has its own zoning scheme or multiple zoning schemes, each setting different rules and regulations.</p> <p>The rules and regulations that would apply to each holder would depend on the location of mining or prospecting operations, the relevant Ordinance as well as the relevant zoning scheme or regulation applicable to that area of jurisdiction.</p> <p>Whereas mining is governed by the MPRDA, the land on which mining takes place is regulated by the various Ordinances. There is therefore an overlap of the two functions.</p> <p>In the Maccsand Case, the ConCourt found that because the powers allocated by the Constitution to the three spheres of government (national, provincial and municipal), in accordance with the functional vision of what was appropriate to each sphere, were not contained in airtight compartments, the exercise of powers by two spheres may on occasion result in an overlap.</p> <p>In the instance of the Maccsand Case the ConCourt found that the overlap of the MPRDA and LUPO does not constitute an impermissible intrusion by one sphere into the area of another. Where overlapping occurs, the Constitution obliges these spheres of government to cooperate with one another in mutual trust and good faith, and to co-ordinate actions taken with one another. The ConCourt held that mining cannot take place until the land in question is appropriately rezoned.</p> <p>The ConCourt further noted that there is nothing in the MPRDA which suggests that LUPO (and therefore any Ordinance) will cease to apply to land upon the granting of a right or permit, the mere granting of a right or permit therefore does not cancel out the applicability of an Ordinance.</p> <p>Section 23(6) of the MPRDA states that "A mining right is subject to this Act, any relevant law, the terms and conditions stated in the right..." and section 17(6) similarly stipulates that "A prospecting right is subject to this Act, any other relevant law and the terms and conditions stipulated in the right..." (Underlining our emphasis). The MPRDA does not define the phrase 'relevant law' and the ConCourt therefore contends that, consequently, it must be accorded its ordinary wide meaning. There is therefore no justification whatsoever for limiting it to laws regulating mining only.</p> <p>If land is intended to be used or is used for a purpose not permitted in terms of the zoning scheme or regulations, application must be made to the municipality for rezoning or for a use departure. If either is granted, the land must be used for the permitted purpose within a period of two years, failing which that rezoning lapses. It must be noted that the Ordinances generally authorise a landowner to apply for rezoning of land. However, land may also be rezoned at the instance of the provincial government or the municipality in whose jurisdiction it is located. This places a rights holder who is not also the landowner at a disadvantage.</p> <p>It is clear from the above that mining cannot take place until the land in question is appropriately rezoned. If consent for rezoning is refused it does not mean that the first decision is vetoed; but it does result in the mining right holder being unable to exercise its rights to mine. Such conflicts of authority would be required to be resolved through cooperation between the two organs of State, failing which the refusal may be challenged on review.</p> <p>The view that rezoning of land is required where the land in question is not zoned for mining purposes was further confirmed by the ConCourt in the Minister for Mineral Resources v Swartland Municipality and Others 2012) (Swartland Case). The ConCourt stated that a party who is granted a mining right or permit in terms of the MPRDA may start mining operations only if the zoning of the land in terms of LUPO (or another Ordinance) allows mining.</p> <p>Both the Maccsand and Swartland cases dealt only with mining rights. However, in a recent decision, the Western Cape High Court, on an</p>		

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		<p>application by the Berg River Municipality, granted an interdict against Bongani Minerals, preventing Bongani Minerals from prospecting for tungsten and molybdenum until the land has been rezoned for prospecting purposes. It must be noted that the prospecting activities of Bongani were not particularly intrusive (drilling) and had little impact on the land.</p> <p>The judgment has not yet been reported but it would now appear that rezoning will be required for both mining and prospecting purposes. Holders of rights or permits must bear in mind that the Maccsand and Swartland cases have given extra ammunition to landowners in their negotiations with mining companies, as the landowner is the principal person able to apply for the rezoning of any property. The right to rezone is not extended to the holder of a right or permit.</p> <p>The holder of a right or permit under the MPRDA may have commenced prospecting or mining operations and may in fact have been granted access to the land by the landowner, but, notwithstanding the grant and execution of a right or permit, until the area covered by the right or permit has been rezoned for mining or prospecting purposes in terms of the relevant land-use planning legislation, such mining or prospecting operations will in fact be carried out illegally.</p> <p>Local government has the legal right to force mining or prospecting operations to close down if the land is not correctly zoned. Ceasing mining or prospecting operations because of rezoning can have far reaching consequences on the right or permit holders as they will have to apply to the DMR for the suspension of mining or prospecting operations until such time as the land has been rezoned. If suspension is not applied for, the holders will not be mining or prospecting in accordance with their approved mining works programmes or prospecting work programmes, which could result in the DMR invoking the provisions of section 47 of the MPRDA and cancelling or terminating a right or permit by reason of noncompliance. The suspension of rights or permits may also have severe financial and/or contractual implications for the holders.</p> <p>Most resource companies believed, and still believe, that a right or permit granted in terms of the MPRDA is sufficient regulatory authority for the conduct of their operations and that rezoning is not required. This is clearly not the case. We strongly advise that the holders of rights or permits who have not applied for the rezoning do so, or where necessary commence negotiations with landowners, to rezone the land as a matter of extreme urgency.</p>		
Gavin Aboud	15/10/2018	<p>Mining Rights and Land Use Compliance - Jun 28, 2017</p> <p>Important Issues to Consider Regarding Mining Rights and Land Use Compliance</p> <p>The issue of mining rights and land use compliance is briefly discussed below, giving you an indication how zoning restrictions could hamper the right to prospect or mine in South Africa. Anyone who wants to apply for mining rights in the country should study and ensure compliance with the Mineral and Petroleum Resources Development Act and all environmental management laws and regulations of South Africa.</p> <p>However, failure to take zoning restrictions into consideration will mean that the person or company, even if they are complying with the terms of the Mineral and Petroleum Resources Development Act, will not be able to exercise their mining rights. As such, land use compliance and mining rights must be considered together. If there is a zoning restriction on the particular piece of land which, for instance, only allows for agricultural or residential usage of the land, the applicant must first apply for the lifting or changing of the zoning to include mining and prospecting usages of the land. For this, the mineral rights permit holder has to get the required land use planning permission before any prospecting or mining operations can commence.</p> <p>Keep in mind that the right to mine on a particular piece of land does not override other laws of the country, not even local ordinances. As such, the mining rights are subject to compliance with other laws and ordinances. Therefore, it is essential to first apply for rezoning of the land where one wants to mine before commencing with mining operations. Because the land use and zoning requirements and limitations differ from province to province, it is important to review the legislation and restrictions of the specific province where the mining rights holder wants to mine. In this regard, the expertise of The Practice Group can come in handy. Our consultants work with zoning restrictions all the time and will be able to assist in the application for rezoning and the relevant approvals from the local authorities to ensure that the mining permit holder can commence with mining operations.</p> <p>That being said, one cannot only look at the current legislation in the province and the local authority zoning restrictions in place now, but must also consider what legislation was in place when the mineral mining rights permit was applied for and received by the permit holder. The legislation may have changed over time. If, for instance, the company applied for mining and mineral rights on a particular piece of land and was granted the right under land use legislation at the time of application, allowing for mining without first having to get provincial or local authority permission, then the company does not have to do so, even if the law has changed in the meantime, before the company started their mining operations on the particular piece of land.</p>	Noted.	

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		<p>To avoid legal disputes and complications regarding mining rights and land use compliance, we recommend that prospective mining permit holders consider factors regarding zoning restrictions, such as:</p> <ul style="list-style-type: none"> • What is the town planning scheme regarding the particular piece of land? • If there is a town planning scheme regarding the land, does the zoning allow for mining on that land? • If there is no town planning scheme over the land, does the scheme exempt mining? • If there is no mining exemption, does the scheme make provision for mining? • If it is not the case, is it possible to argue that the scheme is not legally binding? <p>We highly recommend consulting an attorney specialising in mining and minerals rights and land use management, in addition to making use of our services to apply for authorisation to use the land for mining purposes if mining activities are restricted on the particular piece of land. Rather than waiting until the project must commence, do timely research regarding the particular property. It is possible to have us do a property due diligence to determine which land uses are allowed before you buy the specific property. With prospecting and mining operations being expensive, early application for rezoning will help minimise the risk of financial loss due to having to wait for rezoning approval. Get professional guidance from our team and attorneys to help avoid costly mistakes regarding mineral rights and land use compliance.</p>		
Dawn and Gerrit Scheepers	15/10/2019	We live in the area. This will drastically affect our health due to the dust which will affect our lungs. It will have a really negative effect on our birdlife and animal life as well as fish and creatures which live in the river. The water in the Vaal River will definitely be negatively affected which will further affect our health. Businesses in the area will be negatively affected which in turn will bring down the value of our properties. I therefore strenuously object to the mining in this area.	Please refer to comments above regarding dust and silicosis, fauna and water. Please refer to the Socio-Economic study of the area.	
Chris Campbell	18/10/2019	Object Strongly. Concerns, Air pollution, Water Pollution, Noise Pollution, Proximity to Vaal river due to counties most significant water sources, Groundwater Pollution, Negative socio-economic impact.	Please refer to above comments regarding impacts mentioned.	Please refer to sections above.
Althea Campbell	18/10/2019	Object Strongly. Concerns, Air pollution, Water Pollution, Noise Pollution, Proximity to Vaal river due to counties most significant water sources, Groundwater Pollution, Negative socio-economic impact. Land Zone Agriculture better socio-economic benefits if rezoned for eco-tourism.	Please refer to above comments regarding impacts mentioned.	Please refer to sections above.
Rocco Campbell	18/10/2019	Object Strongly. Concerns, Air pollution, Water Pollution, Noise Pollution, Soil erosions and desertification. Animal habitats destroyed. Insufficient evidence of duty of care by mine owners. Destruction of ecosystem.	Please refer to above comments regarding impacts mentioned.	Please refer to sections above.
Candice Campbell	18/10/2019	Object Strongly. Concerns, Air pollution, Water Pollution, Noise Pollution. Desertification. Disturbance of ecosystem. Insufficient evidence of duty of care by mine owners, therefore lack of evidence in the future commitment to HO. Adverse socio-economic impact.	Please refer to above comments regarding impacts mentioned.	Please refer to sections above.
Cindy Campbell	18/10/2019	Object Strongly. Concerns, Air pollution, Water Pollution, Noise Pollution. Desertification. Disturbance of ecosystem. Insufficient evidence of duty of care by mine owners, therefore lack of evidence in the future commitment to HO. Adverse socio-economic impact.	Please refer to above comments regarding impacts mentioned.	Please refer to sections above.
Revanye Cambell	18/10/2019	Object Strongly. Concerns, Air pollution, Water Pollution, Noise Pollution. Insufficient evidence of duty of care. Adverse social-economic impact. Destruction of flora and fauna. Mining activity in proximity of key water resource, o.e. Vaal river especially diamonds will destroy normal river flow.	Please refer to above comments regarding impacts mentioned. Diamond mining is no longer applicable as described above.	Please refer to sections above.
Craig Richardson	26/10/2018	As immediate neighbours we were never notified of the original Mining Application. Please send proof that notifications were posted in Newspapers in Gauteng as the property borders Gauteng and Emfuleni Local Municipality was notified. This is a legal requirement. Mining is currently taking place on agricultural zoned land which is illegal. The noise generated by the current mine is destroying our sense of place and the noise from the trucks and equipment creates a daily noise nuisance. This if far in excess of normal farm noise as per your information document. The introduction of more heavy equipment and the resultant noise will make living and working in our home impossible and totally destroy our properties value. The current mine has not adhered to their EMP, by working out of designated hours and failing to do concurrent rehabilitation. The DMR is unable to monitor compliance. The dust generated from the mine is unacceptable and it is proving impossible to control. We have photos to prove this. The area is earmarked for tourism and we are planning a multi-billion rand education facility, currently sitting with Gauteng Province that will have to be scrapped should the mines in the area be allowed to continue.	Please refer to answers above regarding the mentioned issues that was addressed during the previous meeting with the Protect the Vaal.	Please refer to sections above.

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Gavin Aboud	26/10/2018	Good day Yolandie, Attached please find our objections to your Section 102 application. Please note I sent you a list Of 1396 persons that were to be registered as IAP's. These objections are raised by each of those 1396 IAP's.	The objection received was the same letter as when received on 23/05/2018 and will hereby not be addressed again.	Please refer to sections above.
Anne Wilson	26/10/2018	The cleanliness of the Vaal river is already a water concerns to the sewerage seeping and leaking into the river. We need guarantees that this will not create more problems with regards to pollution. Noise pollution will directly impact my business as well as other such business in our town. This goes for air pollution as well.	Thank you for you valued comments. A water use licence application has been made. DWS regulated water uses in the area. BBSM is located 3km south as the crow flies from the Vaal Oewer Town, all possible measures to minimise noise and air pollution are taken.	Please refer to sections above.
Department Police, Roads and Transport Mr. JPW Maree	30/10/2018	The Department has 3 borrow pits on the said properties with reference numbers: 203/2/181/170 – 172.	<p>The following comments were made in the letter received and are responded to accordingly:</p> <ol style="list-style-type: none"> 1. It is assumed that the above- mentioned proposed mining activities will take place on the Remainder of the farm Woodlands 407. Your attention is nevertheless brought thereto that this Department has three borrow pits on Subdivisions of Woodlands 407. The number of these borrow pits are: <ul style="list-style-type: none"> a. 203/2/181/170 b. 203/2/181/171 c. 203/2/181/172 2. This department reserved these borrow puts in terms of the provision of section 17(2) of the Free State Roads Ordinance, 1968 (Ordinance No.4 of 1968), as amended. The material from these borrow puts are utilized by the Department for roads building or road rehabilitation purposes. Usable material for such purposes are limited in the province. 3. In view of the existing Department, all borrow pits on the above-mentioned properties, this department has to object should any proposed mining activities for the above-mentioned mining project take place on Subdivision of Woodlands 407. <p>As the Environmental Consultant of the applicant, Tja Naledi, I herewith kindly request the Department of Police, Roads and Transport to provide me with the exact co-ordinates of the three (3) borrow pits as described in your letter under reply.</p> <p>Tja Naledi obtained the Mining Right in 2014, at which stage no objections and/or comments were</p>	N/A

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			received from your Department. To enable us to investigate this matter please provide us with the requested co-ordinates as a matter of urgency.	
The last day of commenting on the DBAR ended on the 27 th of October, when the public meeting was held. All comments received after the 27 th of October 2018 was send to the Socio-Economic Specialist for input into their assessment report.				

iv). Comments received during the Socio-Economic Impact Assessment.

The SEIA was distributed to the I&APS on the 28th of January 2019, where they I&AP'S was allowed a 30-day commenting period that ends on the 28th March 2019. The outcome of this consultation is described in detail below. Please also refer to Appendix E for the comments that was received during the SEIA commenting phase.

Interested and Affected Party	Date Comments Received	Comments	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Ngwathe Municipality – Ria Jordan	29 January 2019	Acknowledgement of receipt.	N/A	N/A
Renee Hartslief	31 January 2019	Thanks Yolandie. As discussed when you called this morning, when you personally sent the notification to the group yesterday, it was received by us. But it was NOT received from your bulk mail handler. Except for Craig. We look forward to hearing from your marketing person about what the problem might be and how it will be corrected so that ALL IAPs are reached.	Bulk email was sent via Outlook to all I&APS and Renee Hartslief was requested by Sonette Smith to comment on the report.	N/A
Sampie Van Rooyen	6 February 2019	<p>Good day Yolandie, I hope you will find these comments useful in your EIA process. In the Economic Impact Assessment, a total of 10 impacts were identified, of which 6 were negative. Will you please indicate to what extent your client, Tja Naledi Barrage Sand Mine, will be willing to assist the affected community in mitigating these negative impacts. Please describe in your Impact Assessment the process of compensation your client proposes if they do not comply to the final EMP (Environmental Management Plan) and Mining Right.</p> <p>Please include all recommendations made by OCES in their Economic Impact Report in your final EMP to be submitted to DMR. Please include all recommendations made by Enviroworks Environmental in their Socio-Economic Impact Assessment into your final EMP to be submitted to DMR.</p> <p>I would also appreciate it if you highlight to DMR the Impact Statement made by Enviroworks Environmental: <i>“The findings from the SEIA indicate that the socio-economic benefits associated with the proposed amendment will not outweigh 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.”</i></p> <p>I highly recommend that you include in your final Impact Assessment and EMP (Environmental Management Plan) a recommendation for monthly Socio-economic and Economic monitoring throughout the lifetime of the mine, to ensure that the current status of the community and environment remain the same or improve. It is very important to have continuous communication and consultations with the affected community. Please explain the methods you propose to fulfil this request.</p> <p>All non-compliances to the EMP and Mining Right must be communicated to the affected community and especially to DMR. I also request that a copy of the monthly monitoring report done by the ECO (Environmental Control Officer) be furnished to all registered I&AP's and DMR. Please do not hesitate to contact me if any of the comments need further explaining.</p> <p>Regards, Sampie</p>	<p>Thank you for your valued comments. Your comments will be incorporated into the Final BAR that will be submitted to the DMR. The SEIA's management and mitigation measure was incorporated into this FBAR.</p> <p>All statements made by Enviroworks Environmental was incorporated into this FBAR as well as the SEIA that was incorporated into the report as Appendix H. Monthly Socio-Economic Monitoring throughout the life of mine will be investigated. A quarterly forum will be established so that all registered I&AP's and community members can raise their comments and concerns during the lifetime of the project.</p> <p>All ECO and EPA reports are available on site and can be viewed by all registered I&AP's.</p>	<p>Please refer to Par H) iv) Socio-Economic Study for the responses incorporated into the report.</p> <p>Please refer to Part B), 1), e) for the management and mitigation measures.</p>
Errol White	11 February 2019	<ol style="list-style-type: none"> 1. The LOCAL COMMUNITY benefits are marginal 2. Our TOURISM sector would be further threatened 3. The MINES must be responsible for reconstruction and maintenance of the Vaal Eden ROAD, from the N1 bridge to the R59 at the Parys Airfield 4. The negative impacts of 3 mines are CUMULATIVE and cannot be considered in isolation from each other 5. The required MITIGATION measures would render the mines UNPROFITABLE 6. There are OTHER PLACES designated by Ngwathe for gravel mining 	<p>Thank you for your valued comments. Your comments will be incorporated into the Final BAR that will be submitted to the DMR.</p> <p>All questions have been addressed in the SEIA.</p> <p>Please refer to section above regarding the road S717 and the agreement that will be set in place relating to the Vaal-Barrage road.</p>	<p>Please refer to Par H) iv) Socio-Economic Study for the responses incorporated into the report.</p>

Interested and Affected Party	Date Comments Received	Comments	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Fezile Dabi District Municipality	15 February 2019	The SEIAR was read together with the economic impact assessment report for the project. FDDM notes that the project is unlikely to improve the livelihoods of people in proximity to the mine, whether from the Free State or Gaiting side. Employment opportunities and improvement of peoples lived is what remains high in the wellbeing of communities. It is noted that the document also took into account the existence of other sand mines in vicinity of Tja Naledi, and once can reasonable conclude that it is unlikely that all these mined comply with their environmental authorisations conditions. It is indicated that already there non-compliance picked from the contractor operation the mine, SPH Kundalila and that it in itself should be a worrying factor. FDDM would like to submit that report is noted and there and no major objection to the project, however it important for DMR to ensure that Tja Naledi complies with its current mining conditions or at least there is clear plan to ensure compliance where non-compliance has been picked before amending the mining right to accommodate mining aggregates and further crushing and screening processes which could require stricter operating conditions.	Thank you for your valued comments. Your comments will be incorporated into the Final BAR that will be submitted to the DMR. All non-compliances has been addressed by SPH Kundalila. EPA report has been conducted by Greenmined Environmental and submitted to DMR for perusal.	Please refer to Par H) iv) Socio-Economic Study for the responses incorporated into the report.
Gavin Aboud	20/02/2019	I refer your mail requesting comment on the subject. Whilst I regard the report and honest one, I think the negative aspects on the mining on the surrounding areas is understated from both a Socio and Economic aspect. If we look just at the informal settlement and the jobs provided in Vaaloewer , Lindequesdrift and Vaaleden, and we compound this with the resorts in the area, we estimate that at least 1000 people are employed in the area. If we work on the assumption that there are 5 dependants associated to those employed, this number grows to 6 000. The enormity of this impact is not clearly stated in the report. I request that this aspect be revisited and that I be consulted in this regard.	Thank you for your valued comments. Your comments will be incorporated into the Final BAR that will be submitted to the DMR. As described above, While only a six (6) employment opportunities will be created, this can be enhanced by Local Economic Development initiatives.	Please refer to Par H) iv) Socio-Economic Study for the responses incorporated into the report.
Louis Kruger	20/02/2019	Hi Gavin. I support your view 100% I think it is imperative now that the frame of reference to the 2011 census must be challenged as their was exponential growth, private development in the area and rapidly and drastically changed employment numbers associated with tourism, lodges etc. Again the reference must census be to the Spatial Development plan of Tlokwe that clearly defines the area as a tourism corridor, with advantage that it form part of the Vredefort Done heritage site and the vaal river corridor that support the spacial development plan of Tolkwe. I will also avail myself for more detailed discussions	The 2011 Census will thus be the third census conducted by a democratic South African government and forms part of the 2010 round of African censuses, which aim to provide comprehensive data on the continent, for improved planning and to aid development. A population census is typically held every five years, but because of a lack of capacity within Statistics South Africa, it was decided that the interval will be extended to 10 years. Reference was made to die Spatial Development Plan for Tlokwe, which is not applicable to the Spatial Development Plan for the Free State Province.	Comments are not applicable to BBSM.
Protect the Vaal	28/02/2019	Survey was conducted by Protect the Vaal consulting all registered I&APs. Comments received included the following: 1. We're experiencing a major dust problem in the Riviersig Street area in Vaal Oewer - massive dust storms are hitting us regularly from the existing mining operations. Noise pollution is also a big issue - the trucks are clearly audible all hours of day, especially the constant "peeping" sounds used when reversing. The new applications will increase mining operations significantly, and will bring them much closer to the river, which will lead to a vastly worsened situation. They are also already an eye-sore, and destroy the sense of place and serene natural environment of the Vaal Oewer area. This will also worsen dramatically if the new applications are approved. They are destroying the value of the community's homes, and will destroy local tourism and jobs. 2. The total disregard and lack of respect for this mine to the surrounding areas, residents, natural environment and rehabilitation has been disappointing at least. To allow this sort of corporation to further destroy the environment and	All comments where incorporated into the Final Public Participation documents and FBAR. 1. Please refer to section above regarding the Dust, Visual and Noise and the management and mitigation measures. The Tja Naledi Mining Right is not a new application, but an amended to the current existing Mining Right Application. 2. Noted.	Please refer to Appendix E for the Public Participation Process that was conducted.

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		<p>further disgruntle long term residents inhabitants of the area to benefit a few, would be nothing short of a criminal act.</p> <ol style="list-style-type: none"> 3. This area is in no condition to support this mining activities. There are limited ground water resources, which needs to be protected for the existing tourism activities and existing local communities. 4. Mining will break down the local leisure and tourism business that is providing many sustainable job opportunities in the areal 5. Property Values already started declining and buyers walk away if they hear about the mines. 6. No compliance 7. One of the minerals they want to mine is gravel. Accoding to their maps this area is a substantial area most of which are koppies of solid very hard rock. To exploit this they will have to do blasting and use crusshers. The said the will only use diesel diggers, loaders and trucks. No dinamite no blasting and no crussing. This blasting will probably start soon after mining begins and will happen about twice per week over 30 years. We live in Riviesig cres. About 100 m from the river which is about 100 m wide and they will mine up to 100m from the river. 300 m from where I live. Groete. Hannes. 8. Went to a meeting ,, with their specialists,, ill prepared ,totally focused on the business end ,,not the impact it shall have 9. They are still mining but nothing have been legal... Money is their main aim 10. Our market value of our property will fall they must buy my property for the market value. 11. These people are arrogant they lie in your face and don't care about the impact of the mine where we live... They bribe people to cover for them 12. We are been bullied by money gods and if they want to continue i will lose value on my property 13. Tja Naledi and their appointed 'agents" Greenmined" pay absolutely no attention to queries raised by certain IAPS--rendering it next to impossible to comment on their plans and the impact thereof. Greenmineds answers are selective and biased to their clients --of course. 14. The person representing the 26% partner in the operation undertook to get back to us- at a public meeting-- about agreeing to an independent oversight authority, to "police" their mining operations-- what they would do as "COMMUNITY upliftment projects": as required by the mining charter--- how they would compensate the community. Nothing has been forthcoming --all ignored ... <p>I for one have not seen an economic viability study--a profit and loss statement- --all of which are required to enable IAPS to meaningfully comment on "socio economic benefits"</p> <p>Greenmined provided minutes of public meeting ONLY after being forced to do so by DMR and again rendering any meaningful dialogue flowing from points raised in the minutes useless.</p> <p>Whilst we are TOLD all relevant elected OFFICIALS in all three affected Provinces were advised of this application ----as required ---there is ZERO concern by the impartial practitioners GREENMINED--- that NOT one ELECTED official has commented on this application and given the long term</p>	<ol style="list-style-type: none"> 3. DMR has granted the existing mining right in 2014. 4. Noted. 5. Please refer to the Economic Impact Assessment that was conducted by Enviroworks. 6. Noted. 7. No blasting to be conducted as stated in the FBAR. No mining will be conducted within 500m from the Vaal River. Please refer to maps as indicated in Appendix A-D. 8. Please refer to the meeting minutes and the presentation that was held in Parys town hall. Impacts that the mining area will have on the environment, was the topics to be discussed during the meeting, but the chairperson of protect the Vaal, Gavin Aboud, did not allow Greenmined or Tja Naledi to continue with the presentation (as recorded in the voice recordings). 9. Tja Naledi has a legal current mining right. 10. Please refer to the Economic Impact Assessment conducted by Environworks. 11. Noted. No bribes. 12. Noted. 13. All comments received from I&Aps have been incorpotated into the FBAR as well as the Public Participation Appendices. 14. The SLP is still in process with the municipality as the municipality still needs to provide Tja Naledi with and LED project. Please also refer to Appendix E of the Socio-Economic study for the Economical Impact Assessment. All meeting minutes was provided publicly after the meeting was held. Please refer to Appendix E for the Public Participation meetings. All documents where made public on the Greenmined website. Greenmined can not be held responsible if state departments does not response to our public participation process if contact was made in numerous methods with the departments. 	

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		<p>implications to all IAPS -of what will happen to EDEN --(this is EDEN) --its businesses and communities if this application is approved --when Greenmined KNOW that elected officials BY LAW have to take an interest in such matters BECAUSE the elected OFFICIALS have all sworn an OATH to uphold the Constitution and protect all our Constitutional rights ESPECIALLY our rights with regard to the environment we live in -- SURELY this is what GREENMINED have to do ???so they must purchase my property for the market value not negotiable.</p> <p>15. I have just moved here to the Vaal and strongly disagree to the mining especially with all the negative implications on the environment and the community. It is a disadvantage to the community who live here due to the dust and the negative impact on our health.</p> <p>16. I BELIEVE THE PROPOSED MINE WILL FURTHER IMPACT DISASTROUSLY ON THE ALREADY STRESSED (AND MESSED) VAAL RIVER WHICH HAS BECOME A MEANS FOR SEWERAGE DISPOSAL WHICH THE USELESS EMFULENI MUNICIPALITY IS NOT QUALIFIED TO REMEDY. FURTHERMORE IT WILL PROBABLY ATTRACT MORE CRIMINALS TO THE AREA AND FURTHER DEVALUATE THE PROPERTIES AT VAALOEWER AND SURROUNDING AREAS.</p> <p>17. I object to this application for this development due to the Negative Environmental impact on the Vaal river area, and the negative Financial impact on our properties next to the river.</p> <p>18. The added strain to an already badly polluted Vaal River due to mining is of major concern. The added dust from mining activities is already evident.</p> <p>19. I strongly oppose all mining activity in the area as it serves no benefit at all for the nearby residents but exposure to noise and dust pollution and loss in property values. There is absolutely no gain but hardships for the residents living next to or near the planned mining area. The fona and flora will be destroyed. Underground water sources will be depleted. The river will be impacted not only in this area bit also downstream. There is no positive outcome for mining in this area but the enrichment of the mine owners and shareholders.</p> <p>20. There is no trust - I believe they are not interested in what we have to say.</p> <p>21. Health issues for sinus sufferers must also be taken into account. With extra foreign particles being expelled into the air this is affecting people with sinus problems.</p> <p>22. Please note that no mines should operate, in or around anywhere near the Vaal river. I don't agree with some of the questions that stated that the mines need to comply with various restrictions and or requirements. these mines are and jave been operation illegally and should receive any permission nor even be mining. So not even the slightest edge should be given to any mine to undergo in any mining operations anywhere close to the life source of the Vaal river.</p> <p>23. MITIGATION: there should be no mining at all in the Vaal Eden area. Mining is taking place contrary to zoning and SDF as a result of flawed Public Participation Processes and officials not following due process and acting without authorisation. The Vaal Eden area AS WELL AS the area on the opposite side of the Vaal River in both the North West and Gauteng Provinces have been zoned for agriculture and tourism. Both FS Provincial and Fezile</p>	<p>15. Noted. Please refer to comments above.</p> <p>16. Noted. Please refer to the Socio-economic Impact assessment discussed the crime impact on the area.</p> <p>17. Noted.</p> <p>18. Noted. Please refer to the sections below regarding the dust and water impacts and their associated management and mitigation measures.</p> <p>19. Please refer to comments above regarding the dust, noise, biodiversity and water impacts on the area.</p> <p>20. Noted.</p> <p>21. Noted. Please refer to dust mitigation measures.</p> <p>22. Tja Naledi has a current approved mining right from the DMR.</p> <p>23. Interprovincial consultation has been conducted regarding cross border activities. Please refer to Appendix E for the public participation process that was followed.</p>	

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		<p>Dabi & Ngwate Municipal guidelines and policies call for interprovincial consultation regarding cross border activities and this was not done.</p> <p>24. ROADS: All legislated signage should be in place irrespective of mining activities, as should the policing thereof. The same pertains to road maintenance. The fact this all the aforesaid is not being carried out, adds justification to opposing any further mining in the Vaal Eden area. Provincial and municipal budgets are inadequate to police or maintain roads and self regulation by the mines, based on their historic compliance is ludicrous.</p> <p>25. ECONOMIC IMPACT: The natural beauty of the area and its sense of place is the draw card for tourism activities and it is being seriously threatened by the mining activities. The Vaal Eden area together with the town of Parys, the Vredefort Dome World Heritage Site and Potchefstroom is considered a prime tourism destination. There is an incredibly huge untapped market on the doorstep of the area, viz Gauteng as well as international tourists arriving via Oliver Tambo airport. The tourism organisations from the above mentioned areas are now combining efforts to highlight this prime destination that offers nature, wildlife, cultural heritage, education, sporting and outdoor activities, arts, festivals, cuisine and shopping experiences. There is no other region closeby (if anywhere in the country) that can offer all of the above - The tourism potential together with related job growth is ENORMOUS and growing, it is SUSTAINABLE, it is a set GOAL of National Government. The small benefits accruing to a limited number of individuals from opencast sandmining for the next 30 plus years, will destroy the surrounding environment, negatively impact on the health and livelihoods of the community, and severely impact on the positive benefits that tourism could bring to the area.</p> <p>26. No mining.</p> <p>27. Already experienced dust and noise.</p> <p>28. I am aware of it.</p> <p>29. They are ruthless dictators!</p> <p>30. Not personally, but we are aware of it.....</p> <p>31. These mines are ruining the beauty of the area and destroying the river and life in the river!!!!</p> <p>32. The mining is destroying the natural beauty of the river and surrounding areas. It is a threat to every person's investment in the Vaaloewer and surrounding areas and should not be allowed.</p> <p>33. Dust storms from the mines have been horrible. Annoyed that these mines have disregarded rehabilitation and I do not feel they are trustworthy. DMR seem to be unable to monitor them.</p> <p>34. The entire thing is disgusting. This would never happen overseas thru do it all wrong here could not care about the future of their families.</p> <p>35. IAP'S NO TRUST IN PROCESS</p> <p>36. IAP just walked over with the process</p> <p>37. Always Noise and Dust in the area, during weekends as well. Water from the Vaal River is being pumped up on various weekends.</p> <p>38. It is the ages old case of David against Goliath. Our community will fight till the end against the powerful and money hungry Goliath who think they have carte blanche to rape our beautiful river and environment.ENOUGH!!!!!!!!!! The mines have no regard for the PEOPLE 'S GRIEVANCES....THE</p>	<p>24. Please refer to the section below regarding the access roads to site and the S721.</p> <p>25. Noted.</p> <p>26. Noted.</p> <p>27. Noted. Please refer to comments above regarding dust and noise.</p> <p>28. Noted.</p> <p>29. Noted.</p> <p>30. Noted.</p> <p>31. Noted.</p> <p>32. Noted. Please refer to comments above regarding dust.</p> <p>33. Noted.</p> <p>34. Noted.</p> <p>35. Noted.</p> <p>36. Noted. Please refer to comments above regarding dust, noise and water.</p> <p>37. Noted.</p> <p>38. Noted.</p>	



Interested and Affected Party	Date Comments Received	Comments	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
		<p>ENVIRONMENT THEY ARE SCARRING....AND ABOVE ALL...NO REGARD FOR LAWFUL PROCEDURES...</p> <p>Regards U.L.KLEBBA.</p> <p>39. I am in total agreement with the above statement</p> <p>40. As individual we get steamrolled with the process which is not easy to understand all affects and future issues.</p> <p>41. With previous experience I strongly don't trust them and don't want them to do any mining or any other work in this area. I agree hundred percent with all the comments and objections that was made in the above mentioned statement.</p> <p>42. They are not reliable. Mining in our area will rob us from so much we have at the moment.</p> <p>43. The roads are not designed to handle ongoing heavy vehicle traffic and will rapidly fall into a state of total disrepair. Dust, noise and the impact on the roads will negatively affect the ecotourism (including lodges and wedding venues) that are providing jobs and upskilling the community.</p> <p>44. The roads are not designed to handle ongoing heavy vehicle traffic and will rapidly fall into a state of total disrepair. Dust, noise and the impact on the roads will negatively affect the ecotourism (including lodges and wedding venues) that are providing jobs and upskilling the community.</p> <p>45. THIS IS A TOURISM AERIA THAT WILL BE ----"FUCKED UP BY PEOPLE THAT HAS BEEN BRIBED.</p> <p>46. NOBODY IN OUR AREA KNOWS OF ANY ENVIROMENTAL STUDIES THAT WAS DONE HERE!!!!</p> <p>47. Onanvaarbaar</p> <p>48. Vakasie area. Gaan myn op n ander plek.</p> <p>49. Health risks on the surrounding community far outweighs any financial gain from these mines.</p> <p>50. Lies by Yolande of Greenminded and Tja Naledis Attorneys, noncompliance, noise nuisance, no notification as legally required to immediate neighbours. No benefit to surrounding community. Absentee landlord using a contractor SPH using "imported labour". No disclosure of the Social Labour plan for Tia Naledi or neighbouring mines. Total destruction of the value of neighbouring properties and sense of place. The mines will cause economic loss to the area of billions of rand. Area being mined currently is zoned agricultural.</p> <p>51. Similar experience. They only act in their own interest.</p> <p>52. Not playing open cards</p>	<p>39. Noted.</p> <p>40. Noted.</p> <p>41. Noted.</p> <p>42. Noted.</p> <p>43. Noted. Please refer to statement above regarding the roads, dust and noise in the area.</p> <p>44. Noted.</p> <p>45. Noted.</p> <p>46. Noted. Please refer to Appendix H for all the specialist studies that has been conducted since 2014.</p> <p>47. Noted.</p> <p>48. Noted.</p> <p>49. Noted.</p> <p>50. Noted.</p> <p>51. Noted.</p> <p>52. Noted.</p>	

iv) The Environmental attributes associated with the alternatives.

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

(1) Baseline Environment

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

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

(i) Climate

According to SA Explorer, Parys normally receives about 496mm of rain per year, with most rainfall occurring during summer. The chart below (Figure 3) shows the average rainfall values for Parys per month. It receives the lowest rainfall (0mm) in July and the highest (89mm) in December. The monthly distribution of average daily maximum temperatures (Figure 4) shows that the average midday temperatures for Parys range from 17.2°C in June to 28.2°C in January. The region is the coldest during July when the mercury drops to 0.1°C on average during the night. Consult the chart below (Figure 5) for an indication of the monthly variation of average minimum daily temperatures.

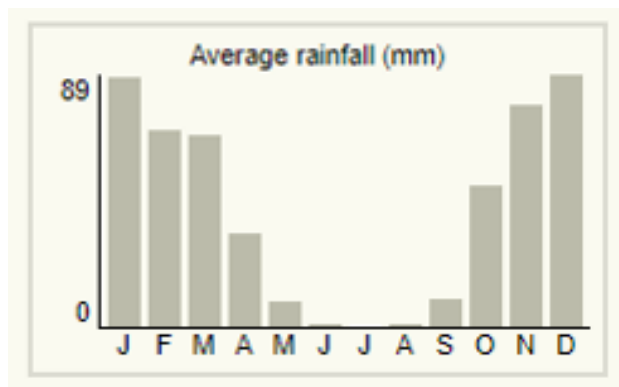


Figure 3: Average rainfall for Parys

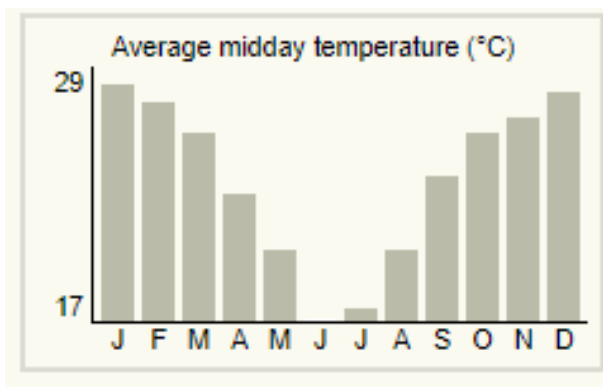


Figure 4: Average midday temperature

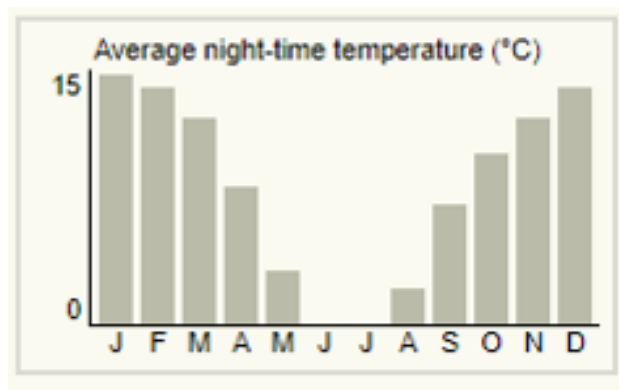


Figure 5: Average night-time temperature

(ii) Geology

The underlying geology comprises quaternary deposits of river gravels and aeolean sand overlying the rocks forming a portion of the ring synclinorium surrounding the Vredefort Dome. On the farm Woodlands the rocks of the ring synclinorium consist of a sequential portion of the Transvaal Sequence from the Malani Dolomite at the bottom to the Black Reef Quartzite not being exposed at Woodlands, up to the Hekpoort Andesite. The sequence as it outcrops on Woodlands has been complicated by a series of east to west trending strike faults that mean that the full sequence is not exposed and that in some cases portions of the sequence are repeated.

The identified mineral deposit is alluvial silica sand deposited by the Paleo-Vaal River over thousands of years. The silica is of a very high quality and is sought after by mainly foundries and tile adhesive manufacturers. This occurrence is not uniform, as the sand tends to accumulate in pockets as determined by the topography of the area next to the river. The alluvial silica pockets occur widely on the southern bank of the Vaal River and stretches from below the Vaal dam wall along the river's southern bank for hundreds of kilometres. The deposits are on average 5 meters deep and underlain by floor granites, sandstone, and alluvial gravel and in some instances coal. The silica is extremely pure in the region of 98% and higher with some trace elements of iron.

Farm Geology

The farm Woodlands is situated on the southern banks of the Vaal River in the Free State Province. Most of the farm is situated directly above the paleo-riverbed (the historical path that the Vaal river followed millions of years ago) which is made up of the following elements, namely: A base layer of floor granites typical of the Vredefort dome area, paleo-riverbed gravel varying in size from boulders to pebbles and various layers of high quality silica sand. Being an ancient riverbed, the sand layers are deepest in the middle of the paleo-river channel and these levels taper off towards the edges of the said channel. Previous tests done by an accredited test house namely SGS showed that the silica sand is on average 98% pure.

Portions of neighbouring farms were mined in the past by various establishments, including the Provincial Administration of the Free State for road building purposes.

The diverse geology underlying Mesic Highveld Grassland correlates closely with high levels of plant species richness and endemism. The soils derived from the diverse types of parent rock vary in texture from sandy to clayey and the sandier soils tend to support lower basal cover but higher plant species diversity than less sandy ones.

In the past, during the 1922-1926 period, 25 000ct diamonds were recorded as being recovered from five farms located on the North bank of the Vaal river (Boshdraai 575, Brakfontein 476, Bronkhorstfontein 566, Kaalplaats 577, Witkop 475, Zeekoeifontein 573). The largest number of diamonds recovered from the farm Zeekoeifontein is located directly across from the farm Woodlands 407, in the meander bend where the Vaal Oewer town is established.

(iii) Topography

The local area is characterised by a sloping topography with the Vaal River to the Northeast of the property. The area around the proposed mine has the mountains of the Vredefort Dome area to the West. The average altitude around the proposed site is about 1 500 meters above mean sea level. The removal of Sand and weathered Sand during the mining process will cause slight depressions that would change the natural topography of the area to a small extent.

(iv) Soil, land use and land capability

Pre Mining Land Capability

The agricultural activities in the area are mainly focussed on livestock farming and dry land maize production. The carrying capacity in the area is 4ha per large stock unit (LSU) according to the Department of Agriculture. Although irrigation does occur in the district, the soil conditions at the proposed mining area are not very suitable for irrigation due to the sandy nature of the soil (CC, 2014).

Land Use

The land use in the area is almost exclusively for agricultural purposes.

Mesic Highveld Grassland is reasonably well adapted to grazing pressure under low to moderate stocking rates with adequate rest periods (CC, 2014).

The current pre-mining land use on the farm Woodlands consisted out of mining that dated back to the early 2000's. Before 2014, when the current mining right was approved, the land use activity on the proposed site consisted out of mining as well as agricultural use. Please also refer to Appendix H for the land use assessment that was compiled by Dorean Environmental in 2014.

Previous mined out areas on the farm does not reflect on the Section 102 amendment application. The previous mining on the farm was mined before Tja Naledi applied for the current mining right. Rehabilitation for the current mining right has occurred in the first active cells that was opened in 2017. Rollover mining will be conducted in the mining area once the area has been mined.

According to the Land cover map (Figure 6), the land cover of the application area consists mostly of cultivated fields and grasslands towards the north of the site. Thicker riverine vegetation occurs along the banks of the Vaal River (Figure 6) towards the east of the site. The land uses surrounding the application area consist of agricultural land, natural areas, existing historical sand mining operations, livestock and game farming. Infrastructure such as secondary tar roads, gravel roads and homesteads, occur within the proximity of the application area. The Vaal River forms the eastern boundary of the proposed project.

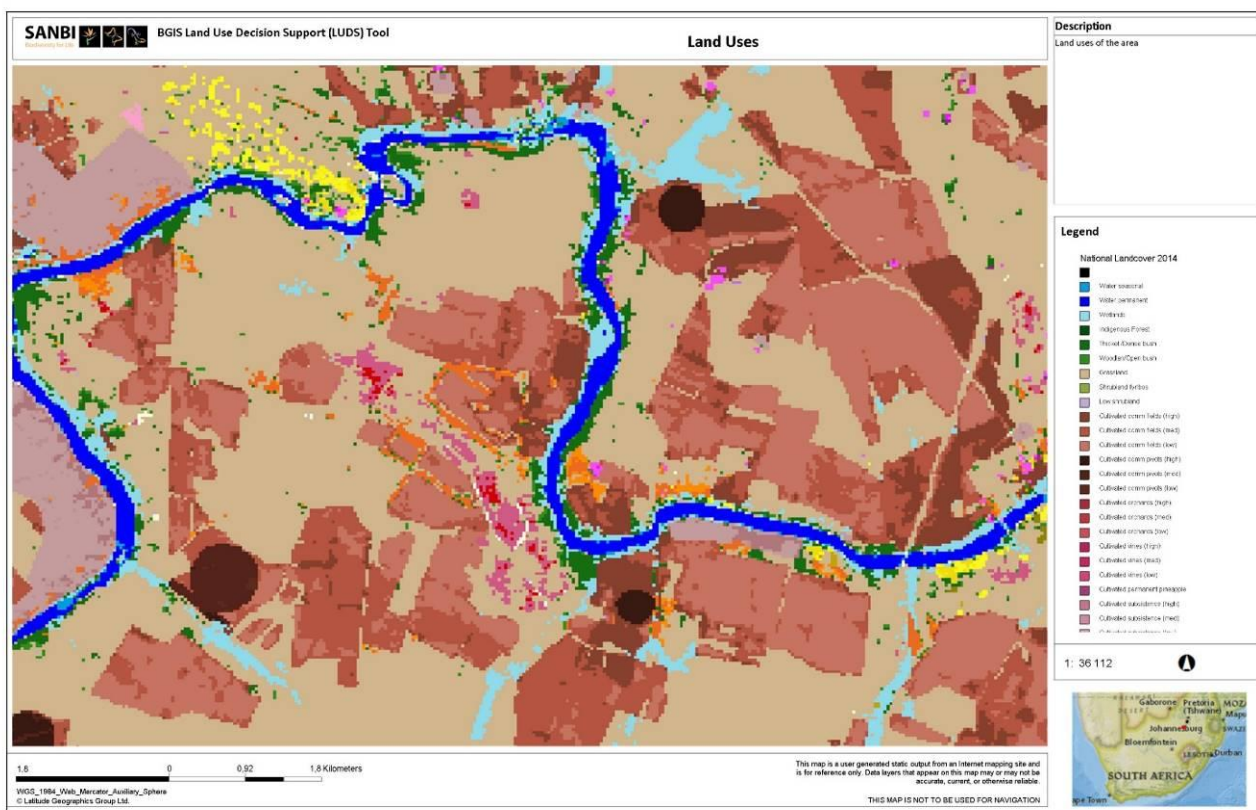


Figure 6: Land Cover of the Proposed Barrage Bulk Sand Mine.

Soil

Soils that are generally deep, fertile and free draining but can have impervious layers of hardpan or ‘oukclip’ (impervious soil layers, often infused with minerals such as calcium carbonate or iron oxide). The diversity of soil types is influenced by the underlying geology, which includes base layers of sedimentary rock (shales, mudstones and sandstones), cut through by dykes and ridges of dolerite, quartzite and gabbro.

The project areas fall within the Bc36 and Ba39 land types. The dominant soils in the crest position will be shallow Mispah and Glenrosa soil forms. Valley bottom soils (close to, the Vaal River includes the Rensburg and Westleigh soil forms, whereas the midslopes soil forms includes the Hutton and Avalon Soil forms.

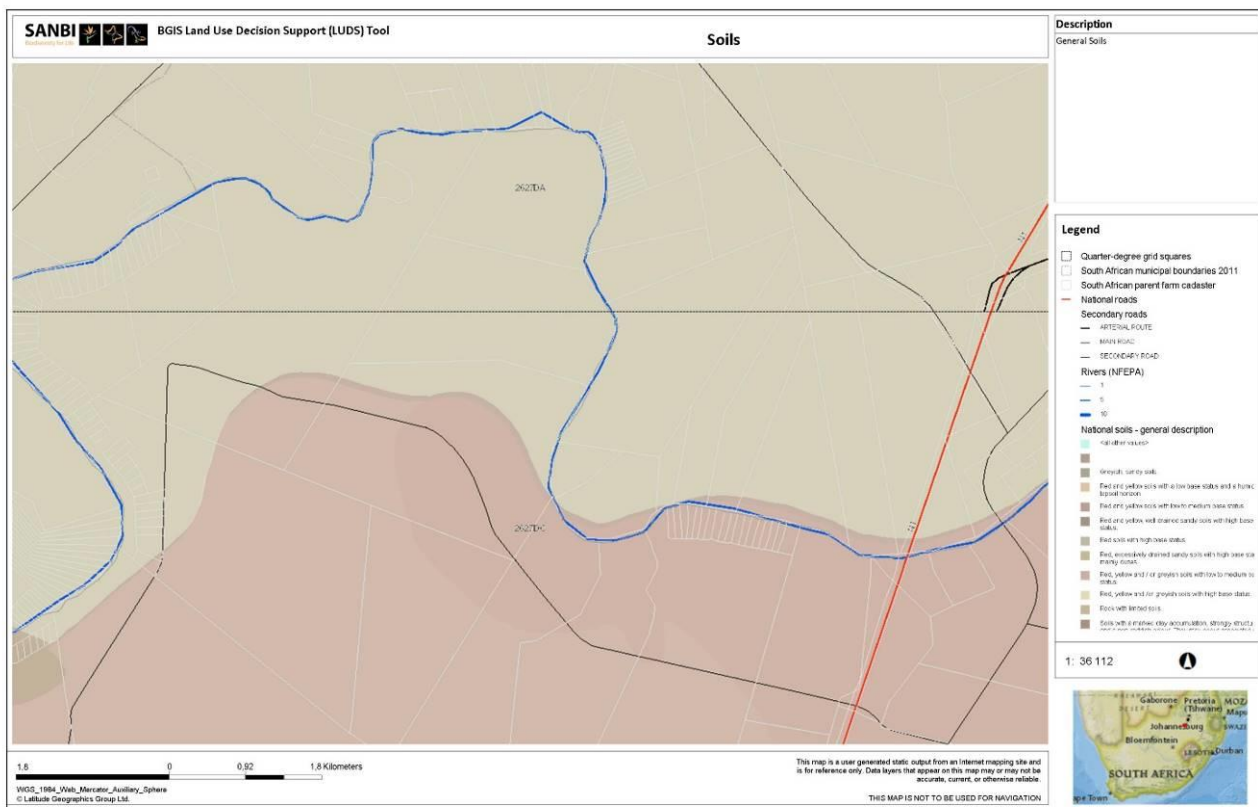


Figure 7: Soil Patterns of the Proposed Barrage Bulk Sand Mine.

In a study on the declining soil quality in South Africa, Mills and Fey (2003) reported that the effect of erosion in the absence of cultivation is easily explained because the exponential decrease in soil organic matter (SOM) concentration with depth means that relatively little topsoil need be lost to reduce substantially the total SOM content. They concluded that when plants are removed, soil deterioration begins at many fronts: At the surface, soil aggregates are exposed to the force of raindrops, clay disperses, pores become blocked, and runoff, soil loss and soil aridity are intensified. The pedoderm or first few centimetres of undisturbed topsoil holds disproportionately more humus, nutrients and salts than the underlying layers. Therefore, the topsoil will be removed and stored separately and replaced over the disturbed areas during rehabilitation (CC, 2014).

(v) Flora

The most recent description of the broader study area’s vegetation is the general description by Mucina & Rutherford (2006) relating to the vegetation which is considered to be the “Vegetation of South Africa, Lesotho and Swaziland” as well as its accompanying map of the country by (Mucina *et al.*, 2005). This memoir contains species information and a comprehensive conservation assessment of all vegetation types.

According to Mucina & Rutherford (2006), the vegetation type is present at the project site, namely Soweto Highveld Grassland (Gm 8).

It occurs on gently to moderately undulating landscape on the Highveld plateau, supporting short to medium-high, dense, tufted grassland dominated almost entirely by *Themeda triandra*. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover. Only a handful of patches statutorily conserved or privately conserved. Almost half of the area already transformed by cultivation, urban sprawl, mining and building of road infrastructure. Dams have flooded some areas.

Important taxa		
Graminoids		
<i>Andropogon appendiculatus</i> (d), <i>Andropogon schirensis</i> , <i>Aristida adscensionis</i> , <i>A. bipartita</i> , <i>A. congesta</i> , <i>A. junciformis</i> subsp. <i>galpinii</i> , <i>Brachiaria serrata</i> (d), <i>Cymbopogon</i> <i>pospischillii</i> (d), <i>Cynodon dactylon</i> (d), <i>Cymbopogon caesius</i> ,	<i>Digitaria diagonalis</i> , <i>Diheteropogon amplexans</i> , <i>Eragrostis micrantha</i> , <i>E. superba</i> , <i>Elionurus muticus</i> (d), <i>Eragrostis capensis</i> (d), <i>E. chloromelas</i> (d), <i>E. curvula</i> (d), <i>E. plana</i> (d), <i>E. planiculmis</i> (d), <i>E. racemosa</i> (d),	<i>Heteropogon contortus</i> (d), <i>Hyparrhenia hirta</i> (d), <i>Harporchloa falx</i> , <i>Microchloa caffra</i> , <i>Paspalum dilatatum</i> <i>Setaria nigrirostris</i> (d), <i>S. sphacelata</i> (d), <i>Themeda triandra</i> (d), <i>Tristachya leucothrix</i> (d),
Herbs		
<i>Acalypha angustata</i> , <i>Berkheya setifera</i> , <i>Dicoma anomala</i> , <i>Euryops gilfillanii</i> , <i>Geigeria aspera</i> var. <i>aspera</i> , <i>Graderia subintergra</i> ,	<i>Hermannia depressa</i> (d), <i>Haplocarpha scaposa</i> , <i>Helichrysum miconiifolium</i> , <i>H. nudifolium</i> var. <i>nudifolium</i> , <i>H. rugulosum</i> , <i>Hibiscus pusillus</i> ,	<i>Justicia anagalloides</i> , <i>Lippia scaberrima</i> , <i>Rhynchosia effusa</i> , <i>Schistostephium crataegifolium</i> , <i>Selago densiflora</i> , <i>Senecio coronatus</i> , <i>Vernonia oligocephala</i> , <i>Wahlenbergia undulata</i> ;
Geophytic Herbs		
<i>Haemanthus humillis</i> subsp. <i>hirsutus</i> ,	<i>H. montanus</i>	
Herbaceous Climber		
<i>Rhynchosia totta</i>		
Low Shrubs		
<i>Anthospermum hispidulum</i> , <i>A. rigidum</i> subsp. <i>pumilum</i> ,	<i>Berkheya annectens</i> , <i>Felicia muricata</i> ,	<i>Ziziphus zeyheriana</i> .

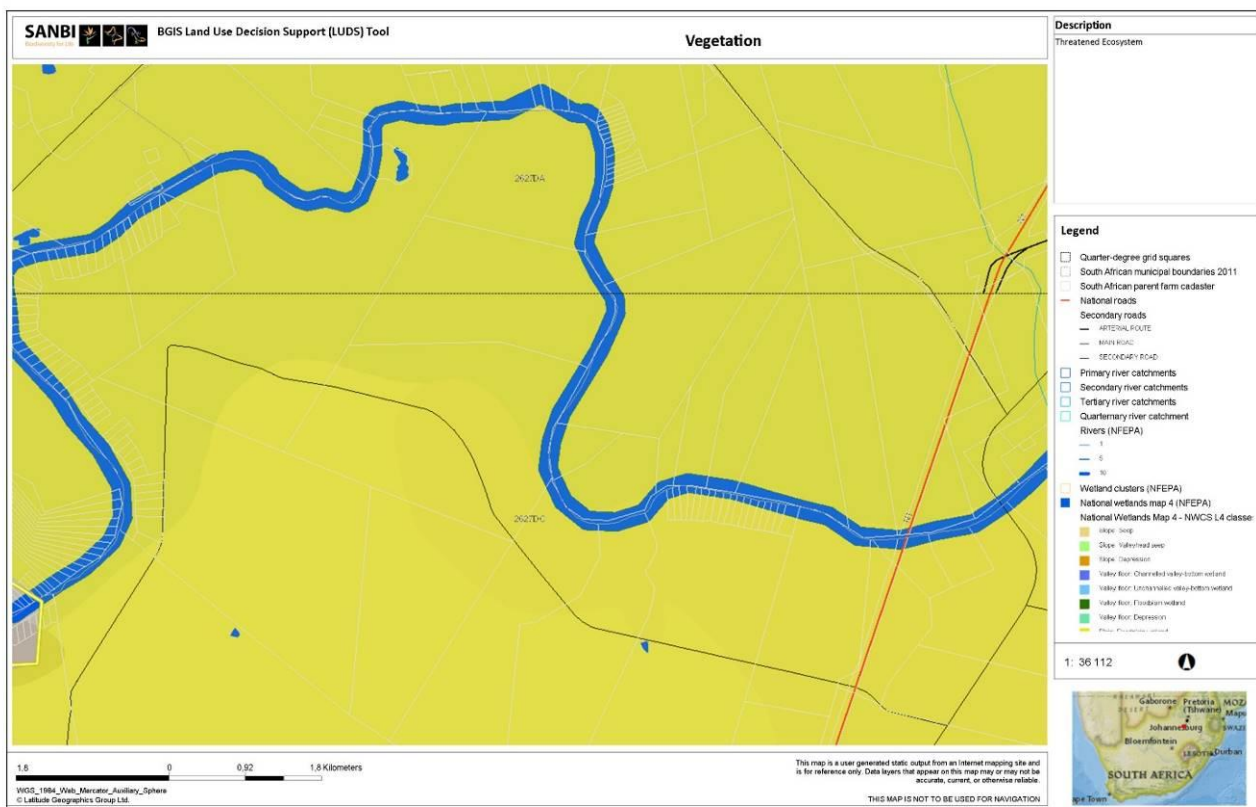


Figure 8: Flora of Tja Naledi - Barrage Bulk Sand Mine

The mine site falls within the northern variation of the Cymbopogon-Themeda Veld (Acocks Veld Type No 48) which is a sparse tufted veld type. Grass species such as *Setaria flabellata*, *Themeda triandra*, *Heteropogon contortus*, *Eragrostis racemosa* and *Cymbopogon plurinodis* are common in this veld type. Trees such as Fire Thorn *Rhus pyroides*, Acacia's *Acacia spp* and Buffalo Thorn *Ziziphus mucronata* can also occur on the site. The site is impacted by the cultivation of grazing and no undisturbed or "virgin" veldt is present on site.

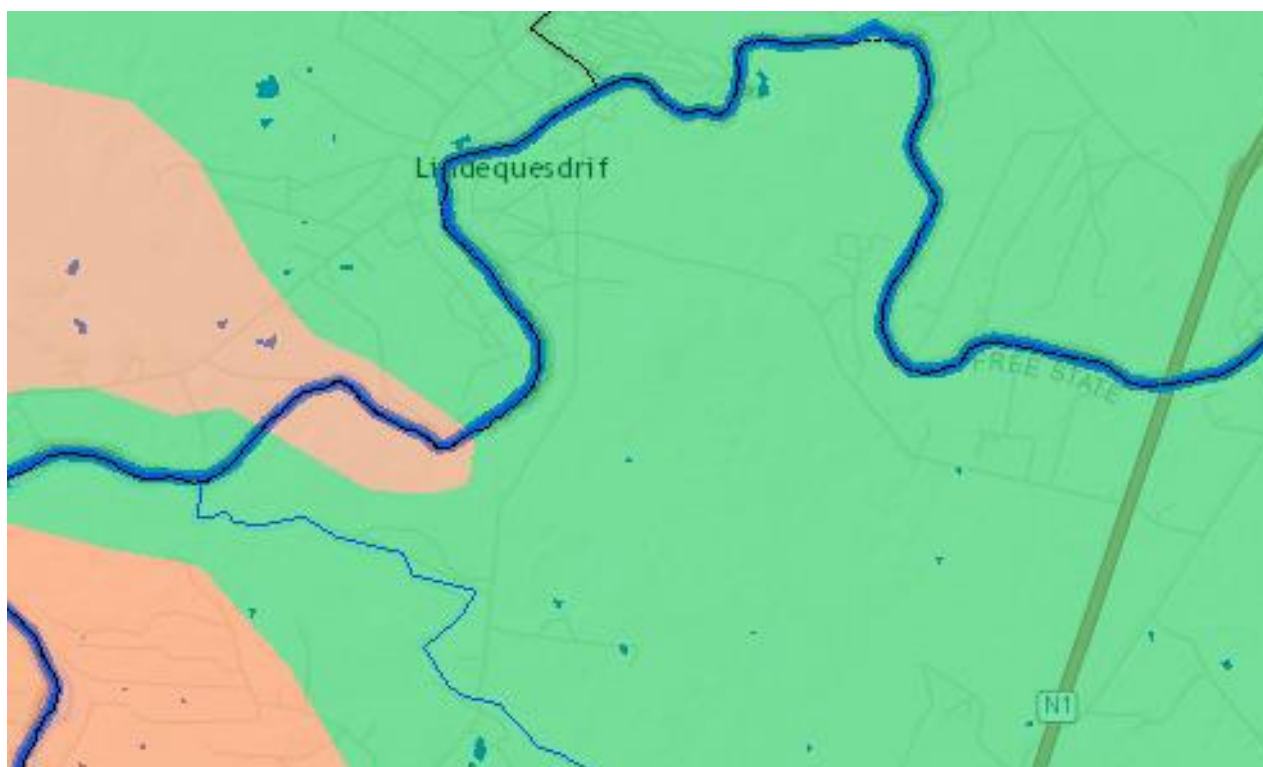


Figure 9: The vegetation map of the project site (red polygon) and the surrounding area (Enviro-Niche, November 2018).

- Green area – Soweto Highveld Grassland (Gm 8)
- Pink area (yellow arrow) – Andesite Mountain Bushveld (SVcb 11)
- Orange area (orange arrow) – Gold Reef Mountain Bushveld (SVcb 9)
(Mucina & Rutherford, 2006).

General characteristics of this group of ecosystems are that they:

- Are made up of highly productive sourveld grasslands characterised by long-lived grasses that favour re-sprouting, and other plants that show a tendency to store carbohydrates in specialised underground storage organs; plants withstand aboveground disturbance by being long-lived with only occasional replacement from seed.
- Are adapted to a climate characterised by high summer rainfall (700 – 1 200mm mean annual precipitation), combined with warm summer temperatures and cool to cold winters with a moderate to high incidence of frost.
- Occur at mid-altitudes (1 300 – 1 800m) in varied landscapes that include extensive flat or undulating plains broken by low hills and 'tafelbergs, rocky outcrops, steep boulder-strewn slopes and deep river valleys.

- Occur on soils that are generally deep, fertile and free draining but can have impervious layers of hardpan or 'oukclip' (impervious soil layers, often infused with minerals such as calcium carbonate or iron oxide). The diversity of soil types is influenced by the underlying geology, which includes base layers of sedimentary rock (shales, mudstones and sandstones), cut through by dykes and ridges of dolerite, quartzite and gabbro.
- Conservation:
 - A high proportion of vegetation types in Mesic Highveld Grassland are considered to be threatened and this ecosystem group is generally poorly protected.
- Socio-economic importance:
 - Many key economic activities take place in this grassland ecosystem – mining, grazing, cultivation, plantation forestry and urban settlement; Mesic Highveld grasslands are key water production landscapes – many wetlands and pans and five major river systems have their origin in these grasslands.
 - The climate is characterised by warm, wet summers and cool, dry winters; this, combined with the effects of altitude, results in:
 - A long growing season (centred over summer) lasting about six to seven months, alternating with unproductive winter and early spring seasons.
 - High primary productivity leading to rapid build-up of biomass, resulting in a high fuel load and potentially intense fires.
 - High natural incidence of fire: Summer weather is characterised by frequent storms, and lightning strikes, which cause natural fires. The natural occurrence of fire, combined with the effects of frost and hailstorms, maintains the open, largely treeless character of these grasslands (except on rocky ridges, which support natural shrublands because the surface topography favours the growth of woody species over grasses).
- Life-history strategies:
 - The combined summer grazing/winter burning disturbance regime has resulted in vegetation dominated by plants that are perennial and long-lived, and that reproduce mostly by vegetative growth with only occasional replacement from seed.
 - There are few annual species found in mesic grassland. This means that these ecosystems do not recover well when areas are cleared, as the newly disturbed ground is rapidly colonised by other annual weeds that out-compete slower-growing, perennial grasses.
- Hydrological characteristics:

- Mesic Highveld grasslands are located in high rainfall regions and are vitally important for water production. The characteristically dense vegetation cover traps surface water, slowing runoff and allowing more time for water to drain vertically through the porous soil profile; this water is then stored as sub-surface water by the impermeable rock layers that lie beneath the subsoil. This sub-surface water drains slowly as clean water into the many wetland systems that occur throughout this ecosystem (because of its flattish topography), replenishing streams and rivers almost year-round. The supply of good quality water from these ecosystems is important for domestic, agricultural, industrial and commercial water users in both South Africa and neighbouring countries.

(a) *National List of Threatened Terrestrial Ecosystems for South Africa (2011)*

The National threatened ecosystem classification is based on Mucina & Rutherford's map of 2006. The vegetation types of South Africa have been classified according to their conservation status, which is, in turn, assessed according to the degree of transformation and rates of conservation. The status of a habitat or vegetation type is based on how much of its original area still remains intact relative to various thresholds. On a national scale, these thresholds are as depicted in the table below, as determined by best available scientific approaches (Driver *et al.* 2005). The level at which an ecosystem becomes Critically Endangered differs from one ecosystem to another and varies from 16% to 36% (Driver *et al.* 2005) (Enviro-Niche, November 2018).

Table 5: Determining ecosystem status (from Driver *et al.* 2005). *BT = biodiversity target (the minimum conservation requirement).

Habitat remaining (%)	80–100	least threatened	LT
	60–80	vulnerable	VU
	*BT–60	endangered	EN
	0–*BT	critically endangered	CR

Threatened ecosystems, which are in need of protection (GN1002 of 2011), was published under the National Environment Management: Biodiversity Act (Act No. 10 of 2004). It lists national vegetation types that are afforded protection based on rates of transformation. The threshold for listing in this legislation is higher than in the scientific literature, which means there are fewer ecosystems listed in the National Ecosystem List versus in the scientific literature (Enviro-Niche, November 2018).

The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEM: BA) provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered, endangered, vulnerable or protected. Threatened ecosystems are listed in order to reduce the rate of ecosystem and species extinction by preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to conserve sites of exceptionally high conservation value (SANBI, BGIS) (Enviro-Niche, November 2018).

Table 6: Conservation status of the vegetation types occurring in and around the study area

Vegetation Type	Target (%)	Conserved (%)	Transformed (%)	Conservation Status
Driver <i>et al.</i> , 2005; Mucina & Rutherford, 2006				National Ecosystem List (NEM:BA)
Soweto Highveld Grassland (Gm 8)	24%	3%	50%	Endangered Listed

The National threatened ecosystem classification is based on Mucina & Rutherford’s map. According to the National List of Threatened Terrestrial Ecosystems (2011), the project site **does** fall in a threatened ecosystem although the project site is in a transformed state due to anthropogenic influences (Enviro-Niche, Novemeber 2018).

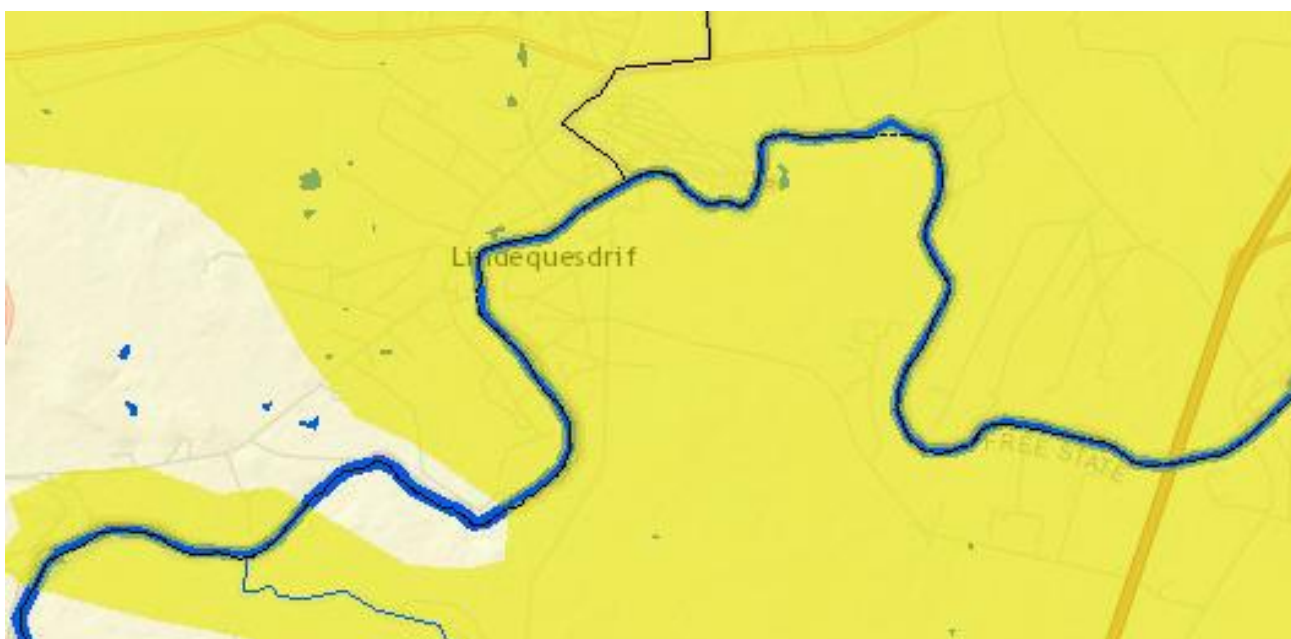


Figure 10: The vegetation map of the project site (red polygon) in relation to the threatened vegetation type (yellow area).

- Yellow area - Soweto Highveld Grassland (Gm 8) (Mucina & Rutherford, 2006).

(b) Vulnerable ecosystems and habitats

Invasive alien plants threaten three main components of the landscape:

- Agricultural potential of the land;
- Biodiversity value of the land; and
- Water quality and quantity.

Some habitats are more vulnerable to invasion by alien plant species than others and are therefore more likely to become problematic areas with respect to management of alien plant species. In addition, some parts of the site will be subject to greater levels of disturbance than others, which will promote conditions suitable for invasion by alien plant species. Although any parts of the site could become invaded by alien plants, the areas on site that are most likely to be problematic from the point of view of invasion by alien plants are as follows:

- Drainage lines and watercourses;
- Areas with deeper soils, including primarily valley bottom areas;
- Areas immediately adjacent to any disturbance due to mining activities;
- Areas prone to increased runoff following mining activities, for example spoil material;
- Areas of prolonged disturbance, for example, construction camps and laydown areas.

(c) Major vegetation units present on project site

This section provides an outline of the existing status of the site with respect to alien invasive plant species. The purpose is to provide a tool to identify the alien invasive species and how to control them.

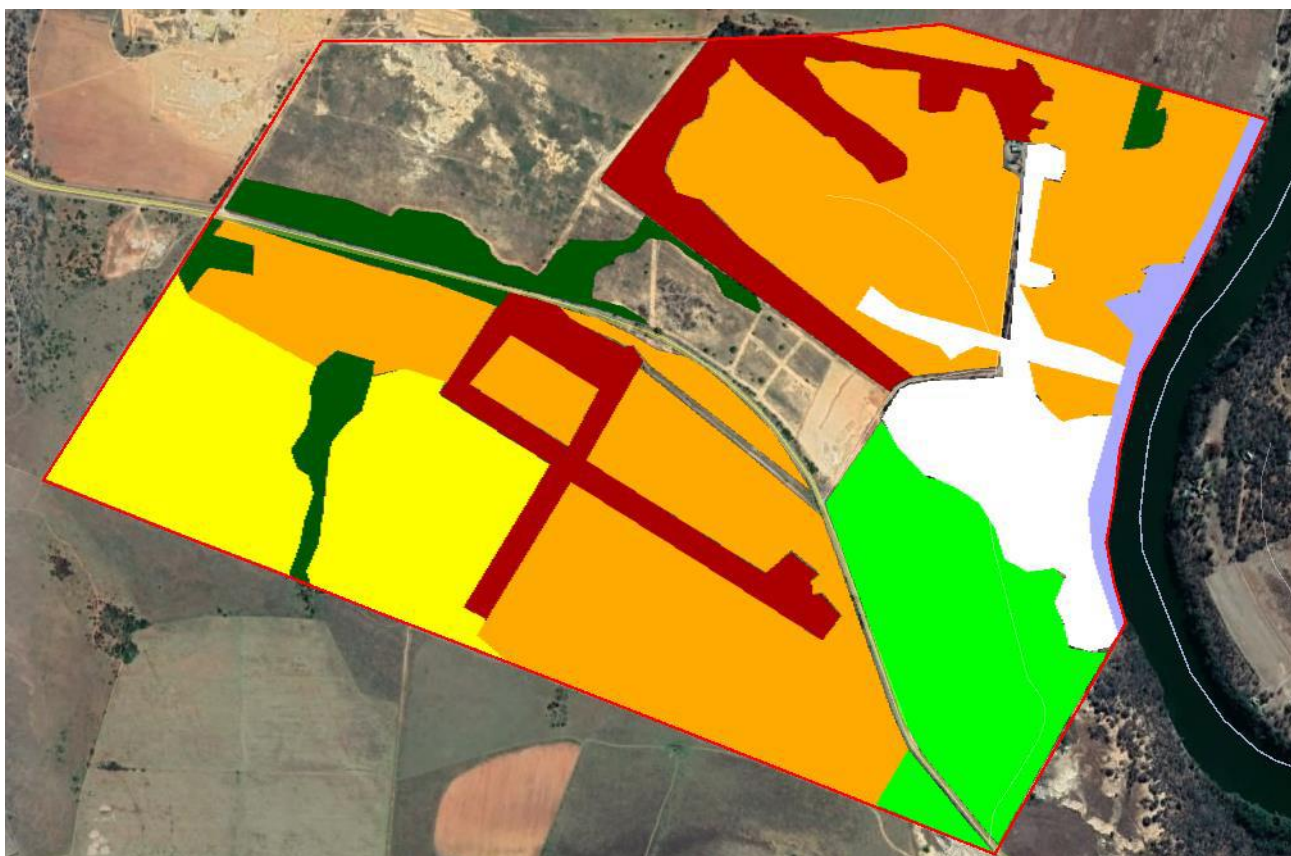


Figure 11: The project site (green polygon) in relation to the various major vegetation units present on site. Arrows indicate current mine areas.

- Yellow areas - Natural grassland
- Dark green areas - Natural shrubland
- Red-brown areas - Blue gum plantations
- Light blue area - Riparian vegetation invaded by alien invasive species
- Light green areas - Rehabilitated mine areas
- White areas - Disturbed areas invaded by various exotic tree species

(d) Listed of alien invader species observed on the project site

Table 7: Other exotic species noted on site but which are not declared weeds

Common name	Scientific name
Black Ironbark Gum	<i>Eucalyptus sideroxylon</i>
Black Jack	<i>Bidens bipinnata</i>
Chicory	<i>Chichorium intybus</i>
Common chenopodium	<i>Chenopodium album</i>
Common peach	<i>Prunus persica</i>
Cordyline	<i>Colyline australe</i>
Deodar Ceder	<i>Cederus deodara</i>
Italian Cypress	<i>Cupressus sempervirens</i>
Khaki Bush	<i>Tagetes minuta</i>
Little Khaki Bush	<i>Schkuhria pinnata</i>
Weeping willow	<i>Salix babylonica</i>

(vi) Fauna

Birds commonly associated with the area include the Guinea fowl, plovers, pigeon's swaisons's francolin amongst other common airborne species. Ground squirrels, mongoose, moles and rats also occur on the farm. The specific habitat in the area of interest however is not necessarily typical of their presence.

Some of the animals that are currently occurring on the farm might temporarily leave the immediate area of mining for the duration of the mining activities. Proper mitigation measures will ensure the return of the small animals after the mining activities have ceased. No threatened amphibians, reptiles or fish that are listed in the Red Data Book occur on or near the mine site.

The following threatened bird and mammal species may occur in the area:

Common Name	Scientific Name	Red Data Category
Grass Owl	<i>Tyto capensis</i>	Indeterminate
African Fin foot	<i>Podica senegalensis</i>	Indeterminate
Small spotted cat	<i>Felis nigripes</i>	Rare
African striped weasel	<i>Poecilogale albinucha</i>	Rare
South African Hedgehog	<i>Atelerix frontalis</i>	Rare
Antbear	<i>Orycteropus afer</i>	Vulnerable
White-tailed mouse	<i>Mystromys albicaudatus</i>	Vulnerable

(vii) Surface water

The Vaal River forms the North Eastern boundary of the farm. No surface water will be used during the mining process, as no washing will take place. The property is situated in the upper catchment of the Vaal River just below the Barrage at Vanderbijlpark.

The proposed mine falls within the Upper Vaal Water Management Area. The Upper Vaal Water Management Area (Upper Vaal WMA) includes the Vaal, Klip, Wilge, Liebenbergsvlei and Mooi Rivers and extends to the confluence of the Mooi and Vaal Rivers. It covers a catchment area of 55 565 km². This WMA includes the very important dams Vaal Dam, Grootdraai Dam and Sterkfontein Dam.

The southern half of the WMA extends over the Free State; the northeast mainly falls within Mpumalanga and the northern and western parts in Gauteng and North West provinces respectively. The Upper Vaal is the uppermost WMA in the Vaal River catchment and one of five WMAs in the Orange River Basin. It is surrounded by the Crocodile (West) and Marico, Olifants, Inkomati, Usutu to Mhlathuze, Thukela, Upper Orange and Middle Vaal WMAs and adjoins Lesotho in the southern extreme. The sub management are being called the Downstream Vaal Dam management area. The mine falls within the quaternary catchment area of C23B.

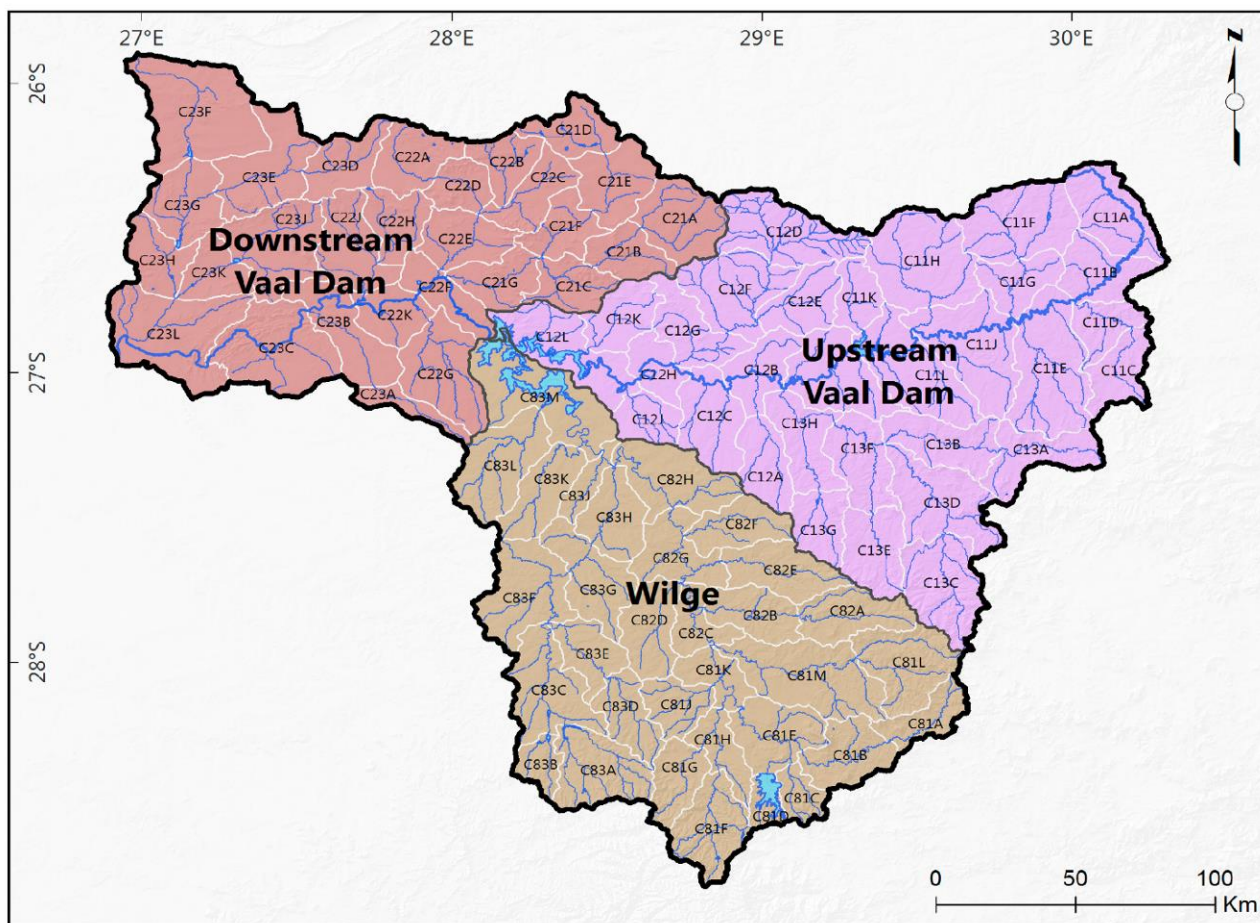


Figure 12: Catchment areas of the Upper Vaal Water Management Area.

No river diversions will be needed. There are no wetlands in the area. No water is to be abstracted from the Vaal River.

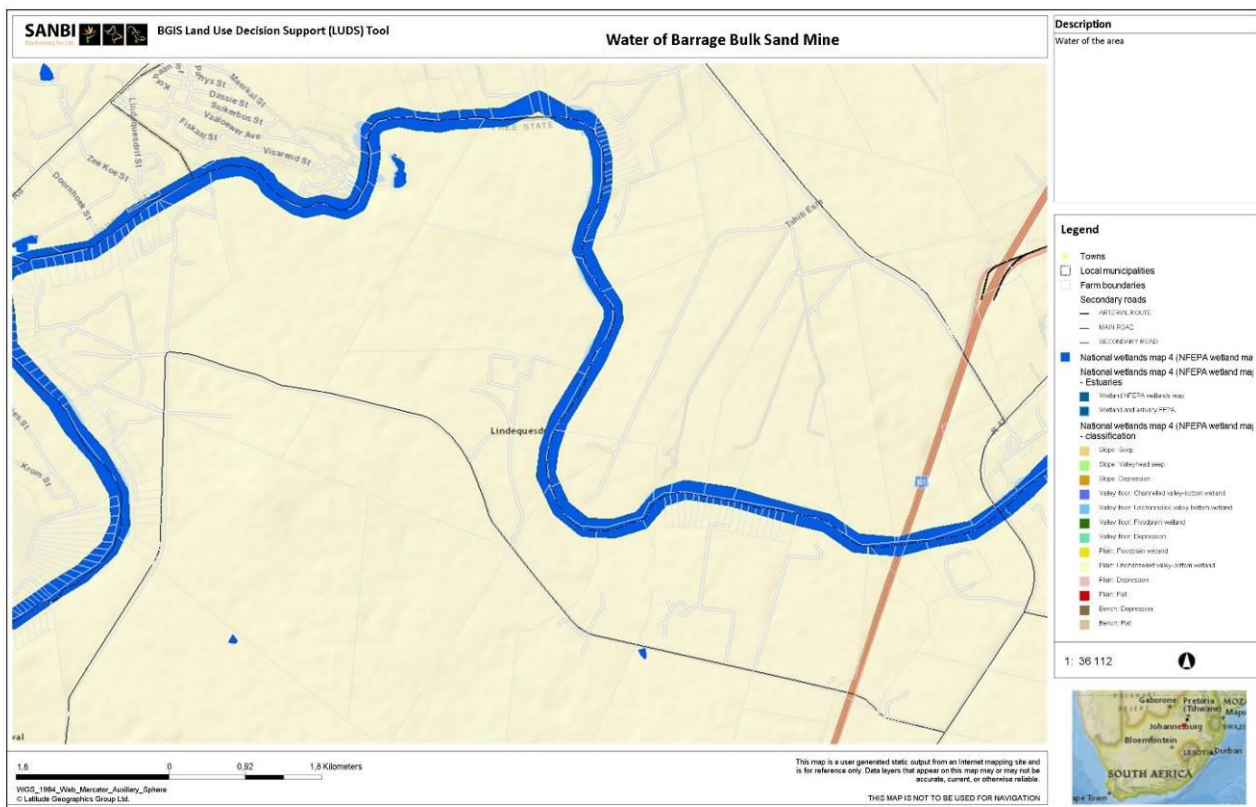


Figure 13: Wetlands in the area.

(viii) Ground water

The mining processes must not have any influence on the quality or quantity of ground water. A negative impact on groundwater usually occurs where subsurface water is pumped out of an excavation pit. This can lower the water table in the immediate surroundings of the excavation, which can negatively affect upon surrounding wetlands (specifically hill slope or seepage wetlands) and boreholes. The proposed method of mining will not entail deep excavations from which groundwater will need to be removed and there are no known wetlands on the farm. The only groundwater that will be used is from an existing farm borehole for domestic water supply and to control dust. The previous owner of the farm registered this borehole with DWS. Records of this registration will be sourced and provided as soon as it can be obtained.

Although the depth of the groundwater is unknown, it is presumed to be deeper than 5m. Mining at the proposed site is expected to be up to a maximum depth of 10m and therefore the impact on the groundwater will need continuous monitoring must ground water be intersected.

An application was made to DWS that was approved on 24/07/2018. GA was approved for taking water from the borehole for industrial purposes of 33 065 m³/a.

There are four (4) boreholes located on the farm Woodlands 407, Portion 4.

Table 8: Borehole Information

Borehole	Latitude (WGS84)	Longitude (WGS84)	Elevation (MAMSL)	Water Level (MBGL)	Status
1	26,7578	27,62481	1441	Pumping	In Use
2	26,75866	27,61974	1449	Closed	In Use
3	26,76435	27,62336	1441	Closed	Not In Use
4	26,75936	27,60881	1457	Closed	In Use



Figure 14: Borehole locations

As described in the SEIA (ENVIROWORKS, 2019) Concern was raised concerning 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 influence 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.

(ix) Air quality

A Dust Impact Assessment was conducted by Skeiron Environmental to address the potential dust impact that BBSM might have on the surrounding area. The National Management controls emission into the atmosphere: Air Quality Act, 2004. The proposed activity at the site will however not trigger an application in terms of the Air Quality Act, as the emissions to be produced at the mining site will only entail dust generation due to the disturbance of soil. Dust will be generated by the movement of earthmoving equipment, the loading of material and transporting of material from site.

The trucks driving on site has to comply with the speed limit and since the material is coarse and heavy, minimal dust is generated during the transportation of material from the mine. Loads will be flattened to ensure that minimal spillage of the material takes place during transportation. Topsoil stockpiles will be planted with indigenous grass species to ensure that exposed surface areas are minimised, reducing windblown dust from the site. The vegetation will also assist in capturing wind born dust and minimising the spread of dust from the site.

Dust generation on the access and haul roads as well as mechanical excavation can be managed through the implementation of dust suppression measures via water carts and a sprinkler system. The applicant has to conduct formal dust monitoring on site to provide management with an effective management tool for mitigating the impact of the mining activity on the surrounding environment with regard to dust pollution.

The project environment is located within an agricultural setting in which heavy equipment, e.g. tractors, already operate. Noise levels are relatively low in the surrounding properties. Various mines are located within the proposed mining area. Air quality is already impacted negatively by the close proximity of the SASOL chemical plant and Mittal steelworks situated 20km to East North East and East South East of the mine respectively.

The background air quality of the surrounding area is highly impacted on by vehicles travelling along the Vaal Eden Road, and by the neighbouring sand mines. The area is already subject to substantial amounts of dust generation because 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 (ENVIROWORKS, 2019).

Sources of emissions in the area therefore includes the following:

- Surrounding Mining Activities (excavating and screening);
- Fuel combustion by mining and domestic vehicles;
- Veld fires;
- Fugitive dust sources (agricultural activities, wind erosion, vehicle entrapment of dust along paved and unpaved roads).

No expansive modelling was needed to make the necessary dust deposition predictions due to factors including the small size of operation; nature of the pollutant (mainly coarse dust particulates); mainly one source; impact and location of site; availability of data of similar operations. After a comprehensive literature study into the specific nature of these activities dust (tailings and gravel), the possible impacts related to the dust deposition levels of this activity was assessed and determine. The level of control that would be required in order to mitigate it was also included in the study. The impact of dust as pollutant of this mining activity can be assessed as follows (Solutions, 2019):

The potential significance and overall effect of dust as pollutant responsible for degradation of the surrounding environment and air quality is determined mainly by the size of the dust particles and the climatology of the region. In general, large dust particles (greater than 30 microns- TSP) make up the greatest proportion of dust and largely deposit within 100 metres of the source. Intermediate sized particles (10 to 30 microns) are likely to travel 200 to 500 metres (Goodquarry.com, 2005). For this impact study, the travel distances of dust particles as calculated by G.E. Blight under South African conditions were used. Blight determined travel distances using a wind speed of 13.9 m.s-1 and calculated distribution distance for the re-suspension of different size dust particles at a height of 1 meter (G.E. Blight, 2007). According to his calculations, the travel distance through re-suspension of dust particles will be 38 metres for a 60-micron particle (G.E. Blight, 2007). This is also more or less in line with real distances of dust particles travelled internationally as described by goodquarry.com (Solutions, 2019).

Grading analysis of the silica sand mined at the Parys Borrow Pit by Stata labs (SANAS accredited, Appendix 1) indicates from several samples that only 2 to 5 % of the silica sand within each sample tested had particle sizes smaller than 75-micron meters. The wind speeds of Sasolburg never exceed 50 km/h (see figure 2). It is thus the prediction of this assessment that no particle ≥ 75 microns, which will include 95-98 % of the Parys Borrow Pit as tested, will travel further than 100 metres from the source if released at a height of 1 meters or below (Solutions, 2019).

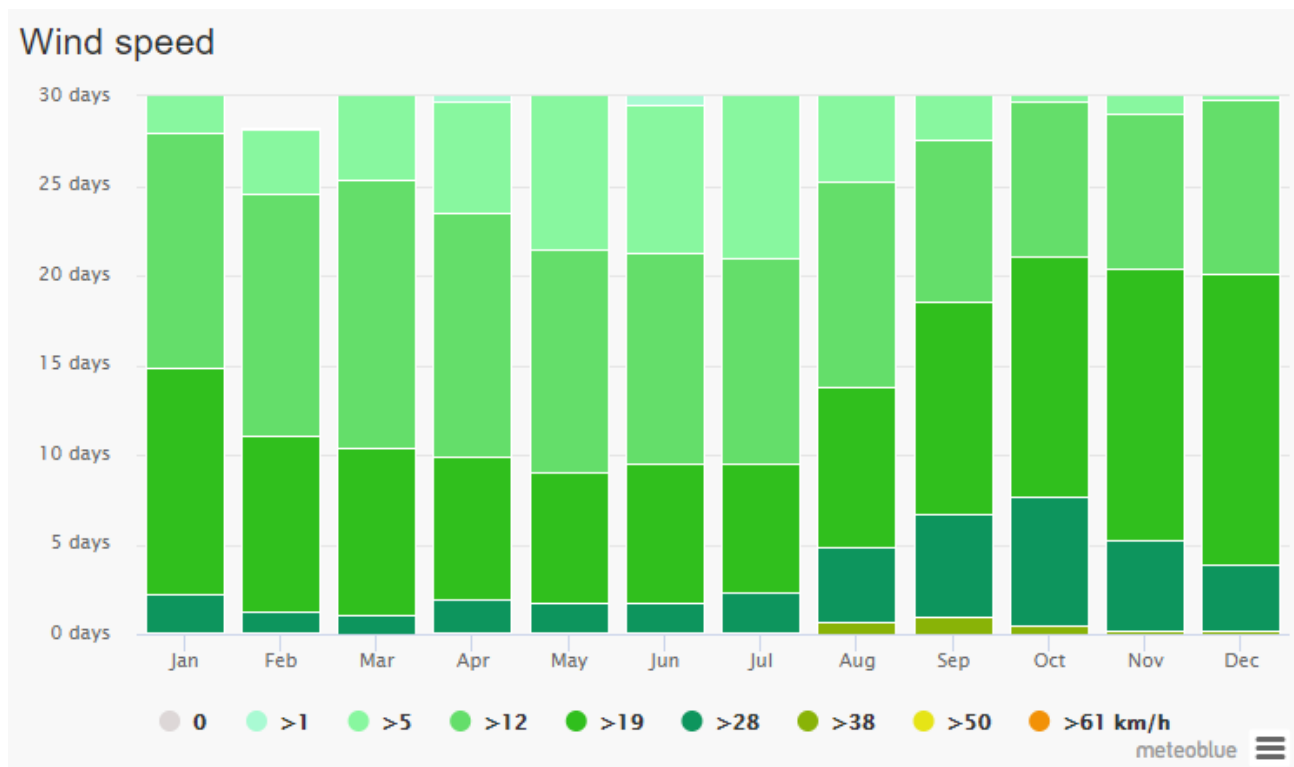


Figure 15: Wind speeds for Sasolburg (Solutions, 2019)

The predicted impact of the generated dust (TSP) emitted during all mining activities including screening at SPH: Barrage Bulk Sand Mine can be assessed as follows:

- The closest sensitive receptors are:
 - Vaal Oewer located 1.6 km NNW of the closest point of the site farm house located 600 meters east of the site boundary the Vaalriver itself located directly to the eastern of the operational boundary
 - Almost all emitted dust will be 60 microns and larger 60 micron dust particles will travel 38 m with a wind speed of 13.9 m.s-1
 - The wind direction for this region is northerly directions 80% of the time (Figure 3)
 - The wind speed for this region never exceeds 50,4 km/h = 13,9 m.s-1 (Figure 2)
 - The only sensitive receptors downwind of the site will be the Vaal river to the east
 - All sensitive receptors except the Vaal River is located more than 100 meters from operational boundary.

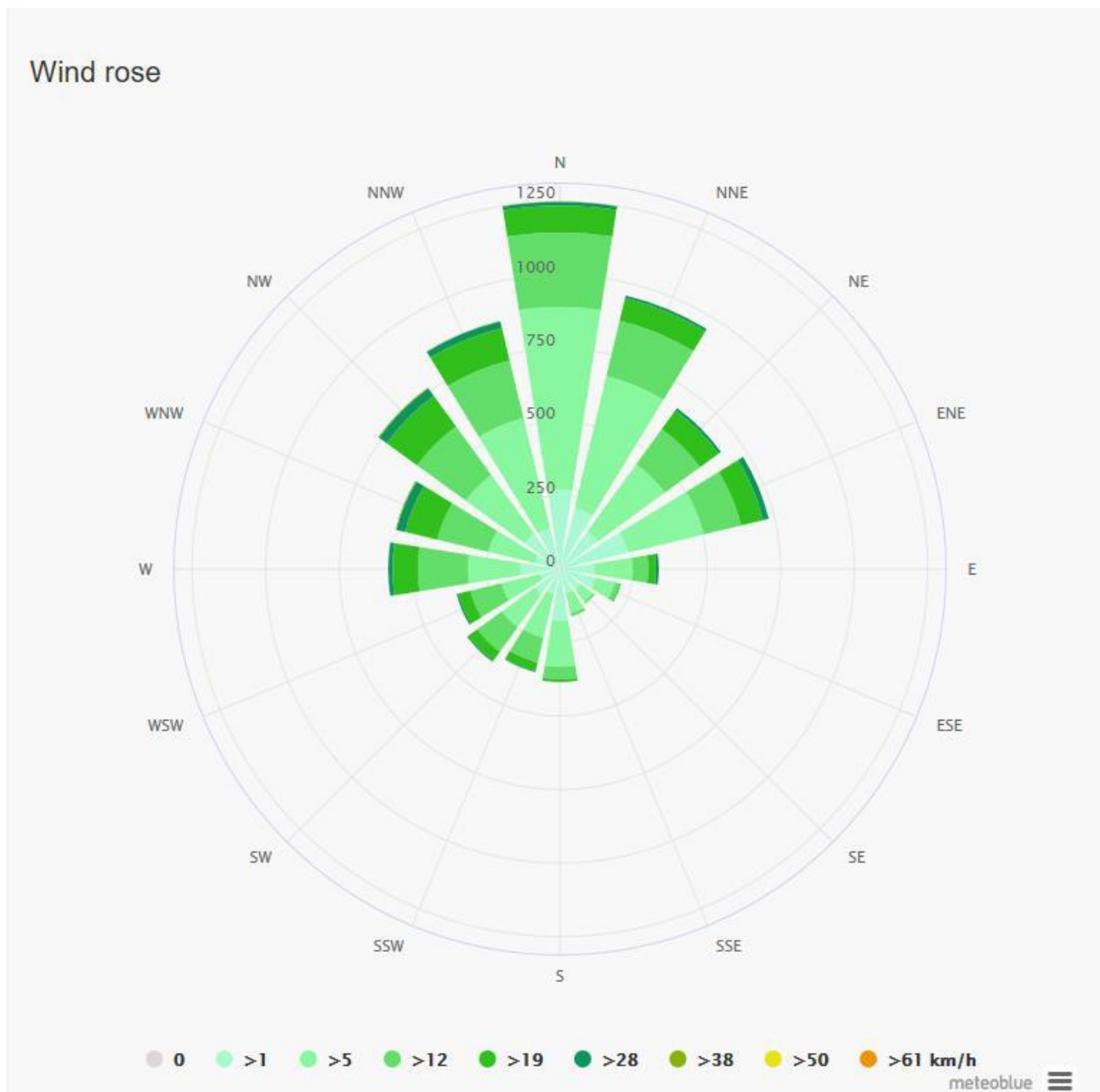


Figure 16: Wind rose for Sasolburg (Solutions, 2019)

It can therefore be presumed that the proposed project will have no impact on any of the nearby receptors including the river as long as mining does not take place within 300 m of the operational boundary line (Solutions, 2019).

Mitigation Strategies

No other sources of particulate or gaseous emissions other than the dust generated from mining, screening and gravel roads are expected to have impact on air quality and environmental surrounding of this region. The main sources of dust emission contributions will be wind-blown dust from vehicles travelling on gravel roads and the mining (excavating) and screening of silica sand.

From the wind-blown dust sources, the stockpiles and screening will be the main source of emissions and mitigating concerns. Wind-blown dust typically affects down-wind from the direction where the highest velocity winds occur (Solutions, 2019).

Fall-out dust buckets are currently placed on the operational boundaries (see figure1). These buckets are used to assess the dust fall-out from the trucks travelling along the gravel roads (source) as well as mining activities to ensure mitigating strategies would be implemented if guideline values for the dust fall-out monitoring program require so. To this date no mitigation strategies was needed as the legal limits of the non-residential dust fall-out rate of 1200 mg/m²/day or the residential limit of 600 mg/m²/day of the acceptable dust-fall-out limits as set in the National Dust Control Regulations was ever exceeded (Solutions, 2019)

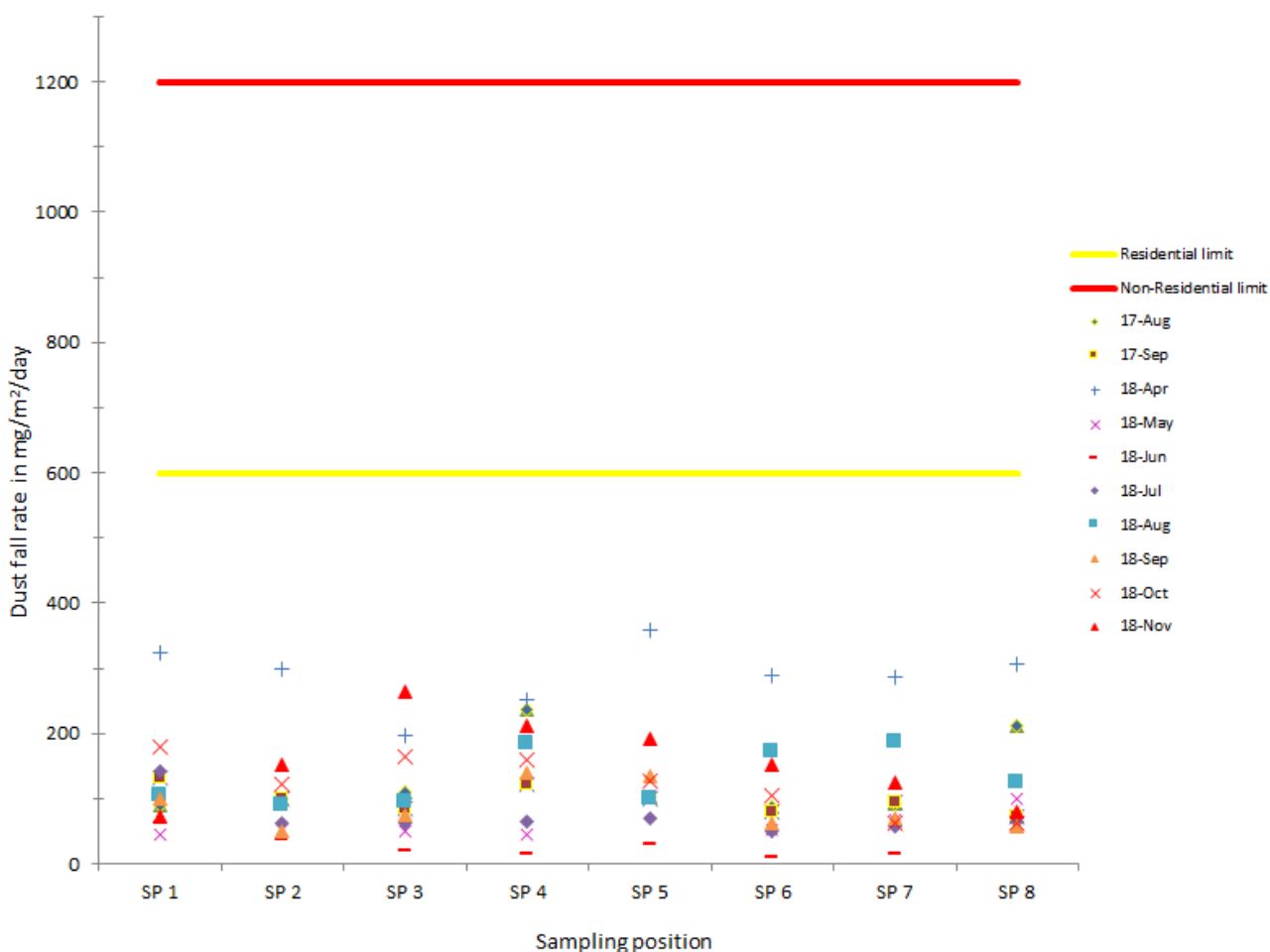


Figure 17: Dust fall-out data of current dust monitoring network (Solutions, 2019).

No impact of dust is anticipated beyond the 300-meter guideline as described in Paragraph 5 and therefore all new activities including screening plant and stockpiles would be placed 300 metres from the closest receptor of the Vaal River to the east. Extensive dust monitoring would be done at selected sites with potential significant environmental and health impacts and mitigation of mining methods and activities pertaining to silica sand source would be managed accordingly (Solutions, 2019).

As described in the SEIA compiled by Enviro Works:

- ✦ The addition of minerals that can be mined and on-site processing (crushing and screening) is will definitely lead to increased dust and noise levels emanating from the mine.
- ✦ High atmospheric dust levels pose a health risk as well as a nuisance factor, causing dust in people's homes, obstructing views and at times forces nearby residents to stay indoors.
- ✦ Potential health risks associated with long term of 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.
- ✦ This aspect needs to be investigated and a health risk statement form an expert must be included in the BAR.
- ✦ 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 very disturbing to the tranquillity of the environment. Efforts were made by the Contractor to silence the reverse hooters to a level that still fulfils 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.
- ✦ 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.

(x) Noise

The background noise level of the surrounding area is highly impacted on by traffic travelling along the Vaal Eden road passing the property, as well as the neighbouring sand mines.

Due to the nature of the proposed activity, noise will be generated because of mechanical excavation. The nuisance value of noise generated by heavy earthmoving equipment for residence in the near vicinity is deemed to be of low – medium significance, as the mine is will only be operational during daylight hours, 6 days a week. The distance of residents from the mining area (>2km) will however assist in the mitigation of the noise impact. All mining vehicles will also be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No. 93 of 1996).

The project environment is located within an agricultural setting in which heavy equipment, e.g. tractors, already operate. Noise levels are relatively low in the surrounding properties. Air quality is already impacted negatively by the close proximity of the SASOL chemical plant and Mittal steelworks situated 20 kilometres to East North East and East South East of the mine respectively.

SANS 10103 (2008) addresses the manner in which environmental noise measurements are to be taken and assessed in South Africa, and is fully aligned with the World Health Organisation (WHO) guidelines for Community Noise (WHO, 1999).

Terrain may affect noise propagation between sources and NRs by acting as noise barriers. Community activities, music, light vehicle and motorcycle traffic, domesticated animals as well as natural noises such as birds, insects and noise created by the Vaal River, currently affect the acoustic climate at NRs. Recorded LReq,d at all sampling locations during the daytime survey are similar to those given in SANS 10103 as typical for rural districts (45 dBA).

After comments received during the second public participation (May 2017), SPH and Dr. Stephen Jacobs went to Craig Richardson's farm after the meeting to investigate the noise concerns. SPH added noise muffler systems on all the reverse hooters of the mining equipment. A noise monitoring system will be added to Mr. Richardson's farm to conduct noise monitoring in the future, if the noise continues on his farm.

As described in the SEIA, It is suggested that a site should be selected in the southern portion of the property, south of the S171 road, where all crushing activities are to take place.

The site selected for crushing activities should ideally have dense vegetation or trees surrounding it.

- Working hours are to be strictly adhered too. As stipulated in the Mining Works Programme working hours are from 8am to 4pm on weekdays. When required the mine will operate on Saturdays as well. When operating on a Saturday work should cease by 2pm.
- No crushing is to take place on weekends.
- All machinery to be fitted with silencers.
- Reversing beepers on all vehicles are to be replaced with white-noise reversing beepers or equivalent.
- Workers on site are to conduct themselves in an orderly manner on site.
- No loud music permitted on site.

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 is 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 (Solutions, 2019).

(xi) Archaeological and cultural interest

Local people that are very familiar with the area and specifically with the farm Woodlands were consulted and confirmed that there are no structures, graves or any other item of archaeological or cultural interest according to their knowledge of the farm.

During the field investigation, no graves that can potentially be related to sites of archaeological interest were found. Some of the buildings on the farm can have historical significance but mining will not affect these. A specialist study has been commissioned to identify and manage any archaeological or cultural sites if found or identified. A single stone tool was identified but the specialist is of the opinion that it was translocated by river action and not an indication of heritage sites or mounds (Heritage, 2015).

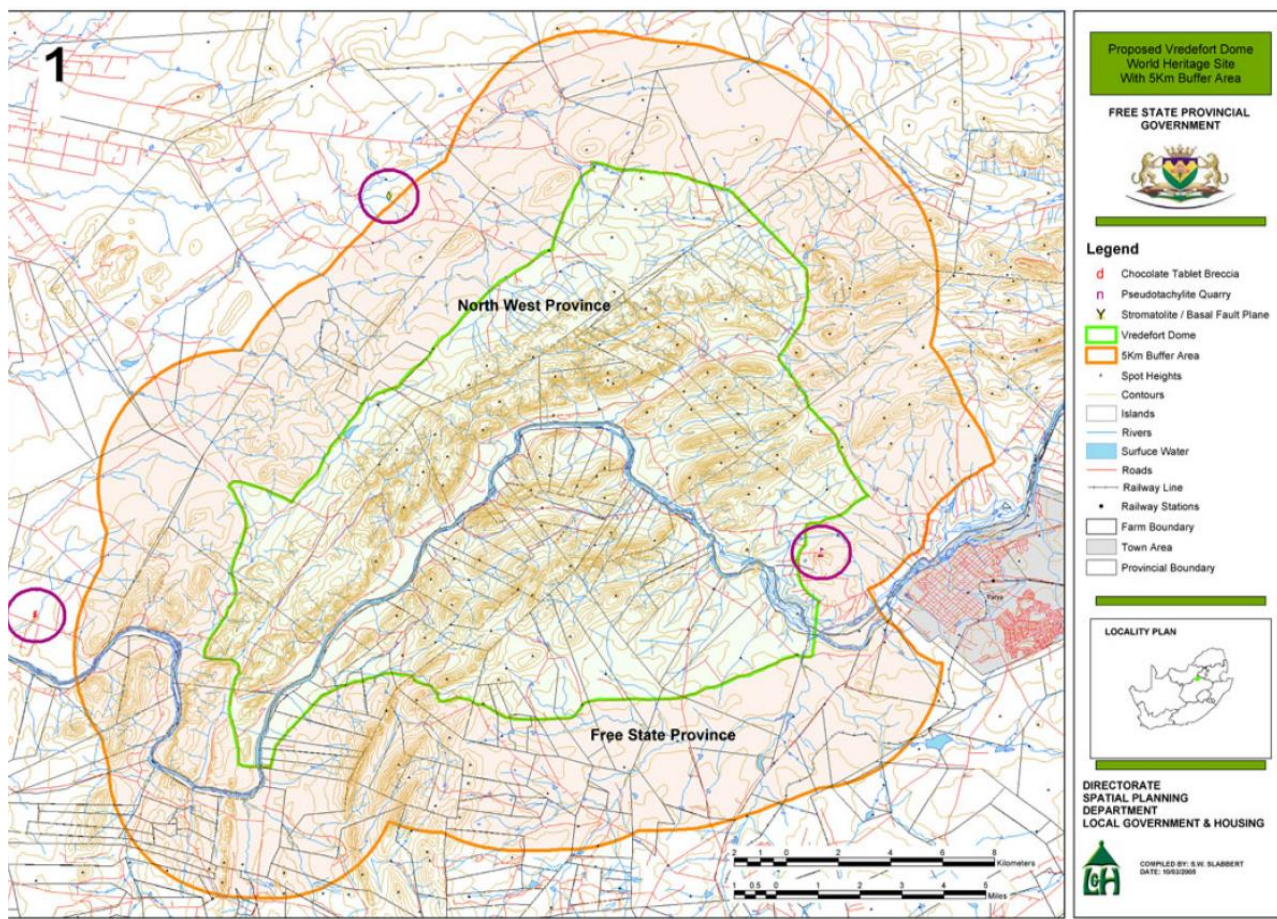


Figure 18: Vredefort Dome World Heritage Site Buffer Areas.

From the above figure, obtained from Heritage specialist, the proposed mining area falls outside of the Vredefort Dome World Heritage Site and outside of the 5km Buffer area. The Vredefort Dome is classified by UNESCO as a world heritage site, but not by SAHRA.

(xii) Visual exposure (Sense of Place)

Due to the current mining disturbance nearby the area, the site has a low aesthetic value. The proposed mining area will be visible from Vaal Eden road passing the property and will therefore have a visual impact on the immediate surrounding area. The site will not be visible from the Vaal Oewer Town, and Vaal Oewer informal Settlement, as the area between the mining area and the town and settlement is 3.98km from each other as the crow flies. Eucalyptus trees act as a visual barrier.

The applicant must ensure that housekeeping is managed to standard, as this will mitigate the visual impacts during the operational phase of the stockpile area. Upon closure of the mining area and decommissioning of the site, the area must be fully rehabilitated and all exposed areas must be seeded to enhance vegetation recovery must natural vegetation not establish within six months of completion of rehabilitation.



Figure 19: View shed of the proposed Quarry.

From the above figure, the green areas indicated the areas that can see the mine location. The purple areas indicate the areas that cannot be seen by the mine.

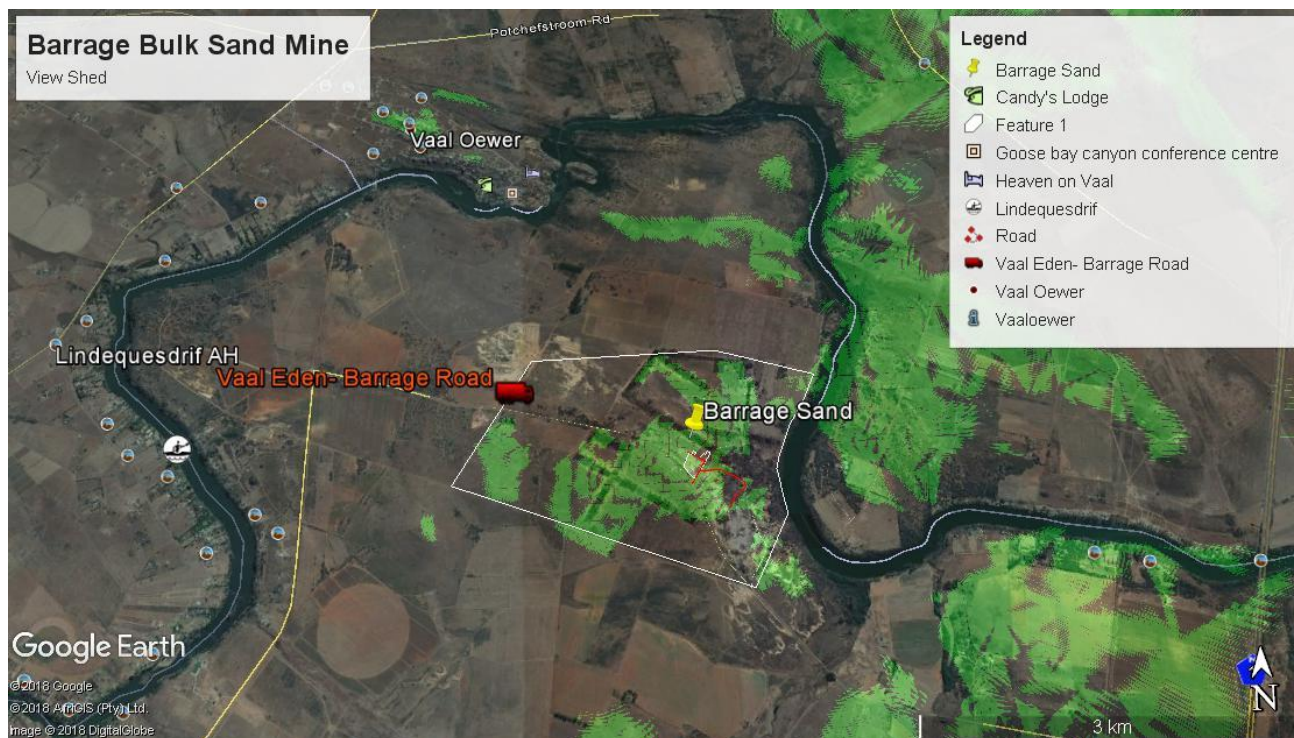


Figure 20: View shed of the proposed Quarry from the Vaal Oewer.

From the above figure, the green areas indicated the areas that can see the mine location. Not all other areas that are not indicated in green will be able to see the proposed mining operation. Meaning that in the Vaal-Oewer Town, areas that is located on the hill will see the mining area. Please also take into factor that there are eucalyptus trees located around the farming area, which will act as a visual barrier.

Noise, not characteristic to the area affects the sense of place and creates a disturbance. 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’. 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 (ENVIROWORKS, 2019).

(xiii) Road Impact

The S171 Road (Vaal Eden- Barrage road) runs to in an East-West direction through the property. It is recommended that a Roads Maintenance plan be prepared in collaboration with other landowners, developments and the relevant road authority as suggested by the Traffic Impact Assessment that was conducted for Pure Source, the adjacent mine to the west. Please refer to the section below in the Socioeconomic Impact Assessment relating to the road impact.

(xiv) Regional socio economic structure

The Free State Province is situated between the Orange and Vaal Rivers. Bloemfontein is the capital city. It is a province of great contrasts from Highveld Grassland and Kalahari Sandveld country to majestic mountains, wilderness areas and farming land. The Free State Province is a strongly rural province. The provincial government's growth strategy is focused on addressing infrastructure backlogs, poverty alleviation and social development. The Free State is the third-largest province in South Africa. However, it has the second-smallest population and the second-lowest population density. The province is favourably situated for economic co-operation with other parts of southern Africa as it shares a border with Lesotho. The Free State Province is divided into five District Municipalities and these are -

- The Xhariep District
- The Motheo District
- The Lejweleputswa District
- The Thabu Mofutsanyane District
- The Fezile Dabi District

This district is an important agricultural production area, particularly for maize, and is known as the grain basket of South Africa. The Vaal Dam is the main source of water for Gauteng, and offers a wide profile of sport and leisure facilities. The district also has other attractions such as the Vredefort Dome, which is the third largest meteorite site in the world (200km in diameter), and various San paintings. The most important towns are Sasolburg and Kroonstad. Sasolburg has significant strategic importance for South Africa, as it is the location of large chemical and synthetic fuel plants (i.e. the Sasol plant). Kroonstad is an important agricultural and administrative centre in the district. Fezile Dabi District Municipality (DC20) is situated within the northern portion of Free State Province. The District Municipality borders Mpumalanga Province in the east, North-West Province in the west and Gauteng Province in the north. Commercial agriculture is an integral part of this part of the province, and cattle ranching and maize farming are very popular. Various chemical industries such as SASOL and its associated industries are found in this region. The provinces largest coal mines are also found in this district. Ngwanthe Local Municipality (FS203) is situated in the northern part of the Fezile Dabi District Municipality previously known as the Northern Free State, it is one of the four Local municipality within the district, the other three (3) being Moqhaka LM, Metsimaholo LM and Mafube LM. The total estimated population of the municipality in terms of Census 2011 results is 120 520. The geographical area of the province is 21301.006 square kilometres. The municipality comprises of five towns which are: Parys (Head Office), Heilbron, Koppies, Vredefort, and Edenville. Ngwanthe Local Municipality is a category B municipality as envisaged in section 155 (h) of the Constitution of the Republic of South Africa Act No. 108 of 1996; as such, it has specific legislative powers and performs such duties and functions, which are attributable to the local municipality of its category by the Constitution. In terms of the provincial gazette, Ngwanthe is supposed to be a Mayoral type municipality.

Tja Naledi – Barrage Bulk Sand Mine operation is located within Ward 6 of the Ngwanthe Local Municipality.

(a) Education and Employment

The District Municipality is also faced with the high levels of illiteracy and innumeracy. Census 2001 indicates that 13.77% of the population haven't had any schooling. Only 6.32% have higher education. These low levels of education are experienced within the female population. This is translated into 40.37% of the available workforce being economically inactive, 35% being employed and 24.58% being unemployed. Most of the males have employment in craft and related trades industries, as machine operators and assemblers and in elementary occupations. Almost all the women have employment in elementary occupations.

Table 9: Education levels in Ngwanthe LM

	1996		2001		2011	
	Male	Female	Male	Female	Male	Female
No schooling	4680	6247	5066	6839	2657	3531
Some primary	7132	8709	7250	8783	5820	7910
Completed primary	2356	3019	2259	2812	1696	2172
Some secondary	10083	11779	9617	11385	11780	13338
Grade 12 / Std 10	3780	4153	5329	5803	9148	9586
Higher	1699	1698	1763	1877	2202	2440

Source: STATSSA, Census 1996, 2001 and 2011

Table 10: Employment status in Ngwanthe LM

	Employed	Unemployed	Unemployment rate
1996	26313	13335	33.6
2001	22064	19643	47.1
2011	25376	13814	35.0

Source: STATSSA, Census 1996, 2001 and 2011

The unemployment rate in the municipality was high in 2011 at 35%. Though it was high in 2011 there was an improvement from the highest unemployment rate experienced in 2001 whereby almost half of the labour force was unemployed. The 2016 household survey does not show the unemployment status and therefore we rely on the 2011 statistics

(b) Economic Profile

Within the Fezile Dabi District, the most important mining town is Sasolburg. Mining and Chemical industries are the primary economic activities in the region and as such, is the largest contributor to the Province's GDP. A far greater portion of the land is used for agriculture.

(c) Population Density, Growth and Location

According to Census 2011, the Fezile Dabi District Municipality has a population of 460 276 with 75.4% being in rural areas.

Table 11: Population and population growth rates by the Fezile Dabi District Municipality.

Municipality	1996	2001	Growth Rate (1996-2001)	2011	Growth Rate (2001-2011)
Ngwathe	120 007	118 810	-0.2	120 520	0.1

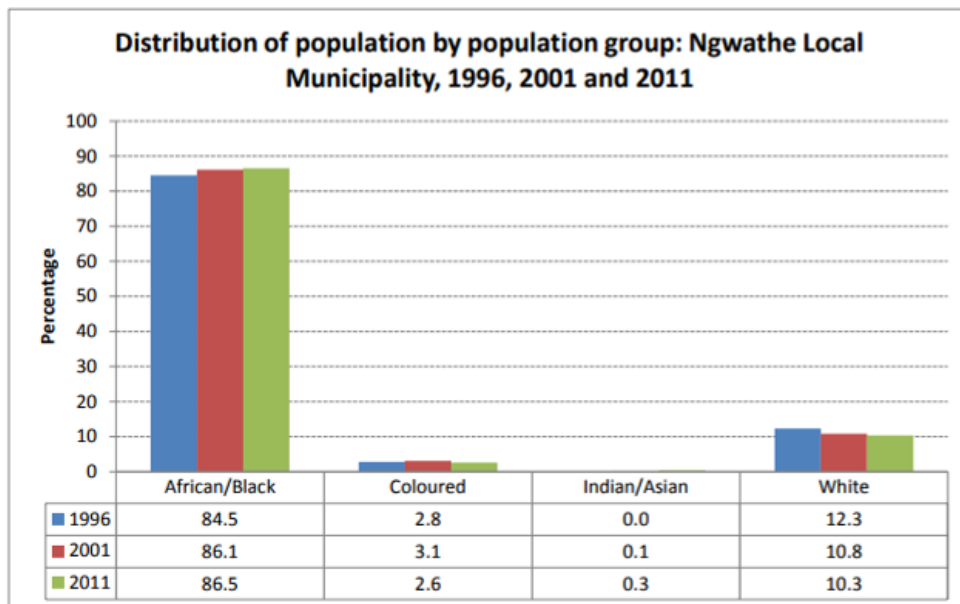
Source: STATSSA, Census 1996, 2001 and 2011

It is indicated from the table below that Ngwanthe Municipality is experience a negative growth in population.

Table 12: Statistics for 2016.

Ngwathe Local Municipality	Black african			Coloured			Indian/asian			White			Total		
	Male	Female	Total	Male	Fem ale	Tota l	Ma le	Fe m ale	Tot al	Male	Fema le	Total	Male	Female	Total
FS203: Ngwathe	50027	54480	104507	1502	1537	3039	61	-	61	4834	6465	11299	56425	62482	118907

Population figures according to race:

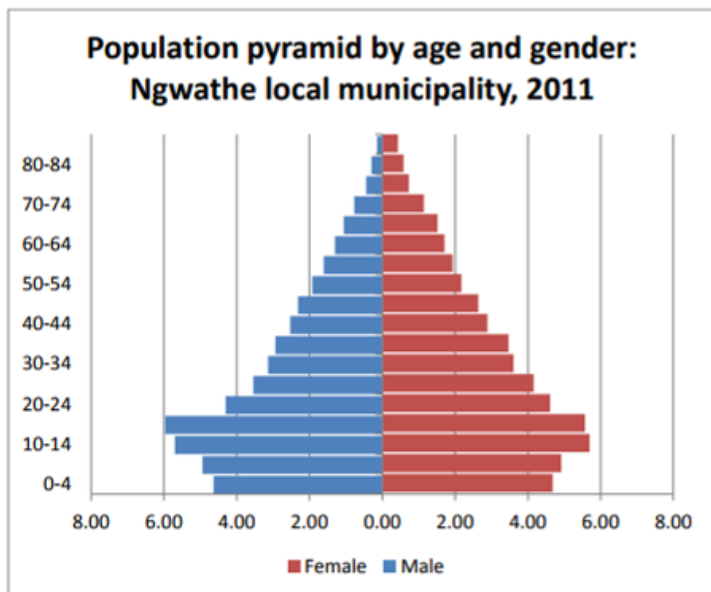


Source: STATSSA, Census 1996, 2001 and 2011

Figure 21: Distribution by race.

The figure above indicates that the municipality consists of the large number of Black African population followed by whites then coloureds. However, the Indian population is the smallest it has been growing from less than 0.1% in 1996 to 0.3% in 2011.

The gender breakdown is as follows (2011 Census) Gender People Percentage Female 1416623 51.60% Male 1328967 48.40% for the Free State Province.



Source: STATSSA, Census 2011

Figure 22: Population pyramid by age and gender.

Population pyramid for 2011 shows a bulge at the lower levels age groups 10- 19 years old. This shows that the municipality consist of the young population who still needs to go to school and enter the labour market in few years. It also shows that the older population 60 years and above lives longer. Females seem to be out living the males as shown in the pyramid that on the female side for older population it is wider than the male side

Of the total population, 68% speak Sesotho and 13.56% speak Afrikaans. Black Africans make up 85.71% of the population and Whites constitute only 12.19%.

(d) Housing

Dwelling statistics indicate that 70% of the population lives in houses or some form of brick structure. Only 17% live in informal settlements.

(e) Social Infrastructure

Telephones and selected household goods

About 42% of the population has access to a public telephone nearby. Land based and cellular telephones are available to 38% of the regional population. Radio seems to be the most popular medium used followed by television. Toilets Census 2001 shows that 11% of the population uses pit latrines without ventilation and 62% having flushing toilets.

Refuse removal

The refuse removal statistics support the toilet statistics in that 62 percent of the population have weekly refuse removal and 20% of the population have their own refuse dump.

(f) *Water and Power Supply*

Electricity and gas are the most common forms of energy used for heating and cooking purposes. 80% of the population have access to electricity whilst 17% uses candles for lighting. About 15% of the population has piped water in their dwellings. About 90% of the regional population has access to piped water.

(xv) Sense of Place

As described in the SEIA (ENVIROWORKS, 2019) 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.

In the event of mismanagement, the value of a multi-million Rand educational facility planned on an adjacent farm may also be compromised.

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

(xvi) Mining and Biodiversity Guidelines

The Mining and Biodiversity Guidelines (2013) were developed by the Department of Mineral Resources, the Chamber of Mines, the South African National Biodiversity Institute and the South African Mining and Biodiversity Forum, with the intention to find a balance between economic growth and environmental sustainability. The Guideline is envisioned as a tool to "foster a strong relationship between biodiversity and mining which will eventually translate into best practice within the mining sector.

In identifying biodiversity priority areas which have different levels of risk against mining, the Guideline categorises biodiversity priority areas into four categories of biodiversity priority areas in relation to their importance from a biodiversity and ecosystem service point of view as well as the implications for mining in these areas:

1. Legally protected areas, where mining is prohibited.
2. Areas of highest biodiversity importance, which are at the highest risk for mining.
3. Areas of high biodiversity importance, which are at a high risk for mining.
4. Areas of moderate biodiversity importance, which are at a moderate risk for mining.

The Guideline provides a tool to facilitate the sustainable development of South Africa’s mineral resources in a way that enables regulators, industry and practitioners to minimise the impact of mining on the country’s biodiversity and ecosystem services. It provides the mining sector with a practical, user- friendly manual for integrating biodiversity considerations into the planning processes and managing biodiversity during the operational phases of a mine, from exploration through to closure. The Guideline provides explicit direction in terms of where mining-related impacts are legally prohibited, where biodiversity priority areas may present high risks for mining projects, and where biodiversity may limit the potential for mining.

According to the Mining and Biodiversity guidelines (as presented in Figure 23) the mining area does not fall within the Mining and Biodiversity area. Areas that are highlighted in green falls within the Moderate biodiversity importance area which have a moderate risk for mining. These areas are not in close proximity to the propose mining area (DEA, 2013).

From the guideline, as mentioned above the area outside the mining area falls within a moderate biodiversity importance area. Please refer to the table below:

Table 13: Moderate Biodiversity Importance

Moderate Biodiversity Importance	<ul style="list-style-type: none"> ➤ Ecological support area ➤ Vulnerable ecosystem ➤ Focus areas for protected areas expansion 	Moderate risk for mining	<p>These areas are of moderate biodiversity value.</p> <p>EIAs and their associated specialist studies must focus on confirmed the presence and significance of these biodiversity features. Identifying features (e.g. threatened species) not included in the existing datasets, and on providing site-species information to guide the application of the mitigation hierarchy.</p> <p>Authorisations may set limits and specify biodiversity offset that would be written into licence agreements and/or authorisations.</p>
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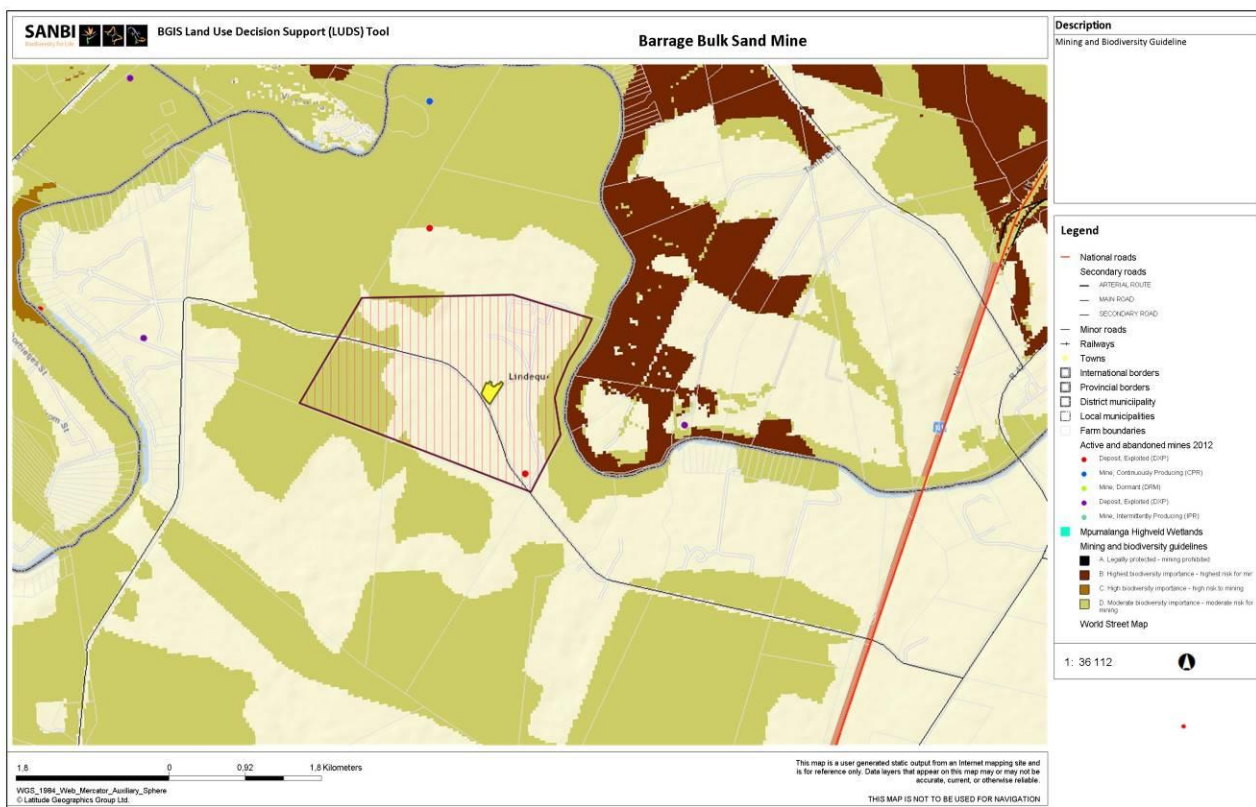


Figure 23: Mining and Biodiversity Guidelines Map (SANBI) (DEA, 2013).

Table 14: Biodiversity Priority areas

Biodiversity priority areas	Description	Information sources
Ecological support areas	These are areas identified in spatial biodiversity plans areas that play an important role in supporting the ecological functioning Critical Biodiversity Areas or protected areas and/or in ecosystem services. The management objective for a functional state	Data: No data available for Free state
Vulnerable ecosystems	Threatened ecosystems are identified in the NBA and may be listed in terms of the Biodiversity Act55. Vulnerable ecosystem types have experienced significant loss of natural area but are not yet critically endangered or endangered. In areas where biodiversity planning has occurred, the best areas to meet targets for vulnerable ecosystem types are generally included in will also be viewable on CBAs. However, where this planning has not yet occurred (e.g. Free State, and part of the Northern Cape), remaining intact areas of vulnerable habitat types must be avoided where possible.	Data: Terrestrial vulnerable ecosystems and currently viewable on the SANBI website. Associated legislation: Section 52 of Biodiversity Act, 2004
Focus areas for land based protected area expansion and focus areas for offshore protection	Focus areas for land-based protected area expansion are large, relatively intact (in terms of natural vegetation cover) and fragmented areas of high biodiversity importance, suitable expansion for the creation or expansion of large protected areas, were identified by the Offshore Marine identified in the National Protected Area project (OMPA; for offshore Protected Area Expansion Strategy 2008. They were identified through a systematic biodiversity planning process, taking into account the need to represent both terrestrial and freshwater biodiversity in	Data: focus areas for land based protected area expansion available on SANBI website. Associated legislation: these areas support further implementation of the protected areas act.

	<p>the protected area network as well as to contribute to climate change resilience. They represent the best remaining large areas of natural habitat that still have low levels of fragmentation and form a key part of our ecological infrastructure network. Focus areas for offshore protection were identified through a systematic biodiversity planning process to direct MPA expansion and other types of spatial management to ensure sustainable resource use and a representative protected area network. They identify spatial priorities for representing offshore biodiversity, protecting sensitive ecosystems, contributing to fisheries sustainability and reducing by-catch. These areas will be refined in the future.</p>	
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(xvii) Socio-Economic

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). Envioworks have compiled this report 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, in both 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.

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 supporting the life of an existing mine and allowing for the small-scale mining of diamonds. 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 mining 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, not 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 lifetime, and can be reversed to a sustainable long-term use. Therefore, if the mining takes place in an environmentally responsible manner, and can be returned upon completion, to another use, 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 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 suitable for agricultural, mining and tourism activities. As the area is classified as a tourism corridor in the PDSF, any land uses that compromise the area's tourism integrity would be in contradiction to the PDSF. Current mining activities already compromise the tourism potential of the surrounding area (see Appendix E of the SEIA as in Appendix H). 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.

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 are also a culprit, particularly with regards to dust.

Should the mine contribute to meaningful LED 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 of the SEIA as included in Appendix H and include among others, strict working times, no processing on weekends and optimal placement of the processing plant with regards to noise.

(a) *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 will 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 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 very

disturbing to the tranquillity of the environment. Efforts were made by the Contractor to silence the reverse hooters to a level that still fulfils the safety aspect and he is 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 that 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 neighbouring 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 about 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. Please refer to Appendix M for the GA.

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 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, local males will likely fill these job opportunities. 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 effect 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 because 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 because 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 because 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 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 Vaaloewer, having been built along the riverbanks. 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 of the SEIA as attached in Appendix H) because 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 about whether or not current mining activities adhere to the existing EMPr. Issues raised include the prefabricated 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, because 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 of the SEIA as attached in Appendix H), 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 of the SEIA as attached in Appendix H), implying a strategic environmental impact assessment cannot be taken lightly and needs to be considered.

- Enviroworks recommend that the DMR play 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

Concerning 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.
- 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 neighbouring 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 offsetting 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 because 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 (ENVIROWORKS, 2019).

From the study above, the mitigation measures for the above mentioned impact are discussed in Part vii)a).

(b) Description of the current land uses.

No traditional settlements are present in the area; land use is mostly residential and mixed farming and residential purposes. Population density is fairly low.

There is some existing infrastructure such as two houses, a barn and out buildings on the farm. An ESKOM transmission line also crosses the property from North to South. A 40m exclusion zone will be allowed around the buildings and lines as required by the Mine Health and Safety Act. A dirt road and tar road services the farm and surrounding properties. Some of the concerns raised by the interested and affected parties verbally is the deterioration of the tar road due to the increased truck traffic in the area. This is a cumulative impact, as there are two other sand mines in the area making use of the same road.

Going forward, together with other sand mines in the area, which will be using the same road (Sweet Sensation and Pure Source Minerals), a strategy will be developed to assist in road repairs once the Section 102 mining right has been approved for Barrage Bulk Sand Mine. The Roads Department is currently busy with an analysis of the road integrity and the sand mines. Once finalized a negotiated plan between BBSM, Pure Source Minerals, Sweet Sensations and the roads department will be discussed and a plan implemented.

The Roads Department informed SPH Kundalila that the Barrage Bridge was built to hold the capacity of the heaviest legal load on national roads, as the bridge is built over a national road. - 120 tons' maximum payload. Vaal-Eden Bridge loads will be investigated.

There are no tourism destinations in the immediate vicinity of the farm. In the larger region, there are various tourism destinations within the Vredefort Dome area, but these will not be impacted by the proposed mining project.

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

Tja Naledi Beafase Investment Holdings (Pty) Ltd currently holds a Mining Right and approved Environmental Management Programme (EMPR) over portion 4 of the farm Woodlands 407 (437.8330ha), which falls in the Ngwanthe Local Municipality in the Fezile Dabi Magisterial district, Free State Province.

Tja Naledi – Barrage Bulk Sand Mine, intends to apply for a mining right amendment, to include gravel into the mining right, and to amend the EMP to include processing (screening). Silica Sand and Gravel (aggregate) to be removed from the mine will be used for building material in the vicinity.

The farm Woodlands 407 is situated approximately 3.98km southwest of Vaal Oewer, 22.26km north-east of Parys, 21.6km east of Sasolburg, Free State Province. The area is currently being mined by SPH Kundalila (contractor), under the old mining right (FS30/5/1/2/2/10020MR). The mining method to be used on Barrage Bulk Sand Mine will be strip mining. Mining will take place via a contractor who will excavate the material, load and haul the material to the processing plant. From the plant, the material will be loaded via front-end loader directly onto client's trucks. The material will be mined in strips. The maximum depth of the excavations will be 10m in some areas. Aggregate will be screened before loaded onto client's trucks to remove any debris' contained in the aggregate.

The proposed mining area is approximately 437.8330ha in extent and the applicant, Tja Naledi – Barrage Bulk Sand Mine, intends to win material from the area for at least 10 years. Silica Sand and Gravel (aggregate) to be removed from the mine will be used for building material in the vicinity. The proposed mine will therefore contribute to the building industry in and around Parys, Vanderbijlpark and Sasolburg area.

The mining activities will consist out of the following:

- Stripping and stockpiling of topsoil;
- Excavating;
- Crushing;
- Screening;
- Stockpiling and transporting;
- Sloping and landscaping upon closure of the site; and
- Replacing the topsoil and vegetation the disturbed area.

The mining site will contain the following:

- Excavating Equipment;
- Earthmoving Equipment;
- Mobile Crushing and Screening Plants;
- Temporary Offices;
- Weigh Bridge; and
- Storage Yard for storing of equipment.

A generator will be used to power the infrastructure on site until an Eskom connection can be secured. Water from the two boreholes on site (registered via the farmer) will be used dust suppression and drinking water on site. See the requested map attached as Appendix B.

The impact of the proposed mining area on the infrastructural features of the surrounding area is deemed to be of low significance as the impact of the mining activity will be concentrated within the 438ha footprint area of the mine.

In order to mitigate the potential impact on the surface or ground water. Storm water management will be implemented on-site. Storm water will be channelled around the mining area to prevent possible contamination of clean water flowing over dirty areas. If this is implemented the proposed activity is not expected to have a negative effect on the surface or ground water in the vicinity.

(d) Environmental and current land use map.

(Show all environmental and current land use features)

The environmental and current land use map is attached as Appendix C.

Neighbouring property activities includes the activities below:

- Northern Neighbour – Low density property development in the North West Province and on the banks of the Vaal river;
- North Easter Neighbour – Mr. Craig Richardson.
- North and North west neighbours – sand mine and game farm owned by Goose Bay Developments (Pure Source);
- Southern Neighbour – Mixed farming;
- Eastern Neighbour – Mixed farming by Mr. Lawrence Sher; and
- Vaal Eden- Barrage road runs to in an East-West direction through the property.

(e) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts

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

The following potential impacts were identified of each main activity in each phase. The significance rating was determined using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact rating listed below was determined for each impact **prior** to bringing the proposed mitigation measures into consideration. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

Table 15: Impact Assessment of Tja Naledi-Barrage Bulk Sand Mine

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
CONSTRUCTION / SITE ESTABLISHMENT PHASE												
ACTIVITY: DEMARCATION OF SITE WITH VISIBLE BEACONS.												
	No impact could be identified other than the beacons being outside the boundaries of the approved processing area.	Neg										Low
ACTIVITY: ESTABLISHMENT OF TEMPORARY OFFICE AND ABLUSTION INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.												
	If the infrastructure is established within the boundaries of the approved mining area, no impact could be identified.	Neg										Low
Social	Potential Increase of Crime	Neg	N/A	3	4	3	3,3	2	2	2	6,667	Low-Med
ACTIVITY: STRIPPING AND STOCKPILING OF TOPSOIL												
Geology	Disturbance of geological strata	Neg	Irreversible	1	3	5	3	5	1	3	9	Med
Soils	Potential for loss of soil & damage to soil characteristics	Neg	Reversible	1	3	4	2,7	2	5	3,5	9,333	Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Soils	Loss of topsoil due to incorrect storm water management		Reversible	1	3	4	2,7	2	5	3,5	9,333	Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Soils	Soil erosion due to absence of vegetation	Neg	Reversible	1	3	2	2	2	5	3,5	7	Low-Med
Flora	Loss of natural vegetation	Neg	Reversible	1	4	2	2,3	2	5	3,5	8,167	Low-Med
Flora	Infestation of the topsoil heaps by weeds and invader plants.	Neg	Reversible	1	2	2	1,7	2	5	3,5	5,833	Low-Med
Surface Disturbance (Topography)	Alteration of topography	Neg	Irreversible	1	2	5	2,7	2	5	3,5	9,333	Low-Med
Land Use	Degrading of grazing potential for livestock farming	Neg	Reversible	1	2	2	1,7	3	5	4	6,667	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers)	Neg	Reversible	1	2	2	1,7	2	5	3,5	5,833	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	1	5	5	3,7	1	5	3	11	Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	1	3	1,7	2	5	3,5	5,833	Low-

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
												Med
Air quality	Dust generation	Neg	Reversible	2	2	1	1,7	2	5	3,5	5,833	Low-Med
Fauna	Loss of food, nest sites and refugia	Neg	Reversible	2	1	3	2	1	5	3	6	Low-Med
Fauna	Alienation of animals from the area	Neg	Reversible	2	1	3	2	1	5	3	6	Low-Med
Surface and Ground Water	Contamination of area with hazardous waste materials	Neg	Reversible	1	1	3	1,7	2	5	3,5	5,833	Low-Med
Surface water	Increased risk of siltation of surface water bodies	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Surface water	Downstream water quantity of catchment reduced	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Social	Financial gain on different levels	Pos	Reversible	2	1	3	2	4	1	2,5	5	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Groundwater	Quality and Quantity of groundwater could be adversely affected by mining activities	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
ACTIVITY: EXCAVATION												
Soils	Increased potential for road incidences	Neg	Reversible	1	3	4	2,7	2	5	3,5	9,333	Med
Soils	Weed and invader plant infestation of the area	Neg	Reversible	1	3	4	2,7	2	5	3,5	9,333	Med
Soils	Impact on the access roads	Neg	Reversible	1	3	2	2	2	5	3,5	7	Low-Med
Flora	Potential damage to vegetation in neighbouring areas	Neg	Reversible	1	4	2	2,3	2	5	3,5	8,167	Low-Med
Surface Disturbance (Topography)	Alteration of topography	Neg	Irreversible	1	2	5	2,7	2	5	3,5	9,333	Low-Med
Land Use	Degrading of grazing potential for livestock farming	Neg	Reversible	1	2	2	1,7	3	5	4	6,667	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers)	Neg	Reversible	1	2	2	1,7	2	5	3,5	5,833	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	1	5	5	3,7	1	5	3	11	Med
Noise	Negative impact on the fauna and flora of the area	Neg	Reversible	1	1	3	1,7	2	5	3,5	5,833	Low-Med
Air quality	Dust generation	Neg	Reversible	2	2	1	1,7	2	5	3,5	5,833	Low-Med
Fauna	Loss of food, nest sites and refugia	Neg	Reversible	2	1	3	2	1	5	3	6	Low-Med
Fauna	Alienation of animals from the area	Neg	Reversible	2	1	3	2	1	5	3	6	Low-Med
Surface and Ground Water	Cultural and Heritage Artefacts	Neg	Reversible	1	1	3	1,7	2	5	3,5	5,833	Low-Med
Surface water	Increased risk of siltation of surface water bodies	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Surface water	Downstream water quantity of catchment reduced	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Groundwater	Quality and Quantity of groundwater could be adversely affected by mining activities	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
ACTIVITY: TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS												
Soils	Potential for loss of soil & damage to soil characteristics	Neg	Reversible	1	3	4	2,7	2	5	3,5	9,333	Med
Soils	Contamination of area with hazardous waste materials	Neg	Reversible	1	3	4	2,7	2	5	3,5	9,333	Med
Flora	Loss of biodiversity	Neg	Reversible	1	4	2	2,3	2	5	3,5	8,167	Low-Med
Flora	Potential damage to vegetation in neighbouring areas	Neg	Reversible	1	2	2	1,7	2	5	3,5	5,833	Low-Med
Surface Disturbance (Topography)	Alteration of topography	Neg	Irreversible	1	2	5	2,7	2	5	3,5	9,333	Low-Med
Land Use	Degrading of grazing potential for livestock farming	Neg	Reversible	1	2	2	1,7	3	5	4	6,667	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers)	Neg	Reversible	1	2	2	1,7	2	5	3,5	5,833	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	1	5	5	3,7	1	5	3	11	Med
Noise	Noise nuisance caused by vehicles	Neg	Reversible	1	1	3	1,7	2	5	3,5	5,833	Low-Med
Air quality	Dust generation	Neg	Reversible	2	2	1	1,7	2	5	3,5	5,833	Low-Med
Fauna	Loss of food, nest sites and refugia	Neg	Reversible	2	1	3	2	1	5	3	6	Low-Med
Fauna	Alienation of animals from the area	Neg	Reversible	2	1	3	2	1	5	3	6	Low-Med
Surface and Ground Water	Contamination of area with hazardous waste materials	Neg	Reversible	1	1	3	1,7	2	5	3,5	5,833	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Surface water	Increased risk of siltation of surface water bodies	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Surface water	Downstream water quantity of catchment reduced	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Groundwater	Quality and Quantity of groundwater could be adversely affected by mining activities	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
ACTIVITY: SCREENING OF SAND AND AGGREGATES												
Noise	Increased noise levels	Neg	Reversible	1	3	4	2,7	2	5	3,5	9,333	Med
Surface Disturbance (Topography)	Alteration of topography	Neg	Irreversible	1	2	5	2,7	2	5	3,5	9,333	Low-Med
Land Use	Degrading of grazing potential for livestock farming	Neg	Reversible	1	2	2	1,7	3	5	4	6,667	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers)	Neg	Reversible	1	2	2	1,7	2	5	3,5	5,833	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	1	5	5	3,7	1	5	3	11	Med
Air quality	Dust generation	Neg	Reversible	2	2	1	1,7	2	5	3,5	5,833	Low-Med
Fauna	Loss of food, nest sites and refugia	Neg	Reversible	2	1	3	2	1	5	3	6	Low-Med
Fauna	Alienation of animals from the area	Neg	Reversible	2	1	3	2	1	5	3	6	Low-Med
Surface and Ground Water	Increased risk of siltation of surface water bodies	Neg	Reversible	1	1	3	1,7	2	5	3,5	5,833	Low-Med
Surface water	Increased risk of siltation of surface water bodies	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Surface water	Downstream water quantity of catchment reduced	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Groundwater	Quality and Quantity of groundwater could be adversely affected by mining activities	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Health and social well-being impacts	Noise	Neg	N/A	3	3	3	3	5	3	4	12	Med
Health and social well-being impacts	Dust	Neg	N/A	4	3	3	3,3	5	4	4,5	15	Medi-High
Health and social well-being impacts	Access Road	Neg	N/A	3	4	3	3,3	3	3	3	10	Med
Quality of the living environment impacts	Disruption of daily living	Neg	N/A	3	3	3	3	3	3	3	9	Med
Quality of the living environment impacts	Loss of sense of place	Neg	N/A	3	3	3	3	3	3	3	9	Med
Economic impacts and material well-being impacts	Decreased tourism potential in the surrounding area	Neg	N/A	3	4	3	3,3	4	3	3,5	11,67	Med-High
Economic impacts and material well-being impacts	Loss of property values	Neg	N/A	3	3	3	3	3	4	3,5	10,5	Med
Economic impacts and material well-being impacts	Supply of building materials to the local building and construction industry.	Pos	N/A	3	1	3	2,3	5	4	4,5	10,5	Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Economic impacts and material well-being impacts	Supply of building materials to the local building and construction industry.	Pos	N/A	4	1	3	2,7	5	4	4,5	12	Med-High
Cultural impacts	Negative influence on an area of tourism importance	Neg	N/A	3	3	3	3	5	4	4,5	13,5	Med
Family and community impacts	Increased animosity towards the sand mines	Neg	N/A	3	4	3	3,3	4	4	4	13,33	Med
Family and community impacts	Decreased level of satisfaction with the living environment	Neg	N/A	3	4	3	3,3	5	4	4,5	15	Med-High
Institutional, legal, political and equity impacts	Increased pressure on existing infrastructure	Neg	N/A	3	4	3	3,3	5	4	4,5	15	Med
ACTIVITY: SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)												
Soils	Erosion of returned topsoil after rehabilitation	Neg	Reversible	1	3	4	2,7	2	5	3,5	9,333	Med
Soils	Loss of reinstated topsoil due to the absence of vegetation	Neg	Reversible	1	3	4	2,7	2	5	3,5	9,333	Med
Flora	Weeds and invader plant infestation of the area	Neg	Reversible	1	4	2	2,3	2	5	3,5	8,167	Low-Med
Surface Disturbance (Topography)	Alteration of topography	Neg	Irreversible	1	2	5	2,7	2	5	3,5	9,333	Low-

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
												Med
Land Use	Degrading of grazing potential for livestock farming	Neg	Reversible	1	2	2	1,7	3	5	4	6,667	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers)	Neg	Reversible	1	2	2	1,7	2	5	3,5	5,833	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	1	5	5	3,7	1	5	3	11	Med
Noise	Noise nuisance caused by machinery	Neg	Reversible	1	1	3	1,7	2	5	3,5	5,833	Low-Med
Air quality	Dust nuisance caused during landscaping activities	Neg	Reversible	2	2	1	1,7	2	5	3,5	5,833	Low-Med
Fauna	Loss of food, nest sites and refugia	Neg	Reversible	2	1	3	2	1	5	3	6	Low-Med
Fauna	Alienation of animals from the area	Neg	Reversible	2	1	3	2	1	5	3	6	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Safety	Health and safety risk posed by un-sloped areas	Neg	Reversible	2	1	3	2	1	5	3	6	Low-Med
Surface water	Increased risk of siltation of surface water bodies	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Surface water	Downstream water quantity of catchment reduced	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Groundwater	Quality and Quantity of groundwater could be adversely affected by mining activities	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Health and safety risk posed by un-sloped areas	Noise	Neg	Reversible	3	3	5	3,7	5	1	3	11	Med
Health and safety risk posed by un-sloped areas	Dust	Neg	Reversible	3	3	5	3,7	5	1	3	11	Med
Health and safety risk posed by un-sloped areas	Crime	Neg	Reversible	3	3	1	2,3	5	3	4	9,333	Low-Med
Health and safety risk posed by un-sloped areas	Road	Neg	Reversible	3	3	5	3,7	5	1	3	11	Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Quality of the living environment impacts	Disruption of daily living	Neg	Reversible	3	3	5	3,7	5	1	3	11	Med
Quality of the living environment impacts	Loss of sense of place	Neg	Reversible	3	3	5	3,7	5	1	3	11	Med
Economic and material well-being impacts (negative)	Loss of employment opportunities	Neg	Reversible	3	3	2	2,7	5	1	3	8	Med
Economic and material well-being impacts (negative)	Increased tourism potential for the mined area and surrounds.	Neg	Reversible	3	3	5	3,7	5	1	3	11	Med
Cultural impacts	Ceasing of activities that could potentially have a negative influence on an area of tourism importance.	Neg	Reversible	3	1	5	3	3	1	2	6	Low-Med
Family and community impacts	Increased level of satisfaction with the living environment	Neg	Reversible	3	3	5	3,7	3	1	2	7,333	Med
Institutional, legal, political and equity impacts	Decreased demand on existing infrastructure	Neg	Reversible	3	1	5	3	5	1	3	9	Low-Med

(1) Cumulative Impacts

Two other sand mines, Sweet Sensations and Pure Source, neighbour 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 substantially high.

A Strategic Environmental Impact Assessment is recommended in order to address the cumulative impacts because of the above-mentioned activities (ENVIROWORKS, 2019).

Table 16: Cumulative Impact Assessment of Tja Naledi-Barrage Bulk Sand Mine

Nature of Impact	Impact	Positive/Negative/Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating	Mitigation
CONSTRUCTION AND OPERATIONAL PHASES													
ACTIVITY: Utilisation of haul and access roads within the mining right area													
SUB ACTIVITY: Truck and heavy machinery operations													
Traffic & Safety	Increased potential for road incidences	Neg	Reversible	2	3	1	2	3	1	2	4	Low	All intersections with main tarred roads will be clearly signposted. Drivers will be enforced to keep setting speed limits. Trucks will be in road-worthy condition with reflective strips.
Traffic & Safety	Road degradation	Neg	Reversible	1	3	1	1,67	2	1	1,5	2,5	Low	A fund will be set aside (with the two similar mines in close vicinity of the Tja Naledi) to maintain the serviceability of the road verge where the trucks approach or depart from the main road.
Air Quality	Dust levels will be cumulated by dust resulting for the surrounding mines and agricultural activities.	Neg	Reversible	1	3	1	1,67	2	1	1,5	2,5	Low	A fund will be set aside (with the two similar mines in close vicinity of the Tja Naledi) to maintain the serviceability of the road verge where the trucks approach or depart from the main road.
Air Quality	Noise impacts will be cumulated with the noise emanating from surrounding mines in the area.	Neg	Reversible	1	3	1	1,66667	2	1	1,5	2,5	Low	A fund will be set aside (with the two similar mines in close vicinity of the Tja Naledi) to maintain the serviceability of the road verge where the trucks approach or depart from the



Nature of Impact	Impact	Positive/Negative/Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating	Mitigation
													main road.

v) Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

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

A “significant impact” is defined as it is defined in the EIA Regulations (2014): “an impact that may have a notable effect on one or more aspects of the environment or may result non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as by its duration, magnitude, intensity or probability of occurrence”. The objective of this EIA methodology is to serve as framework for accurately evaluating impacts associated with current or proposed activities in the biophysical, social and socio-economical spheres. It aims to ensure that all legal requirements and environmental considerations are met in order to have a complete and integrated environmental framework for impact evaluations.

The process of determining impacts to be assessed is one of the most important parts of the environmental impact assessment process. It is of such high importance because the environmental impacts identified can and are often linked to the same impact stream.

In this method all impacts on the biophysical environment are assessed in terms of the overall integrity of ecosystems, habitats, populations and individuals affected. The Environmental Impact Assessment (EIA) 2014 Regulations promulgated in terms of Sections 24 (5), 24M and 44 of the National Environmental Management Act (NEMA) (Act No. 107 of 1998) [as amended] requires that all identified potential impacts associated with the proposed project be assessed in terms of their overall potential significance on the natural, social and economic environments.

The criteria identified in the EIA Regulations (2014) include the following:

- Nature of the impact;
- Extent of the impact;
- Duration of the impact;
- Frequency of the Impact;
- Probability of the impact occurring;
- Degree to which impact can be reversed;
- Degree to which impact may cause irreplaceable loss of resources;
- Degree to which the impact can be mitigated; and
- Cumulative impacts.

Greenmined Environmental has developed an impact assessment methodology (as defined below) whereby the significance of a potential impact is determined through the assessment of the relevant temporal and spatial scales determined of the extent, magnitude and duration criteria associated with a particular impact. This method does not explicitly define each of the criteria but rather combines them and results in an indication of the overall significance.

DEFINITIONS AND CONCEPTS:

Environmental significance:

The concept of significance is at the core of impact identification, evaluation and decision-making. The concept remains largely undefined and there is no international consensus on a single definition. The following common elements are recognised from the various interpretations:

- Environmental significance is a value judgement;
- The degree of environmental significance depends on the nature of the impact;
- The importance is rated in terms of both biophysical and socio-economic values; and
- Determining significance involves the amount of change to the environment perceived to be acceptable to affected communities.

Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of acceptability) (DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5).

The concept of risk has two dimensions, namely the consequence of an event or set of circumstances, and the likelihood of particular consequences being realised (Environment Australia (1999) Environmental Risk Management).

(1) Methodology that will be used

(a) Nature of the impact

The nature of an impact can be defined as “a brief description of the impact being assessed, in terms of the proposed activity or project, including the socio-economic or environmental aspect affected by this impact”.

(b) Extent of the impact

The extent of an impact can be defined as “a brief description of the spatial influence of the impact or the area that will be affected by the impact”.

Table 17: Determining the extent of an impact

EXTENT Extent or spatial influence of impact	Footprint	Only as far as the activity, such as footprint occurring within the total site area
	Site	Only the site and / or 500m radius from the site will be affected
	Local	Local area / district (neighbouring properties, transport routes and adjacent towns) is affected
	Region	Entire region / province is affected
	National	Country is affected

(c) Severity of the impact

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects impact on the biophysical and socio-economic environment.

Table 18: Rating of Severity

Type of criteria	Rating				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignificant / Non-harmful	Small / Potentially harmful	Significant/ Harmful	Great/ Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate/ High potential to mitigate impacts to level of insignificance/ Easily reversible	Low cost to mitigate	Substantial cost to mitigate/ Potential to mitigate impacts/ Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate/ Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

(d) Duration of the impact

Duration refers to the amount of time that the environment will be affected by the event, risk or impact, if no intervention e.g. remedial action takes place.

Table 19: Rating of Duration

Rating		Description
1	Very Short Term	Up to three months (quarter) after construction
2	Short Term	Three months to one year after construction
3	Medium Term	One year to six years after construction
4	Long Term	Six to ten years after construction
5	Permanent	Beyond ten years after construction

(e) Probability of the impact occurring

The probability of an impact can be defined as “the estimated chance of the impact happening”. Probability refers to how often the activity or aspect has an impact on the environment.

Table 20: Determining the probability of an impact

PROBABILITY	1	Almost never / almost impossible	<i>Impossible</i> to occur (0 – 20% probability of occurring)
	2	Very seldom / highly unlikely	<i>Unlikely</i> to occur (20 -40% probability of occurring)
	3	Infrequent / unlikely / seldom	<i>May occur</i> (40-60% chance of occurring)
	4	Often / regularly / likely / possible	<i>Likely</i> to occur (60-80% chance of occurring)
	5	Daily / highly likely / definitely	Will <i>certainly</i> occur (80-100% chance of occurring)

(f) Degree to which impact can be reversed

The reversibility of an impact can be defined as “the ability of an impact to be changed from a state of affecting aspects to a state of not affecting aspects”.

Table 21: Determining the reversibility of an impact

REVERSIBILITY	Reversible	Impacts can be reversed through the implementation of mitigation measures
	Irreversible	Impacts are permanent and can't be reversed by the implementation of mitigation measures

(g) Determination of Likelihood:

The irreplaceability (likelihood) of an impact can be defined as “the amount of resources that can / can’t be replaced”. The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5, as described below and in Table 20 and Table 22.

Overall Likelihood

Overall likelihood is calculated by adding the factors determined above and summarised below, and then dividing the sum by 2.

Example of calculating Overall Likelihood

Consequence	Rating
Frequency	Example 4
Probability	Example 2
SUBTOTAL	6
TOTAL LIKELIHOOD (Subtotal divided by 2)	3

Determination of Frequency

Frequency refers to how often the specific activity, related to the event, aspect or impact, is undertaken.

Table 22: Rating of Frequency

Rating	Description
1	Once a year or once/more during operation
2	Once/more in 6 Months
3	Once/more a Month
4	Once/more a Week
5	Daily

(h) Determination of Overall Environmental Significance:

The environmental significance assessment methodology is based on the following determination:

Environmental Significance = Overall Consequence X Overall Likelihood

The multiplication of overall consequence with overall likelihood will provide the environmental significance, which is a number that will then fall into a range of **LOW**, **LOW-MEDIUM**, **MEDIUM**, **MEDIUM-HIGH** or **HIGH**, as shown in the table below.

Significance or Risk	Low	Low-Medium	Medium	Medium-High	High
Overall Consequence X	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Overall Likelihood					

Based on the above, the significance rating scale has been determined as follows:

- High** Of the highest order possible within the bounds of impacts, which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.
- Medium-High** Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.
- Medium** Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, in case of positive impacts; other means of achieving these benefits would be about equal in time, cost and effort.
- Low-Medium** Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved or little would be required, or both. In case of positive impacts alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.
- Low** Impact would be negligible. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple. In the case of positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit
- Insignificant** There would be a no impact at all – not even a very low impact on the system or any of its parts.

(i) Determination of Overall Consequence

Consequence analysis is a mixture of quantitative and qualitative information and the outcome can be positive or negative. Several factors can be used to determine consequence. For the purpose of determining the environmental significance in terms of consequence, the following factors were chosen: **Severity/Intensity, Duration and Extent/Spatial Scale**. Each factor is assigned a rating of 1 to 5, as described in the tables above.

(j) Degree to which the impact can be mitigated

The degree to which an impact can be mitigated can be defined as “the effect of mitigation measures on the impact and its degree of effectiveness”.

Table 23: Determining the mitigation rating of an impact

MITIGATION RATING	MITIGATED Degree impact can be mitigated	High	<i>Impact 100% mitigated</i>
		Medium	<i>Impact >50% mitigated</i>
		Low	<i>Impact <50% mitigated</i>

(a) Cumulative Impacts

The effect of cumulative impacts can be described as “the effect the combination of past, present and “reasonably foreseeable” future actions have on aspects”.

Table 24: Determining the confidence rating of an impact

CUMULATIVE RATING	CUMULATIVE EFFECTS	Low	<i>Minor cumulative effects</i>
		Medium	<i>Moderate cumulative effects</i>
		High	<i>Significant cumulative effects</i>

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

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

No other alternative sites needed to be investigated, as this is an amendment of the current EMPR.

The site was identified during the assessment phase of the environmental impact assessment (2014 assessment), by the applicant and project team, and was therefore selected as the **preferred alternative** due to the following:

Positive Impacts:

- The mining site offers the mineral sought after;
- The proposed footprint area was previously used for mining therefore very little indigenous vegetation needs to be disturbed in order to establish the mining area;
- The site is located within neighbouring sand mines, and will minimally affect the community with regards to dust and noise;
- The mineral to be mined is already in sand form and will not need to be blasted in order to loosen the material;
- The mining area can be reached by an existing farm access road that connects to Vaal Eden-Barrage road. No new road infrastructure need to be constructed;
- Due to the small size of the activity and the remote location of the mining area the potential impacts on the surrounding environment, associated with mining is deemed to be of low significance; and
- No residual waste as a result of the mining activity will be produced that needs to be treated on site. Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site (Parys). The amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental leakage. Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site.

Negative Impacts:

- Due to the remote location of the mining area, very little negative impacts on the community could be identified that were deemed to be of significant importance. The dust and noise impacts that may emanate from the mining area during the operational phase could have a negative impact on the surrounding community if the mitigation measures proposed in this document is not implemented and managed on-site;
- Road integrity and bridge integrity might be affected if no upkeep is in place; and

- Negative impacts with regard to the environment include potential contamination of the area due to spillage of hydrocarbon products.

The land is currently under cultivated grazing, mixed farming and mining. Two farmhouses, a barn and outbuildings are currently present on site. These buildings will not be impacted by mining and are situated in the exclusion zones on the mining plan.

vii) The possible mitigation measures that could be applied and the level of risk.

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

Dust Handling:

The risk of dust, generated from the proposed mining activity, having a negative impact on the surrounding environment can be reduced to being low through the implementation of the mitigation measures listed below:

- The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents.
- The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the access roads must be limited to 40km / h to prevent the generation of excess dust.
- All roads will be sprayed with water or an environmental friendly dust-allaying agent that contained PCB's (e.g. DAS products/ Pro/base) at regular intervals to ensure that dust is adequately suppressed in the mining of roads.
- All disturbed or exposed areas will be re-vegetated as soon as possible during the mining to prevent any dust source from being created.
- A fall out and nuisance dust monitoring programme could be submitted to the principle inspector of mines (DMR-Welkom) on an annual basis if required. If any complaint is received form the public or state department regarding dust levels, the fall-out and nuisance dust levels will again be monitored at prescribed monitoring points. The result will then be compiled into monthly reports and forwarded to the Director-Occupational Hygiene.
- Fallout dust will be monitored via a fallout dust bucket system on the boundaries of the mining area.

Visual Mitigation:

The risk of the proposed mining activity having a negative impact on the aesthetic quality of the surrounding environment can be reduced to a low – medium risk through the implementation of the mitigation measures listed below:

- The site needs to have a neat appearance and be kept in good condition at all times.
- Upon closure, the site needs to be rehabilitated to insure that the visual impact on the aesthetic value of the area is kept to a minimum.

Noise Handling:

The risk of noise, generated from the proposed mining activity, having a negative impact on the surrounding environment can be reduced to being low medium through the implementation of the mitigation measures listed below:

- The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.
- No loud music may be permitted at the mining area.
- All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.
- Noise monitoring station will be set up at Craig Richardson farm to measure the levels of noise from Tja Naledi. Personal dust and noise monitoring is being conducted, which forms part of the Mine Health and Safety Act.
- SPH have appointed an occupation hygienist as per the OHS to conduct the gravimetric noise testing done. This concern will be investigated further to minimise noise in the mining area.

Road and Bridge Integrity

- Going forward, together with other sand mines in the area, which will be using the same road (Sweet Sensation and Pure Source Minerals), a strategy will be developed to assist in road repairs once the Section 102 mining right has been approved for Barrage Bulk Sand Mine.
- Roads Department is currently busy with an analysis of the road integrity and the sand mines. Once finalized a negotiated plan between BBSM, Pure Source Minerals, Sweet Sensations and the roads department will be discussed and a plan implemented.
- The Roads Department informed SPH Kundalila that the Barrage Bridge was built to hold the capacity of the heaviest legal load on national roads, as the bridge is built over a national road. - 120 tons' maximum payload.
- Vaal-Eden Bridge loads will be investigated.

Management of Health and Safety Risks:

The health and safety risk, posed by the proposed mining activity can be reduced to being low through the implementation of the mitigation measures listed below:

- Workers must have access to the correct personal protection equipment (PPE) as required by law.
- All operations must comply with the Occupational Health and Safety Act.

viii) Motivation where no alternative sites were considered.

Tja Naledi – Barrage Bulk Sand Mine identified the need for sand and aggregate in the area due to an increase in building, construction and road maintenance projects. As mentioned earlier, no other alternative sites needed to be investigated, as this is an amendment of the current EMPR. The site was identified during the assessment phase of the environmental impact assessment (2014 assessment), by the applicant and project team, and was therefore selected as the preferred alternative.

Not applicable as this BAR/EMP is an amendment of the previous approved EMP.

ix) Statement motivating the alternative development location within the overall site.

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

Tja Naledi – Barrage Bulk Sand Mine identified the need for sand and aggregate in the area due to an increase in building, construction and road maintenance projects. As mentioned earlier, no other alternative sites needed to be investigated, as this is an amendment of the current EMPR. The site was identified during the assessment phase of the environmental impact assessment (2014 assessment), by the applicant and project team, and was therefore selected as the preferred alternative.

No statement needed, as no alternatives are discussed and therefore not applicable,

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

(Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures)

During the impact assessment process, the following potential impacts were identified of each main activity in each phase. An initial significance rating (listed under *v) Impacts and Risks Identified*) was determined for each potential impact must the mitigation measures proposed in this document not be implemented on-site. The impact assessment process then continued in identifying mitigation measures to address the impact that the proposed mining activity may have on the surrounding environment.

The significance rating was again determined for each impact using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact ratings listed below was determined for each impact **after** bringing the proposed mitigation measures into consideration and therefore represents the final layout/activity proposal.

Table 25: Impact Assessment of Tja Naledi-Barrage Bulk Sand Mine

Nature of Impact	Impact	Positive/Negative / Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
CONSTRUCTION / SITE ESTABLISHMENT PHASE													
ACTIVITY: DEMARCATION OF SITE WITH VISIBLE BEACONS.													
	No impact could be identified other than the beacons being outside the boundaries of the approved processing area.	Neg		None.									Low
ACTIVITY: ESTABLISHMENT OF TEMPORARY OFFICE AND ABLUSTION INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.													
	If the infrastructure is established within the boundaries of the approved mining area, no impact could be identified.	Neg		None.									Low
Social	Potential Increase of Crime	Neg	N/A	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 labourers, in order to avoid a potential influx of work seekers to the area immediately surrounding the mine.	3	3	3	3	1	2	1,5	4,5	Low
ACTIVITY: STRIPPING AND STOCKPILING OF TOPSOIL													
Geology	Disturbance of geological strata	Neg	Irreversible	None.	1	3	5	3	5	1	3	9	Low-Med
Soils	Potential for loss of soil & damage to soil characteristics	Neg	Reversible	Ensure activities occur only within the designated areas and stockpile and revegetated soil as soon as possible. Topsoil will be removed before mining activities commence and stored outside of the active mining cell.	1	3	4	2,7	2	3	2,5	6,667	Low-Med
Soils	Loss of topsoil due to incorrect storm water management	Neg	Reversible	Loss of topsoil due to incorrect storm water management · Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. · Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. · The effectiveness of the storm water infrastructure needs to be continuously monitored. · The activity must be conducted in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department of Mineral Resources may impose: o Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	1	2	3	2,5	2,5	5	Low-Med
Soils	Soil erosion due to absence of vegetation	Neg	Reversible	The necessary measures will be put in place to limit erosion form the stockpiles and to divert storm water away from the stockpiles. Re-vegetate any bare soil immediately. Herbaceous plant mater should be stockpiled to retain organic content of soil. Stockpiles should be to the specifications of the pedological study.	1	3	2	2	2	3	2,5	5	Low-Med
Flora	Loss of natural vegetation	Neg	Reversible	Topsoil will be removed before mining operations commence. Restoring of topsoil during rehabilitation would encourage natural re-vegetation of the area. Re-vegetation with indigenous seeds would be done if it were necessary. Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas.	1	4	2	2,3	2	3	2,5	5,833	Low-Med

Nature of Impact	Impact	Positive/Negative / Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Flora	Infestation of the topsoil heaps by weeds and invader plants.	Neg	Reversible	Management of weed- or invader plants: <ul style="list-style-type: none"> • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: <ul style="list-style-type: none"> o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds. 	1	2	2	1,7	2	3	2,5	4,167	Low
Surface Disturbance (Topography)	Alteration of topography	Neg	Irreversible	Excavation areas will be sloped during rehabilitation to even out depressions.	1	2	5	2,7	2	3	2,5	6,667	Low-Med
Land Use	Degrading of grazing potential for livestock farming	Neg	Reversible	Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.	1	2	2	1,7	3	3	3	5	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers)	Neg	Reversible	Precautionary measures such as firebreaks would be taken into account and the company will join the local FPA.	1	2	2	1,7	2	3	2,5	4,167	Low
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: <ul style="list-style-type: none"> • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. 	2	1	3	2	2	3	2,5	5	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity.	1	5	5	3,7	1	3	2	7,333	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: <ul style="list-style-type: none"> The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. 	1	1	3	1,7	2	3	2,5	4,167	Low
Air quality	Dust generation	Neg	Reversible	Dust Handling: <ul style="list-style-type: none"> • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. 	2	2	1	1,7	2	3	2,5	4,167	Low
Fauna	Loss of food, nest sites and refugia	Neg	Reversible	Relocate larger animals with the aid of specialists. Ensure relevant permits are in place.	2	1	3	2	1	3	2	4	Low
Fauna	Alienation of animals from the area	Neg	Reversible	Mining will only take place on designated areas, and will be restricted to office ours. <ul style="list-style-type: none"> No traps or hunting of any animals will be allowed. Mining will be done with the least possible habitat destruction. Mining activities are only temporary. <ul style="list-style-type: none"> Inform staff, contractors and visitors to not harm fauna in the area. 	2	1	3	2	1	3	2	4	Low

Nature of Impact	Impact	Positive/Negative / Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Surface and Ground Water	Contamination of area with hazardous waste materials	Neg	Reversible	Contamination of surface or groundwater due to hazardous spills not cleaned: <ul style="list-style-type: none"> Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. Biodegradable refuse generated must be handled as indicated above. 	1	1	3	1,7	2	3	2,5	4,167	Low
Surface water	Increased risk of siltation of surface water bodies	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place.	2	1	2	1,7	2	3	2,5	4,167	Low
Surface water	Downstream water quantity of catchment reduced	Neg	Reversible		2	1	2	1,7	2	3	2,5	4,167	Low
Social	Financial gain on different levels	Pos	Reversible	The SLP was submitted as part of the application manages this aspect of the project.	2	1	3	2	4	1	2,5	5	Low-Med
Groundwater	Quality and Quantity of groundwater could be adversely affected by mining activities	Neg	Reversible	Groundwater will only be used for domestic purposes and will not be directly affected by mining activities.	2	1	2	1,7	2	3	2,5	4,167	Low
ACTIVITY: EXCAVATION													
Soils	Increased potential for road incidences	Neg	Reversible	Ensure activities occur only within the designated areas and stockpile and revegetated soil as soon as possible. Topsoil will be removed before mining activities commence and stored outside of the active mining cell.	1	3	4	2,7	2	3	2,5	6,667	Low-Med
Soils	Weed and invader plant infestation of the area	Neg	Reversible	Management of weed- or invader plants: <ul style="list-style-type: none"> A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: <ul style="list-style-type: none"> "The plants can be uprooted, felled or cut off and can be destroyed completely." "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." The temporary topsoil stockpiles needs to be kept free of weeds. 	1	3	1	2	3	2,5	2,5	5	Low-Med
Soils	Impact on the access roads	Neg	Reversible	The necessary measures will be put in place to limit erosion from the stockpiles and to divert storm water away from the stockpiles. Re-vegetate any bare soil immediately. Herbaceous plant matter should be stockpiled to retain organic content of soil. Stockpiles should be to the specifications of the pedological study.	1	3	2	2	2	3	2,5	5	Low-Med
Flora	Potential damage to vegetation in neighbouring areas	Neg	Reversible	Limit activity to area of disturbance and revegetated impacted areas as soon as possible.	1	4	2	2,3	2	3	2,5	5,833	Low-Med
Surface Disturbance (Topography)	Alteration of topography	Neg	Irreversible	Excavation areas will be sloped during rehabilitation to even out depressions.	1	2	5	2,7	2	3	2,5	6,667	Low-Med
Land Use	Degrading of grazing potential for livestock farming	Neg	Reversible	Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous grass seed mix.	1	2	2	1,7	3	3	3	5	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers)	Neg	Reversible	Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA.	1	2	2	1,7	2	3	2,5	4,167	Low
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	The visual impact may affect the aesthetics of the landscape.	2	1	3	2	2	3	2,5	5	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialist consulted prior to any further activity.	1	5	5	3,7	1	3	2	7,333	Low-Med
Noise	Negative impact on the fauna and flora of the	Neg	Reversible	Negative impact on fauna that may enter the area:	1	1	3	1,7	2	3	2,5	4,167	Low

Nature of Impact	Impact	Positive/Negative / Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
	area			<ul style="list-style-type: none"> The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. Workers must be instructed to report any animals that may be trapped in the working area. No snares may be set or nests raided for eggs or young. 									
Air quality	Dust generation	Neg	Reversible	Dust will be contained within the property boundaries and will therefore affect only the landowner.	2	2	1	1,7	2	3	2,5	4,167	Low
Fauna	Loss of food, nest sites and refugia	Neg	Reversible	Relocate larger animals with the aid of specialists. Ensure relevant permits are in place.	2	1	3	2	1	3	2	4	Low
Fauna	Alienation of animals from the area	Neg	Reversible	<p>Mining will only take place on designated areas, and will be restricted to office ours.</p> <p>No traps or hunting of any animals will be allowed.</p> <p>Mining will be done with the least possible habitat destruction. Mining activities are only temporary.</p> <p>Inform staff, contractors and visitors to not harm fauna in the area.</p>	2	1	3	2	1	3	2	4	Low
Surface and Ground Water	Cultural and Heritage Artefacts	Neg	Reversible	Contamination may cause surface or ground water pollution if not addressed	1	1	3	1,7	2	3	2,5	4,167	Low
Surface water	Increased risk of siltation of surface water bodies	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place.	2	1	2	1,7	2	3	2,5	4,167	Low
Surface water	Downstream water quantity of catchment reduced	Neg	Reversible	Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality.	2	1	2	1,7	2	3	2,5	4,167	Low
Groundwater	Quality and Quantity of groundwater could be adversely affected by mining activities	Neg	Reversible	Groundwater will only be used for domestic purposes and will not be directly affected by mining activities.	2	1	2	1,7	2	3	2,5	4,167	Low
ACTIVITY: TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS													
Soils	Potential for loss of soil & damage to soil characteristics	Neg	Reversible	Ensure activities occur only within the designated areas and stockpile and revegetated soil as soon as possible. Topsoil will be removed before mining activities commence and stored outside of the active mining cell.	1	3	4	2,7	2	3	2,5	6,667	Low-Med
Soils	Contamination of area with hazardous waste materials		Reversible	Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality.	1	3	1	2	3	2,5	2,5	5	Low-Med
Flora	Loss of biodiversity	Neg	Reversible	<p>Topsoil will be removed before mining operations commence.</p> <p>Restoring of topsoil during rehabilitation would encourage natural re-vegetation of the area.</p> <p>Re-vegetation with indigenous seeds would be done if it were necessary.</p> <p>Ensure permits are obtained to remove protected species.</p> <p>Relocate all protected species with aid of specialists.</p> <p>Only remove species in areas designated for activity and do not disturb surrounding areas.</p>	1	4	2	2,3	2	3	2,5	5,833	Low-Med
Flora	Potential damage to vegetation in neighbouring areas	Neg	Reversible	Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality.	1	2	2	1,7	2	3	2,5	4,167	Low
Surface Disturbance (Topography)	Alteration of topography	Neg	Irreversible	Excavation areas will be sloped during rehabilitation to even out depressions.	1	2	5	2,7	2	3	2,5	6,667	Low-Med
Land Use	Degrading of grazing potential for livestock farming	Neg	Reversible	Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix?	1	2	2	1,7	3	3	3	5	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers)	Neg	Reversible	Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA.	1	2	2	1,7	2	3	2,5	4,167	Low
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	<p>Management of weed- or invader plants:</p> <ul style="list-style-type: none"> A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: <ul style="list-style-type: none"> "The plants can be uprooted, felled or cut off and can be destroyed completely." "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." The temporary topsoil stockpiles needs to be kept free of weeds. 	2	1	3	2	2	3	2,5	5	Low-Med

Nature of Impact	Impact	Positive/Negative / Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity.	1	5	5	3,7	1	3	2	7,333	Low-Med
Noise	Noise nuisance caused by vehicles	Neg	Reversible	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	1	1	3	1,7	2	3	2,5	4,167	Low
Air quality	Dust generation	Neg	Reversible	Dust will be contained within the property boundaries and will therefore affect only the landowner.	2	2	1	1,7	2	3	2,5	4,167	Low
Fauna	Loss of food, nest sites and refugia	Neg	Reversible	Relocate larger animals with the aid of specialists. Ensure relevant permits are in place.	2	1	3	2	1	3	2	4	Low
Fauna	Alienation of animals from the area	Neg	Reversible	Mining will only take place on designated areas, and will be restricted to office ours. No traps or hunting of any animals will be allowed. Mining will be done with the least possible habitat destruction. Mining activities are only temporary. Inform staff, contractors and visitors to not harm fauna in the area.	2	1	3	2	1	3	2	4	Low
Surface and Ground Water	Contamination of area with hazardous waste materials	Neg	Reversible	Contamination may cause surface or ground water pollution if not addressed	1	1	3	1,7	2	3	2,5	4,167	Low
Surface water	Increased risk of siltation of surface water bodies	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place.	2	1	2	1,7	2	3	2,5	4,167	Low
Surface water	Downstream water quantity of catchment reduced	Neg	Reversible	Ensure water management facilities are operating adequately. Clean out silt build up over dry season.	2	1	2	1,7	2	3	2,5	4,167	Low
Groundwater	Quality and Quantity of groundwater could be adversely affected by mining activities	Neg	Reversible	Groundwater will only be used for domestic purposes and will not be directly affected by mining activities.	2	1	2	1,7	2	3	2,5	4,167	Low
ACTIVITY: SCREENING OF SAND AND AGGREGATES													
Noise	Increased noise levels	Neg	Reversible	Ensure activities occur only within the designated areas and stockpile and revegetated soil as soon as possible. Topsoil will be removed before mining activities commence and stored outside of the active mining cell.	1	3	4	2,7	2	3	2,5	6,667	Low-Med
Surface Disturbance (Topography)	Alteration of topography	Neg	Irreversible	Excavation areas will be sloped during rehabilitation to even out depressions.	1	2	5	2,7	2	3	2,5	6,667	Low-Med
Land Use	Degrading of grazing potential for livestock farming	Neg	Reversible	Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.	1	2	2	1,7	3	3	3	5	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers)	Neg	Reversible	Precautionary measures such as firebreaks would be taken into account and the company will join the local FPA.	1	2	2	1,7	2	3	2,5	4,167	Low
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	The visual impact may affect the aesthetics of the landscape.	2	1	3	2	2	3	2,5	5	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity.	1	5	5	3,7	1	3	2	7,333	Low-Med
Air quality	Dust generation	Neg	Reversible	Dust will be contained within the property boundaries and will therefore affect only the landowner.	2	2	1	1,7	2	3	2,5	4,167	Low
Fauna	Loss of food, nest sites and refugia	Neg	Reversible	Relocate larger animals with the aid of specialists. Ensure relevant permits are in place.	2	1	3	2	1	3	2	4	Low
Fauna	Alienation of animals from the area	Neg	Reversible	Mining will only take place on designated areas, and will be restricted to office ours. No traps or hunting of any animals will be allowed. Mining will be done with the least possible habitat destruction. Mining activities are only temporary. Inform staff, contractors and visitors to not harm fauna in the area.	2	1	3	2	1	3	2	4	Low
Surface and Ground Water	Increased risk of siltation of surface water bodies	Neg	Reversible	Ensure water management facilities are operating adequately. Ensure integrity of any lining is not compromised. Ensure no standing water on site and that all dirty water within the footprint drains into lined PCDs.	1	1	3	1,7	2	3	2,5	4,167	Low
Surface water	Increased risk of siltation of surface water bodies	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place.	2	1	2	1,7	2	3	2,5	4,167	Low
Surface water	Downstream water quantity of catchment reduced	Neg	Reversible	-	2	1	2	1,7	2	3	2,5	4,167	Low

Nature of Impact	Impact	Positive/Negative / Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Groundwater	Quality and Quantity of groundwater could be adversely affected by mining activities	Neg	Reversible	Groundwater will only be used for domestic purposes and will not be directly affected by mining activities.	2	1	2	1,7	2	3	2,5	4,167	Low
Health and social well-being impacts	Noise	Neg	N/A	The impacts associated with onsite processing activities can be mitigated to a degree as follows: <ul style="list-style-type: none"> · 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. 	1	1	3	1,7	3	3	3	5	Low-Med
Health and social well-being impacts	Dust	Neg	N/A	The impacts associated with onsite processing activities can be mitigated to a degree as follows: <ul style="list-style-type: none"> · 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. 	4	1	3	2,7	5	4	4,5	12	Med
Health and social well-being impacts	Access Road	Neg	N/A	The impacts associated with onsite processing activities can be mitigated to a degree as follows: <ul style="list-style-type: none"> · 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. 	3	1	3	2,3	1	1	1	2,333	Low
Quality of the living environment impacts	Disruption of daily living	Neg	N/A	The negative impacts associated with a disruption to daily living can be mitigated to a degree as follows: <ul style="list-style-type: none"> · 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. 	3	1	3	2,3	1	1	1	2,333	Low
Quality of the living environment impacts	Loss of sense of place	Neg	N/A	The impacts associated with onsite processing activities can be mitigated to a degree as follows: <ul style="list-style-type: none"> · 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. 	3	1	3	2,3	1	1	1	2,333	Low

Nature of Impact	Impact	Positive/Negative / Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
				<ul style="list-style-type: none"> 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. 									
Economic impacts and material well-being impacts	Decreased tourism potential in the surrounding area	Neg	N/A	<p>The negative impacts associated with a decrease in tourism potential can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> 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. 	3	1	3	2,3	1	3	2	4,667	Low
Economic impacts and material well-being impacts	Loss of property values	Neg	N/A	<p>The negative impacts associated with a decrease in tourism potential can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> 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. 	3	2	3	2,7	3	4	3,5	9,333	Low-Med
Economic impacts and material well-being impacts	Supply of building materials to the local building and construction industry.	Pos	N/A										
Economic impacts and material well-being impacts	Supply of building materials to the local building and construction industry.	Pos	N/A										
Cultural impacts	Negative influence on an area of tourism importance	Neg	N/A	<p>The negative impacts associated with mine expansion that may influence the VDWHs can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> 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. 	3	1	3	2,3	5	4	4,5	10,5	Med-High
Family and community impacts	Increased animosity towards the sand mines	Neg	N/A	<p>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:</p> <ul style="list-style-type: none"> 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. <p>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.</p>	3	3	3	3	5	3	4	12	Med-High
Family and community impacts	Decreased level of satisfaction with the living environment	Neg	N/A	<p>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:</p> <ul style="list-style-type: none"> 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. 	3	1	3	2,3	5	4	4,5	10,5	Med-High
Institutional, legal, political and equity impacts	Increased pressure on existing infrastructure	Neg	N/A	<p>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.</p> <ul style="list-style-type: none"> Damage to the road surface needs to be reported and repaired promptly. 	3	1	3	2,3	5	2	3,5	8,167	Low-Med
ACTIVITY: SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTRUBED AREA (FINAL REHBAILITATION)													
Soils	Erosion of returned topsoil after rehabilitation	Neg	Reversible	<p>Ensure activities occur only within the designated areas and stockpile and revegetated soil as soon as possible. Topsoil will be removed before mining activities commence and stored outside of the active mining cell.</p>	1	3	4	2,7	2	3	2,5	6,667	Low-Med
Soils	Loss of reinstated topsoil due to the absence of vegetation		Reversible	<p>Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.</p>	1	3	1	2	3	2,5	2,5	5	Low-Med

Nature of Impact	Impact	Positive/Negative / Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Flora	Weeds and invader plant infestation of the area	Neg	Reversible	topsoil will be removed before mining operations commence. restoring of topsoil during rehabilitation would encourage natural re-vegetation of the area. re-vegetation with indigenous seeds would be done if it is necessary. Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas.	1	4	2	2,3	2	3	2,5	5,833	Low-Med
Surface Disturbance (Topography)	Alteration of topography	Neg	Irreversible	Excavation areas will be sloped during rehabilitation to even out depressions.	1	2	5	2,7	2	3	2,5	6,667	Low-Med
Land Use	Degrading of grazing potential for livestock farming	Neg	Reversible	Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.	1	2	2	1,7	3	3	3	5	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers)	Neg	Reversible	Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA.	1	2	2	1,7	2	3	2,5	4,167	Low
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	The visual impact may affect the aesthetics of the landscape.	2	1	3	2	2	3	2,5	5	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity.	1	5	5	3,7	1	3	2	7,333	Low-Med
Noise	Noise nuisance caused by machinery	Neg	Reversible	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	1	1	3	1,7	2	3	2,5	4,167	Low
Air quality	Dust nuisance caused during landscaping activities	Neg	Reversible	Dust will be contained within the property boundaries and will therefore affect only the landowner.	2	2	1	1,7	2	3	2,5	4,167	Low
Fauna	Loss of food, nest sites and refugia	Neg	Reversible	Relocate larger animals with the aid of specialists. Ensure relevant permits are in place.	2	1	3	2	1	3	2	4	Low
Fauna	Alienation of animals from the area	Neg	Reversible	Mining will only take place on designated areas, and will be restricted to office ours. No traps or hunting of any animals will be allowed. Mining will be done with the least possible habitat destruction. Mining activities are only temporary. Inform staff, contractors and visitors to not harm fauna in the area.	2	1	3	2	1	3	2	4	Low
Safety	Health and safety risk posed by un-sloped areas	Neg	Reversible	The impact on health and safety due to un-sloped areas will be contained within the site boundary.	2	1	3	2	1	3	2	4	Low
Surface water	Increased risk of siltation of surface water bodies	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place.	2	1	2	1,7	2	3	2,5	4,167	Low
Surface water	Downstream water quantity of catchment reduced	Neg	Reversible	-	2	1	2	1,7	2	3	2,5	4,167	Low
Groundwater	Quality and Quantity of groundwater could be adversely affected by mining activities	Neg	Reversible	Groundwater will only be used for domestic purposes and will not be directly affected by mining activities.	2	1	2	1,7	2	3	2,5	4,167	Low
Health and safety risk posed by un-sloped areas	Noise	Neg	Reversible	· All areas cleared because of mining activities are to be adequately rehabilitated with indigenous vegetation, following closure of the mine.									
Health and safety risk posed by un-sloped areas	Dust	Neg	Reversible	· All areas cleared because of mining activities are to be adequately rehabilitated with indigenous vegetation, following closure of the mine.									
Health and safety risk posed by un-sloped areas	Crime	Neg	Reversible	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.									
Health and safety risk posed by un-sloped areas	Road	Neg	Reversible		0								
Quality of the living environment impacts	Disruption of daily living	Neg	Reversible		0								
Quality of the living environment impacts	Loss of sense of place	Neg	Reversible		0								
Economic and material well-being impacts (negative)	Loss of employment opportunities	Neg	Reversible	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.	3	1	2	2	5	1	3	6	Low-Med
Economic and material well-being impacts (negative)	Increased tourism potential for the mined area and surrounds.	Neg	Reversible										

Nature of Impact	Impact	Positive/Negative / Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Cultural impacts	Ceasing of activities that could potentially have a negative influence on an area of tourism importance.	Neg	Reversible										
Family and community impacts	Increased level of satisfaction with the living environment	Neg	Reversible										
Institutional, legal, political and equity impacts	Decreased demand on existing infrastructure	Neg	Reversible	As part of the closure of the mine, the Applicant must ensure all damages to the road, because of the mine, are repaired.	3	1	5	3	5	1	3	9	Low-Med

(1) Cumulative Impacts

Table 26: Cumulative Impact Assessment of Tja Naledi-Barrage Bulk Sand Mine

Nature of Impact	Impact	Positive/Negative / Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating	Mitigation
CONSTRUCTION AND OPERATIONAL PHASES													
ACTIVITY: Utilisation of haul and access roads within the mining right area													
SUB ACTIVITY: Truck and heavy machinery operations													
Traffic & Safety	Increased potential for road incidences	Neg	Reversible	2	3	1	2	3	1	2	4	Lo w	All intersections with main tarred roads will be clearly signposted . Drivers will be enforced to keep to set speed limits. Trucks will be in road-worthy condition with reflective strips.
Traffic & Safety	Road degradation	Neg	Reversible	1	3	1	2	2	1	1, 5	2, 5	Lo w	A fund will be set aside (with the two similar mines in close vicinity f the Tja Naledi) to maintain the serviceability of the road verge where the trucks approach or depart from the main road.
Air Quality	Dust levels will be cumulated by dust resulting for the surrounding mines and agricultural activities.	Neg	Reversible	1	3	1	2	2	1	1, 5	2, 5	Lo w	A fund will be set aside (with the two similar mines in close vicinity f the Tja Naledi) to maintain the serviceability of the road verge where the trucks approach or depart from the main road.
Air Quality	Noise impacts will be cumulated with the noise emanating from surrounding mines in the area.	Neg	Reversible	1	3	1	2	2	1	1, 5	2, 5	Lo w	A fund will be set aside (with the two similar mines in close vicinity f the Tja Naledi) to maintain the serviceability of the road verge where the trucks approach or depart from the main road.

j) Assessment of each identified potentially significant impact and risk

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

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANE
whether listed or not listed	(Including the potential impacts for cumulative impacts)		In which impact is anticipated	if not mitigated	(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)	if mitigated
(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc. Etc.)	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)		(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))		E.g. Modify through alternative method. Control through noise control. Control through management and monitoring. Remedy through rehabilitation.	
DEMARICATION OF SITE WITH VISIBLE BEACONS.	No impact could be identified other than the beacons being outside the boundaries of the approved processing area.	N/A	Construction / Site Establishment phase	N/A	N/A	N/A
ESTABLISHMENT OF TEMPORARY OFFICE AND ABLUSTION INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	If the infrastructure is established within the boundaries of the approved mining area, no impact could be identified.	N/A	Construction / Site Establishment phase	Low	Control through proper site management	Low
ESTABLISHMENT OF TEMPORARY OFFICE AND ABLUSTION INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Potential Increase of Crime	Health and Socio-Wellbeing	Construction / Site Establishment phase	Low-Med	Control through proper site management	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANE
STRIPPING AND STOCKPILING OF TOPSOIL	Visual impact due to removal of topsoil.	The visual impact may affect the aesthetics of the landscape.	Operational phase	Low – Medium	<u>Control:</u> Implementation of proper housekeeping	Low – Medium
STRIPPING AND STOCKPILING OF TOPSOIL	Dust nuisance caused by the disturbance of soil.	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Medium	<u>Control:</u> Dust suppression	Low – Medium
STRIPPING AND STOCKPILING OF TOPSOIL	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	medium	<u>Control:</u> Noise control measures	Low
STRIPPING AND STOCKPILING OF TOPSOIL	Infestation of the topsoil heaps by weeds and invader plants.	Biodiversity	Operational phase	Low – Medium	<u>Control & Remedy:</u> Implementation of weed control and weed/invader plant management plan	Low
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of topsoil due to incorrect storm water management	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	Medium	<u>Control:</u> Storm water management	Low – Medium
STRIPPING AND STOCKPILING OF TOPSOIL	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Medium	<u>Control:</u> Waste management	Low – Medium

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
STRIPPING AND STOCKPILING OF TOPSOIL	Alteration to Topography	Topography Biodiversity	Operational phase	Medium	<u>Control:</u> Storm water management	Low – Medium
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of natural vegetation				<u>Control:</u> Management of buffer areas and demarcation of work areas. <u>Modify:</u> Consider use of a less sensitive area	
STRIPPING AND STOCKPILING OF TOPSOIL	Soil erosion due to absence of vegetation	Loss of soil	Operational phase	Medium	<u>Control:</u> Proper site management.	Low – Medium
STRIPPING AND STOCKPILING OF TOPSOIL	Cultural and Heritage Artefacts				-	
STRIPPING AND STOCKPILING OF TOPSOIL	Quality and Quantity of groundwater could be adversely affected by mining activities				-	
STRIPPING AND STOCKPILING OF TOPSOIL	Downstream water quantity of catchment reduced				-	
STRIPPING AND STOCKPILING OF TOPSOIL	Increased risk of siltation of surface water bodies				-	
STRIPPING AND STOCKPILING OF TOPSOIL	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers)				-	
STRIPPING AND STOCKPILING OF TOPSOIL	Degrading of grazing potential for livestock farming				-	
STRIPPING AND STOCKPILING OF TOPSOIL	Potential for loss of soil & damage to soil characteristics.				-	

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
STRIPPING AND STOCKPILING OF TOPSOIL	Disturbance of geological strata				-	
EXCAVATION	Visual intrusion associated with the excavation activities	The visual impact may affect the aesthetics of the landscape.	Operational phase	Medium	<u>Control:</u> Implementation of proper housekeeping	Low – Medium
EXCAVATION	Dust nuisance due to excavation activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Medium	<u>Control:</u> Dust Suppression	Low – Medium
EXCAVATION	Noise nuisance generated by excavation equipment	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Medium	<u>Control:</u> Noise Control Measures	Low – Medium
EXCAVATION	Contamination of surface or groundwater due to effluent runoff from excavation area	the impact of surface and groundwater contamination due to the excavated area will be mitigated through berms and topsoil stockpiling	Operational phase	Medium	<u>Control:</u> Measures will be implemented as subscribed by DWS	Low
EXCAVATION	Unsafe working conditions for employees	The Unsafe working conditions should only impact the applicant. Safety measures will be implemented	Operational phase	Medium	<u>Control:</u> Implementation of safety control measures	Low – Medium
EXCAVATION	Negative impact on the fauna and flora of the area	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna	Operational phase	Low	<u>Control:</u> Implementation of fauna protection measures	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
		away				
EXCAVATION	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Medium	<u>Control:</u> Waste Management	Low - Medium
EXCAVATION	Weed and invader plant infestation of the area	Biodiversity	Operational phase	Low - Medium	<u>Control & Remedy:</u> Implementation of Weed Control	Low - Medium
EXCAVATION	Cultural and Heritage Artefacts				-	
EXCAVATION	Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water	Operational phase	Low - Medium	<u>Control:</u> Implement storm water control measures. Measures will be implemented as subscribed by DWS.	Low - Medium
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Dust nuisance due to loading and transportation of the material	Should dust levels become excessive it may have an impact on surrounding landowners.	Operational phase	Medium	<u>Control:</u> Dust suppression	Low - Medium
	Impact on the access roads	All road users will be affected	Operational phase	Medium	<u>Control & Remedy:</u> Road management	Low - Medium
	Noise nuisance caused by vehicles	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Medium	<u>Control:</u> Noise control measures	Low - Medium
	Contamination of area with hazardous	Contamination may cause surface or	Operational phase	Medium	<u>Control:</u> Waste Management	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	waste materials	ground water pollution if not addressed				
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Health and social well-being impacts	Noise	Operational phase	Med	<u>Noise Monitoring</u>	Low-Med
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Health and social well-being impacts	Dust	Operational phase	Medi-High	-	Med
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Health and social well-being impacts	Access Road	Operational phase	Med	<p><u>The negative impacts</u> associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Quality of the living environment impacts	Disruption of daily living	Operational phase	Med	The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows: <ul style="list-style-type: none"> · 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. 	Low
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Quality of the living environment impacts	Loss of sense of place	Operational phase	Med	The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows: <ul style="list-style-type: none"> · 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 	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANE
					put in place. · Crossing points should be put in place for farmers crossing the road with livestock.	
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Economic impacts and material well-being impacts	Decreased tourism potential in the surrounding area	Operational phase	Med-High	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.	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>Economic impacts and material well-being impacts</p>	<p>Loss of property values</p>	<p>Operational phase</p>	<p>0</p>	<p><u>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</u></p> <ul style="list-style-type: none"> <u>· 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.</u> <u>· Speed limits should be put in place.</u> <u>· Crossing points should be put in place for farmers crossing the road with livestock.</u> 	<p>0</p>

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANE
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Economic impacts and material well-being impacts	Job creation (minimal)	Operational phase	Med	The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows: <ul style="list-style-type: none"> · 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. 	Low-Med
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Economic impacts and material well-being impacts	Supply of building materials to the local building and construction industry.	Operational phase	Med	The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows: <ul style="list-style-type: none"> · 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 	Low-Med

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANE
					put in place. · Crossing points should be put in place for farmers crossing the road with livestock.	
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Cultural impacts	Negative influence on an area of tourism importance	Operational phase	0	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.	0

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANE
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Family and community impacts	Increased animosity towards the sand mines	Operational phase	Med	<p>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	Low-Med

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANE
<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>Family and community impacts</p>	<p>Decreased level of satisfaction with the living environment</p>	<p>Operational phase</p>	<p>Med</p>	<p>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	<p>Low-Med</p>

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Institutional, legal, political and equity impacts	Increased pressure on existing infrastructure	Operational phase	Med	The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows: <ul style="list-style-type: none"> · 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. 	Low-Med
SCREENING OF SAND AND AGGREGATES	Dust nuisance due to loading and transportation of the material	Should dust levels become excessive it may have an impact on surrounding landowners.	Operational phase	Medium	<u>Control:</u> Dust suppression	Low - Medium
	Noise nuisance caused by crushing plant.	The noise impact must be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Medium	<u>Control:</u> Noise Control Measures	Low - Medium

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Erosion of returned topsoil after rehabilitation	Soil erosion, may affect the agricultural potential of the site after closure of the mine.	Decommissioning phase	Medium	<u>Control:</u> Soil Management and seeding of mined areas	Low - Medium
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Dust nuisance caused during landscaping activities	Should dust levels become excessive it may have an impact on surrounding landowners.	Decommissioning phase	Low - Medium	<u>Control:</u> Dust Suppression	Low
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Health and safety risk posed by un-sloped areas	The impact on health and safety due to un-sloped areas will be contained within the site boundary.	Decommissioning phase	Medium	<u>Control:</u> Sloping of areas upon decommission	Low - Medium
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Noise nuisance caused by machinery	Should noise levels become excessive it may have an impact on surrounding landowners.	Decommissioning phase	Low - Medium	<u>Control:</u> Noise Management	Low
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Decommissioning phase	Low - Medium	<u>Control:</u> Waste Management	Low
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Loss of reinstated topsoil due to the absence of vegetation	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Decommissioning phase	Low - Medium	<u>Control:</u> Stormwater Management	Low
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Weeds and invader plant infestation of the area	Biodiversity	Decommissioning phase	Low - Medium	<u>Control & Remedy:</u> Implementation of Weed Control	Low
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL	Health and safety risk posed by un-	Noise	Decommissioning phase	Medium	<u>Control:</u> Sloping of areas upon	Low - Medium

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
OVER DISTURBED AREA (FINAL REHABILITATION)	sloped areas				decommission	
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Health and safety risk posed by un-sloped areas	Dust	Decommissioning phase	Medium	<u>Control:</u> Sloping of areas upon decommission	Low - Medium
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Health and safety risk posed by un-sloped areas	Crime	Decommissioning phase	Medium	<u>Control:</u> Sloping of areas upon decommission	Low - Medium
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Health and safety risk posed by un-sloped areas	Road	Decommissioning phase	Medium	<u>Control:</u> Sloping of areas upon decommission	Low - Medium
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Quality of the living environment impacts	Disruption of daily living	Decommissioning phase	Medium	<u>Control:</u> Sloping of areas upon decommission	Low - Medium
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Quality of the living environment impacts	Loss of sense of place	Decommissioning phase	Medium	<u>Control:</u> Sloping of areas upon decommission	Low - Medium
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Economic and material well-being impacts (negative)	Loss of employment opportunities	Decommissioning phase	Medium	<u>Control:</u> Sloping of areas upon decommission	Low - Medium
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Economic and material well-being impacts (negative)	Increased tourism potential for the mined area and surrounds.	Decommissioning phase	Medium	<u>Control:</u> Sloping of areas upon decommission	Low - Medium
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Cultural impacts	Ceasing of activities that could potentially have a negative influence on an area of tourism importance.	Decommissioning phase	Medium	<u>Control:</u> Sloping of areas upon decommission	Low - Medium
SLOPING, LANDSCAPING AND	Family and	Increased level of	Decommissioning	Medium	<u>Control:</u>	Low -

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	community impacts	satisfaction with the living environment	phase		Sloping of areas upon decommission	Medium
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Institutional, legal, political and equity impacts	Decreased demand on existing infrastructure	Decommissioning phase	Medium	<u>Control:</u> Sloping of areas upon decommission	Low - Medium

The supporting impact assessment conducted by the EAP must be attached as an appendix, marked **Appendix F**.

k) Summary of specialist reports.

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

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
Heritage Impact Assessment	<p>Although unlikely, sub-surface remains of heritage sites could still be encountered during the construction and mining activities associated with the project. Such sites would offer no surface indication of their presence due to the high state of alterations in some areas as well as heavy plant cover in other areas. The following indicators of unmarked sub-surface sites and graves could be encountered;</p> <ul style="list-style-type: none"> • Ash deposits (unnaturally grey appearance of soil compared to the surrounding substrate); • Bone concentrations, either animal or human; • Ceramic fragments such as pottery shards either historic or pre-contact; and • Stone concentrations of any formal nature. <p>Although no sites of heritage significance were identified within the proposed study area, the following recommendations are given should any sub-surface remains of heritage sites be identified as indicated above;</p> <ul style="list-style-type: none"> • All operators of excavation equipment should be made aware of the possibility of the occurrence of sub-surface heritage features and the following procedures must they be encountered. • All construction in the immediate vicinity (50m radius of the site should cease). • The heritage practitioner must be informed as soon as possible. • In the event of obvious human remains, the SAPS must be notified. • Mitigate measures (such as refilling etc.) must not be attempted. • The area in a 50m radius of the find must be cordoned off with hazard tape. • Public access must be limited. • The area must be placed under guard. • No media statements must be released until the heritage practitioner has had sufficient time to analyse the finds. 	X	Please refer to: Part A h) iv) (1) (a); and Part A t) i)
Comparative land use assessment	<p>Given this project's strong large-scale socio-economic benefits, we conclude that it is acceptable. The fact that relatively little land is impacted upon and that the Tja Naledi – Barrage Bulk Sand Mine Beafase economic footprint is going to be wider than district level also assists in making it acceptable from a sustainable development viewpoint. Hence, this project is recommended from a sustainable development perspective.</p>	X	Please refer to: Part A h) iv) (1) (a)

Botanical & Ecological Assessment	<p>In order to monitor the impact of clearing activities, follow-ups and rehabilitation efforts, monitoring must be undertaken. This section provides a description of a possible monitoring programme that will provide and assessment of the magnitude of alien invasion on site as well as an assessment of the success of the management programme. In general, the following principles apply for monitoring:</p> <ul style="list-style-type: none"> • Photographic records must be kept of areas to be cleared prior to work starting and at regular intervals during initial clearing activities. Similarly, photographic records should be kept of the area from immediately before and after follow-up clearing activities. Rehabilitation processes must also be recorded. • Simple records must be kept of daily operations, e.g. area/location cleared, labour units and, if ever used, the amount of herbicide used. • It is important that, if monitoring results in detection of invasive alien plants, that this leads to immediate action. 	X	Please refer to: Part A h) iv) (1) (a)
Socioeconomic Assessment	<p>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.</p> <ul style="list-style-type: none"> • 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. <p>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</p>	X	Please refer to: Part A h) iv) (1) (a)

	<p>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.</p> <p>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.</p> <p>Cumulative Impacts</p> <p>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.</p> <p>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.</p> <p>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.</p> <ul style="list-style-type: none"> • 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 		
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	<p>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.</p> <p>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:</p> <p>Trust and Communication</p> <ul style="list-style-type: none"> • 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. <p>Dust</p> <ul style="list-style-type: none"> • 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. 		
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	<ul style="list-style-type: none"> • 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. <p>Noise</p> <ul style="list-style-type: none"> • 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. <p>Visual</p>		
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	<ul style="list-style-type: none"> • 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. <p>Condition of the S171 Road</p> <ul style="list-style-type: none"> • 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. <p>Local Economic Development</p> <ul style="list-style-type: none"> • 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. <p>Equipment</p> <ul style="list-style-type: none"> • 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. <p>Rezoning</p> <ul style="list-style-type: none"> • 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. 		
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<p>Economic Impact Assessment</p>	<p>Our recommendation is that DMR carefully consider how they will ensure the effective management of the cumulative impacts of sand mining in this and other areas along the Vaal River. To do this, it will be necessary to develop a regional perspective on the existing sand and gravel mines as well as the applications for mining rights, and develop a regulatory strategy that can manage the number of mines in each locality and the economic impacts on other economic activities. There have been calls by ASPASA (The Aggregate and Sand Producers Association of Southern Africa https://aspasa.co.za/) for special regulations for this sector (separate to those for large mines) which take into account their needs as small, marginal and dispersed quarries in rural areas. This seems like a good opportunity to collaborate to find a viable standard way to enable such developments and at the same time effectively regulate the industry without putting them out of business. This may also serve to equalise the playing field between different sand mining companies and improve the management of negative social, health and economic impacts.</p> <p>With respect to the current applications by Tja Naledi and Pure Source, the economic impacts of these mines on existing economic activities and the marginal economic situation for these mines, suggests that it would not be appropriate to approve these mining applications at this stage. Alternatively, they could be approved subject to the mitigation measures recommended and included in their EMPs, if and when the mine's business financials are proven to be viable (given the broader market context) and can cover the cost of the mitigation measures that are needed to minimise the visual, noise, dust and traffic impacts. This may encourage the mining companies to look for sand mining opportunities in areas where the visual, noise, dust and traffic impacts are minor.</p>	<p>X</p>	<p>Please refer to: Part A h) iv) (1) (a)</p>
<p>Dust Impact Assessment</p>	<p>No impact of dust is anticipated beyond the 300-meter guideline as described in Paragraph 5 and therefore all new activities including screening plant and stockpiles would be placed 300 metres from the closest receptor of the Vaal river to the east. Extensive dust monitoring would be done at selected sites with potential significant environmental and health impacts and mitigation of mining methods and activities pertaining to silica sand source would be managed accordingly.</p>	<p>X</p>	<p>Please refer to: Part A h) iv) (1) (a)</p>
<p>No other specialist studies were deemed necessary for this project as the project entails the establishment of the mining area over an area previously used for agriculture and mining.</p>			

l) Environmental impact statement

i) Summary of the key findings of the environmental impact assessment;

Please refer to the Environmental Impact Assessment in Appendix F. The key findings of the environmental impact assessment entail the following:

- The project entails the excavation mining of sand, aggregates and alluvial diamonds in an area previously used for mining. Due to the small area used for grazing and mining, mining of sand, aggregates in the area was identified as a more viable use. Because of the agricultural activities no natural areas needs to be disturbed.
- Mining will take place via a contractor who will excavate the material, load and haul the material to the processing plant.
- From the plant the material will be loaded via front end loader directly onto client's trucks
- The existing roads to the mine area can be used to gain access to the site. No new roads are needed.
- The proposed mining area will be visible from the Vaal Eden – Barrage road passing the property and will therefore have a visual impact on the immediate surrounding area.
- Mining activities will be contained within the boundaries of the permitted site. Proper storm water and waste management however needs to be implemented on the site in order to minimise the potential of pollution.

LAND USE

The proposed quarry will be established in an area that was previously used for mining purposes as well as agriculture. Tja Naledi- Barrage Bulk Sand Mine will therefore not have to compete with other land uses at the site. Upon closure of the mining area, the land will revert to agricultural grazing for livestock farming and dry land maize production.

Due to the remote location of the quarry very little to no negative impacts on the community could be identified that were deemed to be of significant importance. The dust and noise impacts that may emanate from the mining area during the operational phase could have a negative impact on the surrounding community if the mitigation measures proposed in this document is not implemented and managed on-site.

SURFACE AND GROUND WATER

Should the application require using the water for dust suppression, a water use application has been submitted to the Department of Water and Sanitation. As the river is more than 100m from the proposed mining area, the proposed mining activity is not anticipated to have a negative impact on the river. It is however proposed that the applicant conduct bi-annual water analysis of the water in the Vaal River to enable early identification of possible contamination. The General Authorisation has been approved on the 24/07/2018 for the taking of water from a borehole for industrial purposes at a volume of 33 065 m³/a.

VEGETATION

The vegetation has largely been transformed because of the previous mining activities. The development of the proposed mining area will therefore not have a negative impact on the surrounding area. The mining site itself is largely invested with alien vegetation because of the previously mined area. The proposed mine is a good way to ensure mitigation of these alien plants in the rehabilitation period of the mining site.

Although no sensitive, protected or endangered species were identified during the site inspection, it is proposed that the applicant remove as little vegetation as possible. This will lessen the area to be managed for erosion and weed invasion purposes. Topsoil management must be implemented to ensure that topsoil is available upon rehabilitation of the area.

Due to the subsurface nature of bulbs the possibility of their occurrence cannot be excluded. If during construction any possible finds such plants must be replanted in a demarcated area.

FAUNA

The fauna at the site will not be impacted by the proposed mining activity as they will be able to move away or through the site, without being harmed. Workers must be informed and managed to ensure that no fauna at the site is harmed. Upon commencement of the proposed mining activities, the fence surrounding the property must be maintained to prevent large animals such as goats entering the site.

AIR QUALITY

The background air quality of the surrounding area is relatively good due to low industrial activity. Factors contributing to air pollution are the burning of veld, coal power stations, mines and agriculture in the area. Given the surrounding extent of mostly covered areas, no extreme dust generation under windy conditions is experienced.

Dust will be generated by the proposed operation through the movement of machinery and vehicles. Dust suppression measures must be implemented to prevent excessive dust on site. Due to the remote setting of the proposed mining area the potential impact of dust nuisance on the surrounding environment is deemed to be of low significance.

NOISE

The surrounding areas are characterised by an agricultural setting in which vehicles and farm equipment operate. The traffic on the Vaal Eden- Barrage road and other public roads surrounding the property contributes to the ambient noise of the area.

The noise to be generated at the proposed mining operation is expected to temporarily increase the noise levels of the area. Loading and transportation of the material will generate noise daily.

The significance of noise on the surrounding environment is therefore deemed to be of low significance. Mitigation measures must be implemented to ensure employees conduct them in an acceptable manner while on site in order to lessen the noise impact of the proposed activity on the surrounding environment.

CULTURAL CHARACTER

No sites of archaeological or cultural importance were identified during the site inspection as the site has been extensively used for mining and agriculture purposes. Tja Naledi – Barrage Bulk Sand Mine will make use of temporary infrastructure during the mining operations. Workers will be transported to and from the site daily.

INFRASTRUCTURE

It is expected that the proposed processing (screening) activity will have a very low impact on the surrounding environment as activities will be contained within the boundaries of the site. The proposed footprint area will not require the building of any permanent structures. This will have a direct positive impact on the traffic volumes of the surrounding roads and price of the aggregate.

VISUAL EXPOSURE/ SENSE OF PLACE

The mining area was identified to constitute the lowest possible visual impact on the surrounding environment. The surrounding area has previously been disturbed by mining activities, and this application entails the extension of the existing mining area. The applicant must however ensure that housekeeping is managed to standard, as this will mitigate the visual impacts during the operational phase of the mine.

Upon closure the site will be rehabilitated and sloped to insure that the visual impact on the aesthetic value of the area is kept to a minimum. The site will have a neat appearance and be kept in good condition at all times.

ii) Final Site Map

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

See the map indicating site activities attached as Appendix B.

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

The positive impacts associated with the project include:

- Job creation for approximately 6 employees indirectly contributing to the socio-economic status of the Parys area;
- The site falls within an already disturbed area and can be used for the establishment of the processing (screening) activities, no riparian vegetation will be impacted on;
- The sand and aggregate to be mined will be used for the construction industry in the vicinity of the mining site, thereby indirectly contributing to infrastructure development,
- The project will assist the landowner and lawful users in diversification of the land use of the property.

Associated Positive Impacts – Temporary Infrastructure:

- Low intensity site establishment;
- Easy movement of infrastructure as processing progress; and
- Complete removal of infrastructure at closure of the mine.

The negative impacts associated with the project that was deemed to have a Low-Medium or Medium significance includes:

- | | |
|---|---------------|
| ■ Disturbance of the geological strata | Medium - High |
| ■ Potential for loss of soil and damage to soil characteristics | Low -Medium |
| ■ Potential for erosion, loss of soil characteristics, | Low-Medium |
| ■ Loss of biodiversity | Low-Medium |
| ■ Alteration of topography | Low-Medium |
| ■ Degrading of grazing potential for livestock farming | Low-Medium |
| ■ Visual intrusion due to the proposed project | Low – Medium |
| ■ Loss of and disturbance to surface archaeological sites | Medium - High |
| ■ Dust nuisance stemming from proposed project | Low – Medium |
| ■ Potential Increase in crime | Medium |
| ■ Increased noise from onsite crushing and screening | Medium |
| ■ Increased dust resulting from onsite crushing and screening | Medium |
| ■ Conditions on the S171 Road | Medium -High |
| ■ Disruption of daily living | Medium |
| ■ Sense of Place | Medium |
| ■ Decreased tourism potential in the surrounding area | Medium-High |
| ■ Loss of property values | Medium |
| ■ Increased animosity towards the sand mines | High |
| ■ Decreased level of satisfaction with the living environment | High |

m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR;

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

Management Objectives	Role	Management Outcomes
Visual Aspect /Sense of Place	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> • Ensure that the site have a neat appearance and is kept in good condition at all times. • Control the height of the stockpiles to minimize the visual impact on the surrounding environment. ▪ Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status.
Dust Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. Dust monitoring consultant to check dust results and provide guidelines.	<ul style="list-style-type: none"> ▪ Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. ▪ Limit speed on the access roads to 40km/h to prevent the generation of excess dust. ▪ Spray roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. ▪ Assess effectiveness of dust suppression equipment. ▪ Re-vegetate all disturbed or exposed areas as soon as possible to prevent any dust source from being created. ▪ Thoroughly soak all stockpiles to ensure dust suppression on the site. ▪ Conduct formal dust monitoring on a monthly basis.
Noise Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. Compliance to be monitored by the Noise Monitoring Specialist.	<ul style="list-style-type: none"> ▪ Ensure that employees and staff conduct themselves in an acceptable manner while on site. ▪ No loud music may be permitted at the mining area. ▪ Ensure that all mining vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. ▪ Compliance with the appropriate legislation with respect to noise will be mandatory. ▪ Implement formal noise monitoring on a quarterly basis.
Management of weed/invader plants	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> ▪ Implement a weed and invader plant control management plan. ▪ Control declared invader or exotic species on the rehabilitated areas. ▪ Keep the temporary topsoil stockpiles free of weeds.

Management Objectives	Role	Management Outcomes
Surface and Storm water Handling	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ▪ Divert storm water around the topsoil heaps and access roads to prevent erosion and loss of material. ▪ Divert runoff water around the stockpile areas with trenches and contour structures to prevent erosion of the work areas. ▪ Ensure that water from the wash bay into the oil sump. ▪ Conduct mining in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose.
Topsoil management	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> • Strip and stockpile the upper 500 mm of the soil and protect as topsoil. • Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. • Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. • Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. • Place topsoil stockpiles along the northern and western boundaries of the site. Topsoil heaps may not exceed 1.5m in order to preserve microorganism within the topsoil. ▪ Conduct the processing activity in accordance with the Best Practice Guideline for small-scale mining as stipulated by DWS.
Protection of natural vegetation	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> • Contain all activities within the boundaries of the approved processing area. ▪ Demarcate, signpost and manage the 20m buffer area as no-go area around areas with natural vegetation.
Fauna Management	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> • Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young.
Management of health and safety risks	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by</p>	<ul style="list-style-type: none"> ▪ Ensure that workers have access to the correct PPE as required by law. ▪ Ensure all operations comply with the Occupational Health and Safety Act.

Management Objectives	Role	Management Outcomes
	the Environmental Control Officer.	
Handling of Hazardous Materials and Substance	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer</p>	<ul style="list-style-type: none"> ▪ Store all hazardous materials or substances in a closed storage facility with an impermeable floor. ▪ Storage area to meet the following conditions: ▪ Construct storage area on a level area. ▪ Floor of the storage area must be impermeable. ▪ Storage area must be outside the 1:100-year flood line or further than 100m from the edge of a watercourse, whichever is greatest. ▪ Access to the materials/substances may only take place with the prior notification of the site manager. ▪ Fuel storage tanks must have an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. ▪ Consider the distance and height of the bund wall relative to that of the tank to ensure that oil does not spout beyond the confines of the bund. ▪ Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. Inspection must be at least weekly and any accumulated rainwater must be removed. ▪ All valves and outlets must be checked to ensure that they are intact and closed securely. ▪ Slope the bund base towards a rainwater sump of sufficient size. ▪ Contain contaminated water until it can be collected by a registered hazardous waste handling contractor or be disposed of at a registered hazardous waste handling facility. ▪ Ensure availability of drip trays underneath all stationary equipment or vehicles.
Waste management	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ▪ Ensure no waste storage area is established outside the boundaries of the mining area. ▪ Ensure vehicle maintenance only take place within the service bay area of the off-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litre closed container/bin inside the emergency service area. ▪ Ensure diesel bowser is equipped with a drip tray at all times. ▪ Use drip trays during each and every refuelling event. ▪ Ensure the nozzle of the bowser rests in a sleeve to prevent dripping after refuelling. ▪ Keep drip trays clean. No dirty drip trays may be used on site. ▪ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility. ▪ Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility. File proof on site. ▪ Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. ▪ Place all used oils, grease or hydraulic fluids therein and remove these receptacles from the site on a

Management Objectives	Role	Management Outcomes
		<p>regular basis for disposal at a registered or licensed hazardous disposal facility.</p> <ul style="list-style-type: none"> ▪ Store non-biodegradable refuse such as glass bottles, plastic bags etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and disposed of at the recognised landfill site. Prevent refuse from being dumped on or in the vicinity of the mining area. ▪ Biodegradable refuse to be handled as indicated above. ▪ Generated at the site recording the amount of different types of waste generated by the mine in excel spreadsheet format.
Management of access roads	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ▪ Maintain newly constructed access roads to minimise dust, erosion or undue surface damage. ▪ Divert storm water around the access roads to prevent erosion. ▪ Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. ▪ Repair rutting and erosion of the access roads caused by the proposed activities.
Protection of Cultural or Heritage Artefacts	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> • Immediately stop work must discover any evidence of human burials or other heritage artefact during the execution of the activities. • Notify Heritage and the ECO immediately.
Socio Economic Impacts	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> • 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 labourers, in order to avoid a potential influx of work seekers to the area immediately surrounding the mine. • 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

Management Objectives	Role	Management Outcomes
		<p>should notify surrounding residents of the expected duration of Saturday work.</p> <ul style="list-style-type: none"> • 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. • 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. • 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. • 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. • 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. • 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.

Management Objectives	Role	Management Outcomes
		<ul style="list-style-type: none"> • The Applicant should provide opportunities for skills development, ie. Brick making. • Conduct LED initiatives for the local community. • 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. • 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. • Damage to the road surface needs to be reported and repaired promptly.
<p>After care on rehabilitated areas</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> • Control run-off water via temporary banks to ensure that accumulation of run-off does not cause down-slope erosion. • Only do topsoil spreading at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal. • Plant a cover crop immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. Fertilize the cover crop for optimum production. • Ensure rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation must not be considered complete until the first cover crop is well established. <ul style="list-style-type: none"> ▪ Monitor all rehabilitated areas for erosion, and appropriately stabilized if any erosion occurs.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects, which must be made conditions of the Environmental Authorisation

The management objectives listed in this report under Point m above should be considered for inclusion in the environmental authorisation.

o) Description of any assumptions, uncertainties and gaps in knowledge.

(Which relate to the assessment and mitigation measures proposed)

The assumptions made in this document which relate to the assessment and mitigation measures proposed, stem from site-specific information gathered from the property owner, as well as site inspections, and background information gathering.

p) Reasoned opinion as to whether the proposed activity should or should not be authorised**i) Reasons why the activity should be authorised or not.**

Should the mitigation measures and monitoring programmes proposed in this document be implemented on site, no fatal flaws could be identified that were deemed as severe as to prevent the activity continuing.

ii) Conditions that must be included in the authorisation

The management objectives listed in this report under Point m should be considered for inclusion in the environmental authorisation. A zoning application for Tja Naledi needs to be made.

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-book 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 registers 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, where the mine make available their audit reports and where the public can give input.
- ✦ The community need to be consulted and included in planning processes.
- ✦ The mine needs to draw up a map that clearly indicates areas that will be mined

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.

Dust

- ✦ The dirt road used to access the mine form the S171 Road should be sprayed with a dust-allaying agent, in order to reduce 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.
- ✦ Graveling of permanent, internal dirt roads should be considered.
- ✦ Concurrent rehabilitation of mining strips is to take place.
- ✦ Once mining of a strip is completed, the topsoil is to be replaced within no more than 5 days.
- ✦ If an adequate amount of re-growth has not occurred on mined areas, following one growing season, the mined areas are to be re-seeded and watered to facilitate rehabilitation.
- ✦ Dust monitoring should be conducted regularly to ensure dust levels are within acceptable levels.
- ✦ In order to speed up the rehabilitation and allow for con-current rehabilitation, it is suggested that another grader be deployed on-site. Furthermore, all equipment applied for needs to be explicitly mentioned in the FBAR.
- ✦ A specialist statement should be provided as to the health risks posed by dust to residents living near the mine.

Noise

- ✦ It is suggested that a site should be selected in the southern portion of the property, south of the S171 road, where all crushing activities are to take place.

The site selected for crushing activities should ideally have dense vegetation or trees surrounding it.

- ✦ Working hours are to be strictly adhered to. As stipulated in the Mining Works Programme working hours are from 8am to 4pm on weekdays. When required the mine will operate on Saturdays as well. When operating on a Saturday work should cease by 2pm.
- ✦ No crushing is to take place on weekends.
- ✦ All machinery to be fitted with silencers.
- ✦ Reversing beepers on all vehicles are to be replaced with white-noise reversing beepers or equivalent.
- ✦ Workers on site are to conduct themselves in an orderly manner on site.
- ✦ No loud music permitted on site.

Condition of the S171 Road

- ✦ The Applicant, together 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.
- ✦ 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.

Crime

- ✦ The Applicant needs to ensure that unrealistic expectations are not created during the advertising period.
- ✦ The application process should be conducted at the expected source of local labourers, in order to avoid a potential influx of work seekers to the area immediately surrounding the mine.

Local Economic Development

- ✦ LED initiatives need to be looked at as a means of offsetting negative mine impacts. This must be actively pursued and included in the SLP. The community need to be consulted to formulate these 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.

Rezoning

- ✦ Re-zoning is an issue that will need to be resolved between the Applicant and municipality prior to approval of the amendment.

q) Period for which the Environmental Authorisation is required.

The applicant requests the Environmental Authorisation to be valid for a ten (10)-year period.

r) Undertaking

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

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

s) Financial Provision

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

i) Explain how the aforesaid amount was derived

The annual amount required to manage and rehabilitate the environment was estimated to be R684 901.71. A Bank Guarantee is provided for the proposed site. Please note that this document is an amendment to the current EMP.

ii) Confirm that this amount can be provided from operating expenditure.

(Confirm that the amount is anticipated to be an operating cost and is provided for as such in the Mining Work Programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

The mining operation will be self-funded through income generated by sales of the sand and aggregate mined. A bank guarantee was ceded to the DMR for the required amount in the 2014 EMP. DMR request and additional Bank Guarantee in 2018 that was submitted. Please refer to the Mining Works Program document for the Bank Guarantee submission.

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

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

The social impact of the proposed development was considered at the macro (provincial) meso (district) and micro (farm) levels. This was investigated thoroughly as part of the social and labour plan as contemplated in regulation 46 of the Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) that makes out part of this application. Please refer Appendix H.

The relative small extent of the proposed mining operations implies that the development will not have a significant social impact at the macro level. The financial gain from any such mining operation always has the possibility to contribute positively towards the socioeconomic aspect at any level. The mine has a very large beneficial impact on the development projects in Gauteng and the Vaal Triangle.

Meso (district) level

As for the macro level, the relative small extent of the proposed mining operations implies that the development will not have a significant social impact at the meso level. The financial gain from any mining operation always has the potential to contribute positively towards the socio-economic aspect at any level.

Micro (farm) level

No local labourers will work in the mining operation or will be sourced from the immediate area. As such the proposed development will not contribute to the Micro (farm) level. Little to no impact will occur on neighbouring properties socio-economic conditions. Due to the small scale of the operation, no influx of workers is expected.

The following potential impacts were identified that may impact on socio-economic conditions of directly affected persons:

Visual exposure / Sense of Place:

The mining area was identified to constitute the lowest possible visual impact on the surrounding environment. The surrounding areas have previously been disturbed by mining activities and surrounding mines in the area. The applicant must however ensure that housekeeping is managed to standard, as this will mitigate the visual impacts during the operational phase of the mine.

Upon closure, the site will be rehabilitated and sloped to insure that the visual impact on the aesthetic value of the area is kept to a minimum. The site will have a neat appearance and be kept in good condition at all times.

Air Quality:

The background air quality of the surrounding area is relatively good due to low industrial activity. Factors contributing to air pollution are the burning of veld and agriculture in the area. Given the surrounding extent of mostly covered areas, no extreme dust generation under windy conditions is experienced.

The movement of machinery and vehicles will generate dust. Dust suppression measures must be implemented to prevent excessive dust on site. Due to the remote setting of the proposed mining area, the potential impact of dust nuisance on the surrounding environment is deemed to be of low significance.

Noise:

The surrounding areas are characterised by an agricultural setting in which vehicles and farm equipment operate. The traffic on the Vaal Eden – Barrage road and other public roads surrounding the property contributes to the ambient noise of the area. The noise to be generated at the proposed site operation is expected to temporarily increase the noise levels of the area. Loading and transportation of the material will generate noise daily. The significance of noise on the surrounding environment is therefore deemed to be of low significance.

Mitigation measures must be implemented to ensure employees conduct them in an acceptable manner while on site in order to lessen the noise impact of the proposed activity on the surrounding environment.

Existing Infrastructure:

It is expected that the proposed processing activity will have a very low impact on the surrounding environment, as activities will be contained within the boundaries of the site. The proposed footprint area will not require the building of any permanent structures. The proposed production of sand and aggregate on the property will also reduce the amount of trucks delivering materials, from outside sources. This will have a direct positive impact on the traffic volumes of the surrounding roads and price of the aggregate.

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

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

The specialist report (Heritage, 2015), did indicate a single Stone Age tools and old buildings that would require protection. No mining will take place near the buildings and the recommendations of the report will be followed. Any heritage features be discovered as part of the mining operations. Please refer to Appendix H for the Heritage Impact Assessment that was conducted.

No cultural aspects were identified that could be impacted upon by the mining operations.

u) Other matters required in terms of section 24(4) (a) and (b) of the Act.

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

As mentioned earlier, no other alternative sites needed to be investigated, as this is an amendment of the current EMPr. The site was identified during the assessment phase of the environmental impact assessment (2014 assessment), by the applicant and project team, and was therefore selected as the preferred alternative.

As discussed earlier the following alternatives were considered:

1. Mining area – The proposed mining area over a 437ha area
2. No-go Alternative.

PART B: ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1) Draft Environmental Management Programme.

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

The details and expertise of Yolandie Coetzee of Greenmined Environmental that acts as EAP on this project has been included in Part A Section 1(a) as well as Appendix I as required.

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

The aspects of the activity that are covered by the draft environmental management programme has been described and included in Part A, section (1)(h).

c) Composite Map

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

As mentioned under Part a, section (1) (L) (ii) this map has been compiled and is attached as Appendix B to this document.

d) Description of impact management objectives including management statements

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

The environment affected by the mining operations will be rehabilitated, as far as is practicable, to its natural state or to a predetermined and agreed to standards or land use which conforms with the concept of sustainable development. The affected environment will be maintained in a stable condition that will not be detrimental to the safety and health of humans and animals and that will not pollute the environment or lead to the degradation thereof. This will be done by complying with the conditions in the environmental management program below, and relevant statutory requirements. The contractor and employee will be made aware of their environmental responsibilities and will be empowered to execute the work program in compliance with the requirements of this EMPR.

Rehabilitation of Access Roads

- Whenever the mining right is suspended, cancelled or abandoned or if it lapses and Tja Naledi – Barrage Bulk Sand Mine does not wish to renew the right, any access road or portions thereof, constructed by Sweet Sensation and which will no longer be required by the landowner, will be removed and rehabilitated to the satisfaction of the Regional Manager.
- Any gate of fence erected by Tja Naledi – Barrage Bulk Sand Mine which is not required by the landowner, will be removed and the situation restored to the pre mining situation.
- Roads will be ripped or ploughed, and if necessary appropriately fertilised (based on a soil analysis) to ensure the regrowth of vegetation. Imported road construction material that may be regrow of vegetation will be removed and disposed of in an approved manner prior to rehabilitation.
- Structure such as berms will be installed to prevent erosion of the rehabilitated roads.
- If a reasonable assessment indicated the re-establishment of vegetation is unacceptably slow, the request of the Regional Manager, the soil will be analysed and any deleterious effect on the soil arising from the mining operation, will be corrected and the area be seeded with a seed mix to the Regional Manager's specifications.

Rehabilitation of the Secured Storage Area

- On completion of mining operations, the above areas will be cleared of any contaminated soils, which will be disposed of as referred to in the section above.
- The surface will then be ripped or ploughed to a depth of at least 300mm and the topsoil previously stored adjacent to the site, will be spread evenly to its original depth over the whole area. The areas will then be fertilised if necessary (based on a soil analysis).
- The site will be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- If a reasonable assessment indicated that the re-establishment of vegetation is unacceptable slow, at the request of the Regional Manager, the soil will be analysed and any deleterious effect on the soil arising from the mining operation will be corrected and the area be seeded with a seed mix to the regional manager specification.

(2) Decommission and Closure Phases

(a) Rehabilitation of the mining area

- Rehabilitation will be ongoing and conform an area being stripped of topsoil and area being rehabilitated after the overburden is worked back into the excavation.
- Thus, there will be various areas of land open for rehabilitation in operational times. One excavator will be used to excavate the sand and aggregate.

- Fill and topsoil could be placed over the benches to provide a suitable medium for the establishment of vegetation, especially trees which will break up the line of the faces and enhance their appearance. The floor of the pit must be capped with suitable soil material and re-vegetated.
- No waste will be permitted to be deposited in the excavations. Once overburden, rocks and coarse natural materials has been dumped into the excavated area and profiled with acceptable contours and erosion control measures, topsoil shall be returned over the area.
- The area shall be fertilized to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora. If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

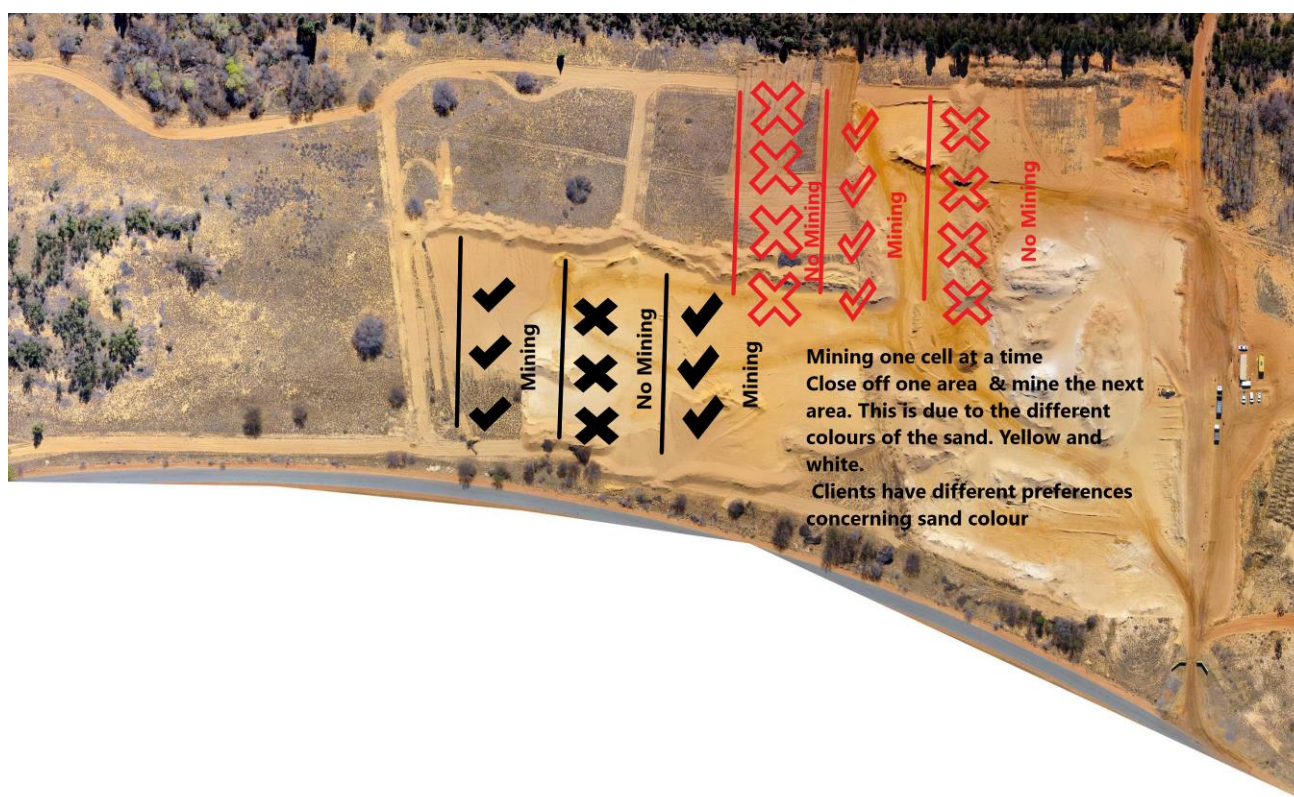


Figure 24: Rehabilitation method

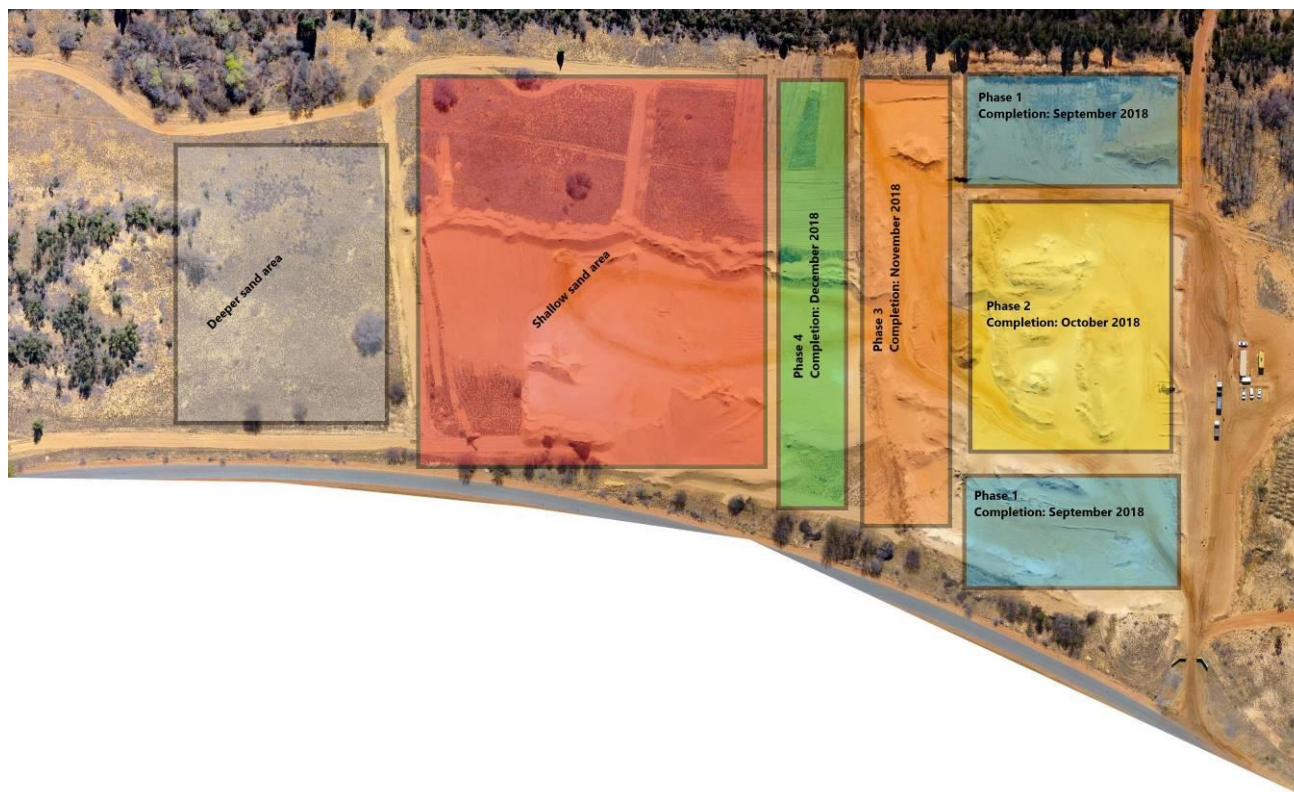


Figure 25: Rehabilitation plan for the next 20 months

(b) Rehabilitation of plant, office and service areas

- Stockpiles will be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.
- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):
 - Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
 - The topsoil will be placed back as a growth medium and the sides of the excavation will be sloped with acceptable contours to prevent soil erosion.
 - The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- Photographs of the office sites, before and during mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.
- The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

(c) Final rehabilitation

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding and maintenance, and weed / alien clearing.
- All Temporary Infrastructures, equipment, plant, and other items used during the mining period will be removed from the site.
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognized landfill facility; proof of this removal will be kept on file at the applicant's office. It will not be permitted to be buried or burned on the site.
- Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species regarded as the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure. Final rehabilitation shall be completed within a period specified by the Regional Manager.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.

(d) Seeding of the area

Once the excavation slopes have been shaped and the topsoil replaced, the initial goal is to establish a good cover of a robust grass that will stabilise the soil and start the accumulation of soil organic carbon. This will be done using a combination of hydro seeding and physical planting of runners to apply a mix of commercial and indigenous species that includes both tufted and creeping species. The plants that were collected during the establishment and operational phases and kept in the designated area will be replanted.

ii) Volume and rate of water use required for the operation

Water is abstracted from the two (2) boreholes that is located on the property on a daily basis for dust suppression purposes and for potable water at the site. A water truck will be used to spray access roads to alleviate dust generation. It is proposed that the mining activities will require approximately 20 000 – 40 000 l of water per day.

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

The General Authorisation has been approved on the 24/07/2018 for the taking of water form a borehole for industrial purposes at a volume of 33 065 m³/a.

iv) Impacts to be mitigated in their respective phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
whether listed or not listed	(volumes, tonnages and hectares or m ²)	In which impact is anticipated			
(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc. Etc.)		(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))			
DEMARCATON OF SITE WITH VISIBLE BEACONS.	437.8330ha	Construction / Site Establishment phase	Demarcation of the site will ensure that all employees are aware of the boundaries of the processing area and that work stay within approved area.	Processing of the waste rock/stone is only allowed within the boundaries of the approved processing area. • MHSA, 1996 • OHSA, 1993	Beacons need to be in place throughout the life of the activity.
ESTABLISHMENT OF TEMPORARY OFFICE AND ABLUSTION INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.				Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.	Construction / Site Establishment phase

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
ESTABLISHMENT OF TEMPORARY OFFICE AND ABLUSTION INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	437.8330ha	Construction / Site Establishment phase	The potential increase in crime levels associated with onsite processing activities can be mitigated to a degree as follows: <ul style="list-style-type: none"> · 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 labourers, in order to avoid a potential influx of work seekers to the area immediately surrounding the mine. 	N/A	Construction / Site Establishment phase
STRIPPING AND STOCKPILING OF TOPSOIL	437.8330ha	Operational phase	<u>Visual Mitigation:</u> <ul style="list-style-type: none"> • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior 	<u>Land use zoning:</u> <ul style="list-style-type: none"> • Free State LUPA • Ngwathe Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use. 	Throughout operational phase

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			status.		
STRIPPING AND STOCKPILING OF TOPSOIL	437.8330ha	Operational phase	<p><u>Dust Handling:</u></p> <ul style="list-style-type: none"> • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. 	<p><u>Dust Handling:</u></p> <ul style="list-style-type: none"> • NEM:AQA, 2004 Regulation 6(1) 	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
STRIPPING AND STOCKPILING OF TOPSOIL	437.8330ha	Operational phase	<p>Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site.</p> <p>No loud music may be permitted at the processing area.</p> <p>All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.</p>	<p>Noise Handling: NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987</p>	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	437.8330ha	Operational phase	<p>Management of weed- or invader plants:</p> <ul style="list-style-type: none"> • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: <ul style="list-style-type: none"> o "The plants can be uprooted, felled or cut off 	<p>Management of weed- or invader plants:</p> <ul style="list-style-type: none"> • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. 	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			<p>and can be destroyed completely.”</p> <p>o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide."</p> <ul style="list-style-type: none"> • The temporary topsoil stockpiles needs to be kept free of weeds. 		
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p>	<p>437.8330ha</p>	<p>Operational phase</p>	<p>Loss of topsoil due to incorrect storm water management</p> <ul style="list-style-type: none"> • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. 	<p>Loss of topsoil due to incorrect storm water management:</p> <ul style="list-style-type: none"> • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. 	<p>Throughout operational phases</p>

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> • The activity must be conducted in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department of Mineral Resources may impose: <ul style="list-style-type: none"> o Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). 		

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			<p>o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.</p>		
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p>	<p>437.8330ha</p>	<p>Operational phase</p>	<p>Contamination of surface or groundwater due to hazardous spills not cleaned:</p> <ul style="list-style-type: none"> • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable 	<p>Contamination of surface or groundwater due to hazardous spills not cleaned:</p> <ul style="list-style-type: none"> • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply. 	<p>Throughout operational and decommissioning phases</p>

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			<p>receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility.</p> <ul style="list-style-type: none"> • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above. 		

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
STRIPPING AND STOCKPILING OF TOPSOIL	437.8330ha	Operational phase		<u>Negative impact on biodiversity of the area:</u> NEM:BA, 2004	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL			topsoil will be removed before mining operations commence. restoring of topsoil during rehabilitation would encourage natural re-vegetation of the area. re-vegetatio with indigenous seeds would be done if it is necessary. Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas.	<u>Negative impact on biodiversity of the area (Site Alternative 1):</u> • NEM:BA, 2004	Throughout operational phases
STRIPPING AND STOCKPILING OF TOPSOIL	437.8330ha	Operational phase	The necessary measures will be put in place to limit erosion form the stockpiles and to divert storm water away from the stockpiles.Re-vegetate any bare soil immediately. Herbaceous plant mater should be stockpiled to retain organic content of soil. Stockpiles should be to the specifications of the	<u>Loss of soil due to un- vegetated areas:</u> • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			pedological study.		
STRIPPING AND STOCKPILING OF TOPSOIL			Groundwater will only be used for domestic purposes and will not be directly affected by mining activities.	-	
STRIPPING AND STOCKPILING OF TOPSOIL			Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place.	-	
STRIPPING AND STOCKPILING OF TOPSOIL			Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA.	-	
STRIPPING AND STOCKPILING OF TOPSOIL			Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous grass seed mix.	-	
STRIPPING AND STOCKPILING OF TOPSOIL			Ensure activities occur only within the designated areas and stockpile and revegetated soil as soon as possible. Topsoil will be removed before mining activities commence and stored outside of the active mining cell.	-	
STRIPPING AND			None.	-	

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
STOCKPILING OF TOPSOIL					
EXCAVATION	437.8330ha	Operational phase	<u>Visual Mitigation:</u> <ul style="list-style-type: none"> • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. 	<u>Land use zoning:</u> <ul style="list-style-type: none"> • Free State LUPA • Ngwathe Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use. 	Throughout operational phase
EXCAVATION	437.8330ha	Operational phase	<u>Dust Handling:</u> <ul style="list-style-type: none"> • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads 	<u>Dust Handling:</u> <ul style="list-style-type: none"> • NEM:AQA, 2004 Regulation 6(1) 	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			<p>must be limited to 40km/h to prevent the generation of excess dust.</p> <ul style="list-style-type: none"> Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. 		
EXCAVATION	437.8330ha	Operational phase	<p>Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.</p>	<p><u>Noise Handling:</u> _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987</p>	Throughout operational and decommissioning phases
EXCAVATION	437.8330ha	Operational phase		-	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
EXCAVATION	437.8330ha	Operational phase		<u>The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure.</u> <ul style="list-style-type: none"> • MHSA, 1996 • OHSA, 1993 	Throughout operational and decommissioning phases
EXCAVATION	437.8330ha	Operational phase	Negative impact on fauna that may enter the area: <ul style="list-style-type: none"> • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young. 	<u>Negative impact on fauna that may enter the area:</u> <ul style="list-style-type: none"> • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities. 	Throughout operational phases
EXCAVATION	437.8330ha	Operational phase		<u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u> <ul style="list-style-type: none"> • NWA, 1998 • NEM: WA, 2008 Every precaution must be taken to prevent contamination. The precautionary principal must apply	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
EXCAVATION	437.8330ha	Operational phase	<p>Management of weed- or invader plants:</p> <ul style="list-style-type: none"> • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: <ul style="list-style-type: none"> o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds. 	<p><u>Management of weed- or invader plants:</u></p> <ul style="list-style-type: none"> • The National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. 	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
EXCAVATION	437.8330ha	Operational phase	<p>Loss of topsoil due to incorrect storm water management</p> <ul style="list-style-type: none"> • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that 	<p>Loss of topsoil due to incorrect storm water management:</p> <ul style="list-style-type: none"> • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. 	Throughout operational phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			<p>Department of Mineral Resources may impose:</p> <ul style="list-style-type: none"> o Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management. 		

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	437.8330ha	Operational phase	<u>Dust Handling:</u> <ul style="list-style-type: none"> • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. 	<u>Dust Handling:</u> <ul style="list-style-type: none"> • NEM:AQA, 2004 Regulation 6(1). All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987 	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	437.8330ha	Operational phase		<u>Degradation of the gravel access road:</u> • NRTA, 1996 The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.	Throughout operational and decommissioning phases
	437.8330ha	Operational phase	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	<u>Noise Handling:</u> _ NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	437.8330ha	Operational phase	<p>Contamination of surface or groundwater due to hazardous spills not cleaned:</p> <ul style="list-style-type: none"> • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered 	<p><u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u></p> <ul style="list-style-type: none"> • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply. 	0

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			<p>receptacles must be available at all times and conveniently placed for the disposal of waste.</p> <ul style="list-style-type: none"> • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. <p>Specific precautions must be taken to prevent refuse from being dumped on or near the processing area.</p> <ul style="list-style-type: none"> • Biodegradable refuse generated must be handled as indicated above. 		
	437.8330ha	Operational phase	<p>The impacts associated with onsite processing activities can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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 	<p><u>Noise Handling:</u> _ NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987</p>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			<p>8:00am. The mine may then only begin loading and selling sand from 8:00am.</p> <ul style="list-style-type: none"> · 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. 		
<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>437.8330ha</p>	<p>Operational phase</p>	<p>The impacts associated with onsite processing activities can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · The sites selected for crushing activities should ideally have dense vegetation or trees surrounding them. 	<p><u>Dust Handling:</u></p> <ul style="list-style-type: none"> • NEM:AQA, 2004 Regulation 6(1). All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987 	<p>Throughout operational and decommissioning phases</p>

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> · 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. 		

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	437.8330ha	Operational phase	<p>The impacts associated with onsite processing activities can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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 	<p><u>Degradation of the gravel access road:</u></p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			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.		
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	437.8330ha	Operational phase	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.	<u>Road</u> <u>Noise</u> <u>Dust</u>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	437.8330ha	Operational phase	<p>The impacts associated with onsite processing activities can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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 	<p><u>Degradation of the gravel access road:</u></p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			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.		

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	437.8330ha	Operational phase	<p>The negative impacts associated with a decrease in tourism potential can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	<p><u>Degradation of the gravel access road:</u></p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	437.8330ha	Operational phase	<p>The negative impacts associated with a decrease in tourism potential can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	<p><u>Degradation of the gravel access road:</u></p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	437.8330ha	Operational phase	<p>The negative impacts associated with a decrease in tourism potential can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	<p><u>Degradation of the gravel access road:</u></p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	437.8330ha	Operational phase		-	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	437.8330ha	Operational phase	<p>The negative impacts associated with mine expansion that may influence the VDWHS can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	-	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	437.8330ha	Operational phase	<p>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:</p> <ul style="list-style-type: none"> · 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. <p>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.</p>	<p><u>Degradation of the gravel access road:</u></p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	437.8330ha	Operational phase	<p>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:</p> <ul style="list-style-type: none"> · 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. 	<p><u>Degradation of the gravel access road:</u></p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	437.8330ha	Operational phase	<p>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.</p> <ul style="list-style-type: none"> · Damage to the road surface needs to be reported and repaired promptly. 	<p><u>Degradation of the gravel access road:</u></p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases
SCREENING OF SAND AND AGGREGATES	437.8330ha	Operational phase	<p><u>Dust Handling:</u></p> <ul style="list-style-type: none"> • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that 	<p><u>Dust Handling:</u></p> <ul style="list-style-type: none"> • NEM:AQA, 2004 Regulation 6(1) 	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	437.8330ha	Operational phase	<p>contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.</p> <p>Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.</p>	<p>Noise Handling: _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987</p>	Throughout operational and decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase		<p><u>Erosion of returned topsoil after rehabilitation:</u></p> <ul style="list-style-type: none"> • NEM:BA, 2004 • MPRDA, 2008 • The replacement of the topsoil and sloping of the area is of utmost importance to ensure the effective future use of the area for agricultural purposes. • Rehabilitation cannot be considered complete until the first cover crop is well established. 	Throughout decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase	<u>Dust Handling:</u> <ul style="list-style-type: none"> • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. 	<u>Dust Handling:</u> <ul style="list-style-type: none"> • NEM:AQA, 2004 Regulation 6(1) 	Throughout operational and decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase		-	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase	<p>Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site.</p> <p>No loud music may be permitted at the processing area.</p> <p>All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.</p>	<p>Noise Handling: <u>NEM: AQA, 2004 Regulation 6(1)</u> All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987</p>	Throughout operational and decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase	<p>Contamination of surface or groundwater due to hazardous spills not cleaned:</p> <ul style="list-style-type: none"> Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. Any effluents containing oil, grease or other industrial substances must be collected in a suitable 	<p><u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u></p> <ul style="list-style-type: none"> NWA, 1998 NEM: WA, 2008 <p>• Every precaution must be taken to prevent contamination. The precautionary principal must apply.</p>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			<p>receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility.</p> <ul style="list-style-type: none"> • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above. 		

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	437.8330ha	Decommissioning phase		<p><u>Erosion of returned topsoil after rehabilitation:</u></p> <ul style="list-style-type: none"> • NEM:BA, 2004 • MPRDA, 2008 • The replacement of the topsoil and sloping of the area is of utmost importance to ensure the effective future use of the area for agricultural purposes. • Rehabilitation cannot be considered complete until the first cover crop is well established. 	Throughout operational and decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase	<p>Management of weed- or invader plants:</p> <ul style="list-style-type: none"> • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: <ul style="list-style-type: none"> o "The plants can be 	<p>Management of weed- or invader plants:</p> <ul style="list-style-type: none"> • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. 	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			<p>uprooted, felled or cut off and can be destroyed completely.”</p> <p>o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide."</p> <ul style="list-style-type: none"> • The temporary topsoil stockpiles needs to be kept free of weeds. 		
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase	<ul style="list-style-type: none"> • All areas cleared as a result of mining activities are to be adequately rehabilitated with indigenous vegetation, following closure of the mine. 	-	Throughout operational and decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase	<ul style="list-style-type: none"> • All areas cleared as a result of mining activities are to be adequately rehabilitated with indigenous vegetation, following closure of the mine. 	-	Throughout operational and decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase	<p>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.</p>	-	Throughout operational and decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF	437.8330ha	Decommissioning phase		-	Throughout operational and

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)					decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase		-	Throughout operational and decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase		-	Throughout operational and decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase	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.	-	Throughout operational and decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase		-	Throughout operational and decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase		-	Throughout operational and decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase		-	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	437.8330ha	Decommissioning phase	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.	-	Throughout operational and decommissioning phases

e) Impact Management Outcomes

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

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
whether listed or not listed	(Including the potential impacts for cumulative impacts)		In which impact is anticipated	(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)	
(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc. Etc.)	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)		(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))	E.g. Modify through alternative method. Control through noise control. Control through management and monitoring. Remedy through rehabilitation.	
DEMARCATIION OF SITE WITH VISIBLE BEACONS.	No impact could be identified other than the beacons being outside the boundaries of the approved	N/A	Construction / Site Establishment phase	N/A	Processing of the waste rock/stone is only allowed within the boundaries of the approved processing area.

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
	processing area.				<ul style="list-style-type: none"> • MHSA, 1996 • OHSA, 1993
ESTABLISHMENT OF TEMPORARY OFFICE AND ABLUSTION INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	If the infrastructure is established within the boundaries of the approved mining area, no impact could be identified.	N/A	Construction / Site Establishment phase	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.
ESTABLISHMENT OF TEMPORARY OFFICE AND ABLUSTION INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Potential Increase of Crime	Health and Socio-Wellbeing	Construction / Site Establishment phase	Control through proper site management	N/A
STRIPPING AND STOCKPILING OF TOPSOIL	Visual impact due to removal of topsoil.	The visual impact may affect the aesthetics of the landscape.	Operational phase	<u>Control:</u> Implementation of proper housekeeping	<u>Land use zoning:</u> <ul style="list-style-type: none"> • Free State LUPA • Ngwathe Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.
STRIPPING AND STOCKPILING OF TOPSOIL	Dust nuisance caused by the disturbance of soil.	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	<u>Control:</u> Dust suppression	<u>Dust Handling:</u> <ul style="list-style-type: none"> • NEM:AQA, 2004 Regulation 6(1)
STRIPPING AND STOCKPILING OF TOPSOIL	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	<u>Control:</u> Noise control measures	<u>Noise Handling:</u> <ul style="list-style-type: none"> NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
STRIPPING AND STOCKPILING OF TOPSOIL	Infestation of the topsoil heaps by weeds and invader plants.	Biodiversity	Operational phase	<u>Control & Remedy:</u> Implementation of weed control and weed/invader plant management plan	Management of weed- or invader plants: <ul style="list-style-type: none"> • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014.
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of topsoil due to incorrect storm water management	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of	Operational phase	<u>Control:</u> Storm water management	Loss of topsoil due to incorrect storm water management:

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
		the site.			<ul style="list-style-type: none"> • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes.
STRIPPING AND STOCKPILING OF TOPSOIL	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	<u>Control:</u> Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: <ul style="list-style-type: none"> • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.
STRIPPING AND STOCKPILING OF TOPSOIL	Alteration to Topography	Topography Biodiversity	Operational phase	<u>Control:</u> Storm water management	<u>Negative impact on biodiversity of the area:</u> NEM:BA, 2004
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of natural vegetation			<u>Control:</u> Management of buffer areas and demarcation of work areas. <u>Modify:</u> Consider use of a less sensitive area	<u>Negative impact on biodiversity of the area (Site Alternative 1):</u> • NEM:BA, 2004
STRIPPING AND STOCKPILING OF TOPSOIL	Soil erosion due to absence of vegetation	Loss of soil	Operational phase	<u>Control:</u> Proper site management.	<u>Loss of soil due to un-vegetated areas:</u> • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
EXCAVATION	Visual intrusion associated with the excavation activities	The visual impact may affect the aesthetics of the landscape.	Operational phase	<u>Control:</u> Implementation of proper housekeeping	<u>Land use zoning:</u> • Free State LUPA • Ngwathe Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.
EXCAVATION	Dust nuisance due to excavation activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	<u>Control:</u> Dust Suppresion	<u>Dust Handling:</u> • NEM:AQA, 2004 Regulation 6(1)
EXCAVATION	Noise nuisance generated by excavation equipment	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	<u>Control:</u> Noise Control Measures	<u>Noise Handling:</u> _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
EXCAVATION	Contamination of surface or groundwater due to effluent runoff from excavation area	the impact of surface and groundwater contamination due to the excavated area will be mitigated through berms and topsoil stockpiling	Operational phase	<u>Control:</u> Measures will be implemented as subscribed by DWS	-
EXCAVATION	Unsafe working conditions for employees	The Unsafe working conditions should only impact the applicant. Safety measures will be implemented	Operational phase	<u>Control:</u> Implementation of safety control measures	<u>The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure.</u> • MHSA, 1996 • OHSA, 1993
EXCAVATION	Negative impact on the fauna and flora of the area	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	<u>Control:</u> Implementation of fauna protection measures	<u>Negative impact on fauna that may enter the area:</u> • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
EXCAVATION	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	<u>Control:</u> Waste Management	<u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u> • NWA, 1998 • NEM: WA, 2008 Every precaution must be taken to prevent contamination. The precautionary principal must apply
EXCAVATION	Weed and invader plant infestation of the area	Biodiversity	Operational phase	<u>Control & Remedy:</u> Implementation of Weed Control	<u>Management of weed- or invader plants:</u> • The National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014.
EXCAVATION	Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water	Operational phase	<u>Control:</u> Implement storm water control measures. Measures will be implemented as subscribed by DWS.	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes.
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Dust nuisance due to loading and transportation of the material	Should dust levels become excessive it may have an impact on surrounding landowners.	Operational phase	<u>Control:</u> Dust suppression	<u>Dust Handling:</u> • NEM:AQA, 2004 Regulation 6(1). All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
	Impact on the access roads	All road users will be affected	Operational phase	<u>Control & Remedy:</u> Road management	<u>Degradation of the gravel access road:</u> • NRTA, 1996 The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.
	Noise nuisance caused by vehicles	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	<u>Control:</u> Noise control measures	<u>Noise Handling:</u> _ NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	<u>Control:</u> Waste Management	<u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u> • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Health and social well-being impacts	Noise	Operational phase	<u>Noise Monioting</u>	<u>Noise Handling:</u> _ NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Health and social well-being impacts	Dust	Operational phase	-	<u>Dust Handling:</u> • NEM:AQA, 2004 Regulation 6(1). All project related vehicles must be in a road worthy

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
					condition in terms of the Road Transport Act, 1987
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Health and social well-being impacts	Access Road	Operational phase	<p><u>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</u></p> <ul style="list-style-type: none"> - <u>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.</u> - <u>Speed limits should be put in place.</u> - <u>Crossing points should be put in place for farmers crossing the road with livestock.</u> 	<p><u>Degradation of the gravel access road:</u></p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Quality of the living environment impacts	Disruption of daily living	Operational phase	<p><u>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</u></p> <ul style="list-style-type: none"> - <u>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.</u> 	Road Noise Dust

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
				<ul style="list-style-type: none"> · <u>Speed limits should be put in place.</u> · <u>Crossing points should be put in place for farmers crossing the road with livestock.</u> 	
<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>Quality of the living environment impacts</p>	<p>Loss of sense of place</p>	<p>Operational phase</p>	<p><u>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</u></p> <ul style="list-style-type: none"> · <u>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.</u> · <u>Speed limits should be put in place.</u> · <u>Crossing points should be put in place for farmers crossing the road with livestock.</u> 	<p><u>Degradation of the gravel access road:</u></p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>Economic impacts and material well-being impacts</p>	<p>Decreased tourism potential in the surrounding area</p>	<p>Operational phase</p>	<p>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	<p>Degradation of the gravel access road:</p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>Economic impacts and material well-being impacts</p>	<p>Loss of property values</p>	<p>Operational phase</p>	<p>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	<p>Degradation of the gravel access road:</p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>Economic impacts and material well-being impacts</p>	<p>Job creation (minimal)</p>	<p>Operational phase</p>	<p>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.</p>	<p>Degradation of the gravel access road: • NRTA, 1996 The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>
<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>Economic impacts and material well-being impacts</p>	<p>Supply of building materials to the local building and construction industry.</p>	<p>Operational phase</p>	<p>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.</p>	<p>-</p>

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
				<ul style="list-style-type: none"> · <u>Crossing points should be put in place for farmers crossing the road with livestock.</u> 	
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Cultural impacts	Negative influence on an area of tourism importance	Operational phase	<p>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	-

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>Family and community impacts</p>	<p>Increased animosity towards the sand mines</p>	<p>Operational phase</p>	<p>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.</p>	<p><u>Degradation of the gravel access road:</u> • NRTA, 1996 The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>
<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>Family and community impacts</p>	<p>Decreased level of satisfaction with the living environment</p>	<p>Operational phase</p>	<p>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.</p>	<p><u>Degradation of the gravel access road:</u> • NRTA, 1996 The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
				<ul style="list-style-type: none"> <u>Crossing points should be put in place for farmers crossing the road with livestock.</u> 	
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Institutional, legal, political and equity impacts	Increased pressure on existing infrastructure	Operational phase	<p><u>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</u></p> <ul style="list-style-type: none"> <u>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.</u> <u>Speed limits should be put in place.</u> <u>Crossing points should be put in place for farmers crossing the road with livestock.</u> 	<p><u>Degradation of the gravel access road:</u></p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>
SCREENING OF SAND AND AGGREGATES	Dust nuisance due to loading and transportation of the material	Should dust levels become excessive it may have an impact on surrounding landowners.	Operational phase	<u>Control:</u> Dust suppression	<u>Dust Handling:</u> • NEM:AQA, 2004 Regulation 6(1)
	Noise nuisance caused by crushing plant.	The noise impact must be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	<u>Control:</u> Noise Control Measures	<u>Noise Handling:</u> _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Erosion of returned topsoil after rehabilitation	Soil erosion, may affect the agricultural potential of the site after closure of the mine.	Decommissioning phase	<u>Control:</u> Soil Management and seeding of mined areas	<u>Erosion of returned topsoil after rehabilitation:</u> <ul style="list-style-type: none"> • NEM:BA, 2004 • MPRDA, 2008 • The replacement of the topsoil and sloping of the area is of utmost importance to ensure the effective future use of the area for agricultural purposes. • Rehabilitation cannot be considered complete until the first cover crop is well established.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Dust nuisance caused during landscaping activities	Should dust levels become excessive it may have an impact on surrounding landowners.	Decommissioning phase	<u>Control:</u> Dust Suppresion	<u>Dust Handling:</u> <ul style="list-style-type: none"> • NEM:AQA, 2004 Regulation 6(1)
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Health and safety risk posed by un-sloped areas	The impact on health and safety due to un-sloped areas will be contained within the site boundary.	Decommissioning phase	<u>Control:</u> Sloping of areas upon decommissioning	-
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Noise nuisance caused by machinery	Should noise levels become excessive it may have an impact on surrounding landowners.	Decommissioning phase	<u>Control:</u> Noise Management	<u>Noise Handling:</u> <ul style="list-style-type: none"> _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Decommissioning phase	<u>Control:</u> Waste Management	<u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u> <ul style="list-style-type: none"> • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
					contamination. The precautionary principal must apply.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Loss of reinstated topsoil due to the absence of vegetation	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Decommissioning phase	<u>Control:</u> Stormwater Management	<u>Erosion of returned topsoil after rehabilitation:</u> <ul style="list-style-type: none"> • NEM:BA, 2004 • MPRDA, 2008 • The replacement of the topsoil and sloping of the area is of utmost importance to ensure the effective future use of the area for agricultural purposes. • Rehabilitation cannot be considered complete until the first cover crop is well established.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Weeds and invader plant infestation of the area	Biodiversity	Decommissioning phase	<u>Control & Remedy:</u> Implementation of Weed Control	Management of weed- or invader plants: <ul style="list-style-type: none"> • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Health and safety risk posed by un-sloped areas	Noise	Decommissioning phase	<u>Control:</u> Sloping of areas upon decommissioning	-
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Health and safety risk posed by un-sloped areas	Dust	Decommissioning phase	<u>Control:</u> Sloping of areas upon decommissioning	-
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Health and safety risk posed by un-sloped areas	Crime	Decommissioning phase	<u>Control:</u> Sloping of areas upon decommissioning	-

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
REHABILITATION)					
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Health and safety risk posed by un-sloped areas	Road	Decommissioning phase	<u>Control:</u> Sloping of areas upon decommissioning	-
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Quality of the living environment impacts	Disruption of daily living	Decommissioning phase	<u>Control:</u> Sloping of areas upon decommissioning	-
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Quality of the living environment impacts	Loss of sense of place	Decommissioning phase	<u>Control:</u> Sloping of areas upon decommissioning	-
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Economic and material well-being impacts (negative)	Loss of employment opportunities	Decommissioning phase	<u>Control:</u> Sloping of areas upon decommissioning	-
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Economic and material well-being impacts (negative)	Increased tourism potential for the mined area and surrounds.	Decommissioning phase	<u>Control:</u> Sloping of areas upon decommissioning	-
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Cultural impacts	Ceasing of activities that could potentially have a negative influence on an area of tourism importance.	Decommissioning phase	<u>Control:</u> Sloping of areas upon decommissioning	-
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Family and community impacts	Increased level of satisfaction with the living environment	Decommissioning phase	<u>Control:</u> Sloping of areas upon decommissioning	-
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Institutional, legal, political and equity impacts	Decreased demand on existing infrastructure	Decommissioning phase	<u>Control:</u> Sloping of areas upon decommissioning	-

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
REHABILITATION)					

f) Impact Management Actions

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

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
whether listed or not listed	(Including the potential impacts for cumulative impacts)	(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)		
(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc. Etc.)	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	E.g. Modify through alternative method. Control through noise control. Control through management and monitoring. Remedy through rehabilitation.		
DEMARICATION OF SITE WITH VISIBLE BEACONS.	No impact could be identified other than the beacons being outside the boundaries of the approved processing area.	N/A	Processing of the waste rock/stone is only allowed within the boundaries of the approved processing area. • MHSA, 1996 • OHSA, 1993	Beacons need to be in place throughout the life of the activity.
ESTABLISHMENT OF TEMPORARY OFFICE AND ABLUTION INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	If the infrastructure is established within the boundaries of the approved mining area, no impact could be identified.	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.	Construction / Site Establishment phase
ESTABLISHMENT OF TEMPORARY OFFICE AND ABLUTION INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Potential Increase of Crime	Control through proper site management	N/A	Construction / Site Establishment phase

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
STRIPPING AND STOCKPILING OF TOPSOIL	Visual impact due to removal of topsoil.	<u>Control:</u> Implementation of proper housekeeping	<u>Land use zoning:</u> • Free State LUPA • Ngwathe Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase
STRIPPING AND STOCKPILING OF TOPSOIL	Dust nuisance caused by the disturbance of soil.	<u>Control:</u> Dust suppression	<u>Dust Handling:</u> • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	<u>Control:</u> Noise control measures	<u>Noise Handling:</u> NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	Infestation of the topsoil heaps by weeds and invader plants.	<u>Control & Remedy:</u> Implementation of weed control and weed/invader plant management plan	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014.	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of topsoil due to incorrect storm water management	<u>Control:</u> Storm water management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes.	Throughout operational phases
STRIPPING AND STOCKPILING OF TOPSOIL	Contamination of area with hazardous waste materials	<u>Control:</u> Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			taken to prevent contamination. The precautionary principal must apply.	
STRIPPING AND STOCKPILING OF TOPSOIL	Alteration to Topography	<u>Control:</u> Storm water management	<u>Negative impact on biodiversity of the area:</u> NEM:BA, 2004	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of natural vegetation	<u>Control:</u> Management of buffer areas and demarcation of work areas. <u>Modify:</u> Consider use of a less sensitive area	<u>Negative impact on biodiversity of the area (Site Alternative 1):</u> • NEM:BA, 2004	Throughout operational phases
	Soil erosion due to absence of vegetation	<u>Control:</u> Proper site management.	<u>Loss of soil due to un-vegetated areas:</u> • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational and decommissioning phases
EXCAVATION	Visual intrusion associated with the excavation activities	<u>Control:</u> Implementation of proper housekeeping	<u>Land use zoning:</u> • Free State LUPA • Ngwathe Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase
EXCAVATION	Dust nuisance due to excavation activities	<u>Control:</u> Dust Suppression	<u>Dust Handling:</u> • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
EXCAVATION	Noise nuisance generated by excavation equipment	<u>Control:</u> Noise Control Measures	<u>Noise Handling:</u> _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
EXCAVATION	Contamination of surface or groundwater due to	<u>Control:</u> Measures will be implemented as	-	Throughout operational and decommissioning

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	effluent runoff from excavation area	subscribed by DWS		phases
EXCAVATION	Unsafe working conditions for employees	<u>Control:</u> Implementation of safety control measures	<u>The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure.</u> • MHS, 1996 • OHS, 1993	Throughout operational and decommissioning phases
EXCAVATION	Negative impact on the fauna and flora of the area	<u>Control:</u> Implementation of fauna protection measures	<u>Negative impact on fauna that may enter the area:</u> • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phases
EXCAVATION	Contamination of area with hydrocarbons or hazardous waste materials	<u>Control:</u> Waste Management	<u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u> • NWA, 1998 • NEM: WA, 2008 Every precaution must be taken to prevent contamination. The precautionary principal must apply	Throughout operational and decommissioning phases
EXCAVATION	Weed and invader plant infestation of the area	<u>Control & Remedy:</u> Implementation of Weed Control	<u>Management of weed- or invader plants:</u> • The National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014.	Throughout operational and decommissioning phases
EXCAVATION	Potential impact of mining activities on the runoff and infiltration of storm water.	<u>Control:</u> Implement storm water control measures. Measures will be implemented as subscribed by DWS.	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil	Throughout operational phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			is of utmost importance to ensure the effective future use of the area for agricultural purposes.	
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Dust nuisance due to loading and transportation of the material	<u>Control:</u> Dust suppression	<u>Dust Handling:</u> • NEM:AQA, 2004 Regulation 6(1). All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
	Impact on the access roads	<u>Control & Remedy:</u> Road management	<u>Degradation of the gravel access road:</u> • NRTA, 1996 The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.	Throughout operational and decommissioning phases
	Noise nuisance caused by vehicles	<u>Control:</u> Noise control measures	<u>Noise Handling:</u> _ NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
	Contamination of area with hazardous waste materials	<u>Control:</u> Waste Management	<u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u> • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	0

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	Health and social well-being impacts	<u>Noise Moniotng</u>	<u>Noise Handling:</u> • NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
	Health and social well-being impacts	-	<u>Dust Handling:</u> • NEM:AQA, 2004 Regulation 6(1). All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
	Health and social well-being impacts	<u>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</u> • <u>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.</u> • <u>Speed limits should be put in place.</u> • <u>Crossing points should be put in place for farmers crossing the road with livestock.</u>	<u>Degradation of the gravel access road:</u> • NRTA, 1996 The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	Quality of the living environment impacts	<p>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	Road Noise Dust	Throughout operational and decommissioning phases
	Quality of the living environment impacts	<p>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	<p>Degradation of the gravel access road:</p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	Economic impacts and material well-being impacts	<p>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	<p>Degradation of the gravel access road:</p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases
	Economic impacts and material well-being impacts	<p>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	<p>Degradation of the gravel access road:</p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases
	Economic impacts and material well-being impacts	<p>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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 	<p>Degradation of the gravel access road:</p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
		<p><u>the road.</u></p> <ul style="list-style-type: none"> · <u>Speed limits should be put in place.</u> · <u>Crossing points should be put in place for farmers crossing the road with livestock.</u> 		
	Economic impacts and material well-being impacts	<p><u>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</u></p> <ul style="list-style-type: none"> · <u>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.</u> · <u>Speed limits should be put in place.</u> · <u>Crossing points should be put in place for farmers crossing the road with livestock.</u> 	-	Throughout operational and decommissioning phases
	Cultural impacts	<p><u>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</u></p> <ul style="list-style-type: none"> · <u>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.</u> · <u>Speed limits should be put in place.</u> · <u>Crossing points should be put in place for farmers crossing the road with livestock.</u> 	-	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	Family and community impacts	<p>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	<p>Degradation of the gravel access road:</p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases
	Family and community impacts	<p>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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. 	<p>Degradation of the gravel access road:</p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases
	Institutional, legal, political and equity impacts	<p>The negative impacts associated with heavy vehicles frequenting the S171 road can be mitigated to a degree as follows:</p> <ul style="list-style-type: none"> · 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 	<p>Degradation of the gravel access road:</p> <ul style="list-style-type: none"> • NRTA, 1996 <p>The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.</p>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
		<u>the road.</u> • <u>Speed limits should be put in place.</u> • <u>Crossing points should be put in place for farmers crossing the road with livestock.</u>		
SCREENING OF SAND AND AGGREGATES	Dust nuisance due to loading and transportation of the material	<u>Control:</u> Dust suppression	<u>Dust Handling:</u> • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
	Noise nuisance caused by crushing plant.	<u>Control:</u> Noise Control Measures	<u>Noise Handling:</u> _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Erosion of returned topsoil after rehabilitation	<u>Control:</u> Soil Management and seeding of mined areas	<u>Erosion of returned topsoil after rehabilitation:</u> • NEM:BA, 2004 • MPRDA, 2008 • The replacement of the topsoil and sloping of the area is of utmost importance to ensure the effective future use of the area for agricultural purposes. • Rehabilitation cannot be considered complete until the first cover crop is well established.	Throughout decommissioning phases
	Dust nuisance caused during landscaping activities	<u>Control:</u> Dust Suppression	<u>Dust Handling:</u> • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
	Health and safety risk posed by un-sloped areas	<u>Control:</u> Sloping of areas upon decommissioning	-	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
	Noise nuisance caused by machinery	<u>Control:</u> Noise Management	<u>Noise Handling:</u> _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
	Contamination of area with hazardous waste materials	<u>Control:</u> Waste Management	<u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u> • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
	Loss of reinstated topsoil due to the absence of vegetation	<u>Control:</u> Stormwater Management	<u>Erosion of returned topsoil after rehabilitation:</u> • NEM:BA, 2004 • MPRDA, 2008 • The replacement of the topsoil and sloping of the area is of utmost importance to ensure the effective future use of the area for agricultural purposes. • Rehabilitation cannot be considered complete until the first cover crop is well established.	Throughout operational and decommissioning phases
	Weeds and invader plant infestation of the area	<u>Control & Remedy:</u> Implementation of Weed Control	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014.	Throughout operational and decommissioning phases
	Health and safety risk posed by un-sloped areas	<u>Control:</u> Sloping of areas upon decommissioning	-	Throughout operational and decommissioning phases
	Health and safety risk posed by un-sloped areas	<u>Control:</u> Sloping of areas upon	-	Throughout operational and decommissioning

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
		decommissioning		phases
	Health and safety risk posed by un-sloped areas	<u>Control:</u> Sloping of areas upon decommissioning	-	Throughout operational and decommissioning phases
	Health and safety risk posed by un-sloped areas	<u>Control:</u> Sloping of areas upon decommissioning	-	Throughout operational and decommissioning phases
	Quality of the living environment impacts	<u>Control:</u> Sloping of areas upon decommissioning	-	Throughout operational and decommissioning phases
	Quality of the living environment impacts	<u>Control:</u> Sloping of areas upon decommissioning	-	Throughout operational and decommissioning phases
	Economic and material well-being impacts (negative)	<u>Control:</u> Sloping of areas upon decommissioning	-	Throughout operational and decommissioning phases
	Economic and material well-being impacts (negative)	<u>Control:</u> Sloping of areas upon decommissioning	-	Throughout operational and decommissioning phases
	Cultural impacts	<u>Control:</u> Sloping of areas upon decommissioning	-	Throughout operational and decommissioning phases
	Family and community impacts	<u>Control:</u> Sloping of areas upon decommissioning	-	Throughout operational and decommissioning phases
	Institutional, legal, political and equity impacts	<u>Control:</u> Sloping of areas upon decommissioning	-	Throughout operational and decommissioning phases

i) Financial Provision

(1) Determination of the amount of Financial Provision.

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

The primary objective is to obtain a closure certificate at the end of the life of the mine at minimum cost and in as short a time period as possible whilst still complying with the requirements of the Minerals and Petroleum Resources Development Act. To realise this, the following objectives must be achieved:

- Remove all temporary infrastructure and waste from the site as per the requirements of this EMPR and of the Provincial Department of Mineral Regulation.
- Demolish / rehabilitate all roads with no post - mining use potential.
- Ensure that no threat to surface and underground water quality remains.
- Ensure that all permanent changes in topography are sustainable and do not cause erosion or the damming up of runoff.
- Shape and contour all disturbed areas in compliance with the EMPR.
- The stockpiled topsoil will be spread over the disturbed area to a depth of at least 500 mm.
- Make safe any dangerous excavations or subsidence on the surface.
- Rehabilitate all disturbed areas in compliance with the EMPR and of the Provincial Department of Mineral Regulation.
- Ensure that all rehabilitated areas are safe, stable and self-sustaining in terms of vegetation.
- Control of weeds and alien invasive plant species is an important aspect after topsoil replacement and seeding has been done in an area.
- Site management will implement an alien invasive plant management plan during the 12 months' aftercare period to address germination of problem plants in the area.
- The applicant will comply with the minimum closure objectives as prescribed by DMR.

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

The Draft Basic Assessment Report, included all the environmental objectives in relation to closure and will be made available for perusal of I&AP's and stakeholders. Any additional comments received during the commenting period was added to the Final Basic Assessment Report to be submitted to DMR for approval.

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

The requested rehabilitation plan is attached as Appendix D. Upon closure of the mining activity all infrastructure will be removed. The compacted areas will be ripped and levelled upon which the topsoil will be replaced. No permanent structures will remain upon closure of the site.

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

The rehabilitation of the mining area as indicated on the rehabilitation plan attached as Appendix D will comply with the minimum closure objectives as prescribed by DMR and detailed below, and therefore is deemed to be compatible:

Rehabilitation of the excavated area:

- Due to the impracticality of importing large volumes of fill to restore the mining area to its original topography, the rehabilitation option is to develop the mining into a minor landscape feature.
- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- No waste will be permitted to be deposited in the excavations.
- Once overburden, rocks and coarse natural materials has been dumped into the excavated area and profiled with acceptable contours and erosion control measures, topsoil shall be returned over the area.
- The area shall be fertilized to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

Rehabilitation of plant, office and service areas:

- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- Stockpiles will be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.
- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act [MPRDA], 2002 (Act No. 28 of 2002):
 - Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
 - The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.
- On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable / possible topsoil needs to be returned to its original depth over the area.
- Prior to replacing the topsoil, the material that was removed from these areas will be replaced in the same order as it originally occurred.
- The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

Final rehabilitation:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding and maintenance, and weed / alien clearing.
- All infrastructures, equipment, plant, and other items used during the mining period will be removed from the site.
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species regarded as weeds according to the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.
- Seeding of the area:
 - Once the pit slopes have been shaped and the soil replaced, the initial goal is to establish a good cover of a robust grass that will stabilise the soil and start the accumulation of soil organic carbon. This will be done using a combination of hydro seeding and physical planting of runners to apply a mix of commercial and indigenous species that includes both tufted and creeping species. The plants that were collected during the establishment and operational phases and kept in the designated area will be replanted.

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

The calculation of the quantum for financial provision was according to Section B of the working manual.

Mine type and saleable mineral by-product

According to Tables B.12, B.13 and B.14

Mine type	Sand
Saleable mineral by-product	None

Mine type	Gravel
Saleable mineral by-product	None

Primary Risk Class

According to Tables B.12 or B.13

Primary risk ranking	Class C
Revised risk ranking	N/A

Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine	Low
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Level of information

According to Step 4.1

Level of information available	Extensive
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Identification of closure components

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)

		Open-cast Mine	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	NO
2(A)	Demolition of steel buildings and structures	-	NO
2(B)	Demolition of reinforced concrete buildings and structures	-	NO
3	Rehabilitation of access roads Comment: Only the access road from the existing road to the mine area.	YES	
4(A)	Demolition and rehabilitation of electrified railway lines	-	NO
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	NO
5	Demolition of housing and facilities	-	NO
6	Opencast rehabilitation including final voids and ramps	YES	-
7	Sealing of shafts, adits and inclines	-	NO
8(A)	Rehabilitation of overburden and spoils	-	NO
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	NO
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	NO
9	Rehabilitation of subsided areas	-	NO
10	General surface rehabilitation, including grassing of all denuded areas	YES	-
11	River diversions	-	NO
12	Fencing	-	NO
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	NO
14	2 to 3 years of maintenance and aftercare	YES	-

Unit rates for closure components

According to Table B.6 master rates and multiplication factors for applicable closure components. The master rate from the DMR Master Rates table for financial provision of 2017 has been used.

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of processing plant and related structures	-	-

Component No.	Main description	Master rate	Multiplication factor
	(including overland conveyors and power lines)		
2(A)	Demolition of steel buildings and structures	-	-
2(B)	Demolition of reinforced concrete buildings and structures	-	-
3	Rehabilitation of access roads	36	-
4(A)	Demolition and rehabilitation of electrified railway lines	-	-
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	-
5	Demolition of housing and facilities	-	-
6	Opencast rehabilitation including final voids and ramps	212 440	0.04
7	Sealing of shafts, adits and inclines	-	-
8(A)	Rehabilitation of overburden and spoils		
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	-
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	-
9	Rehabilitation of subsided areas	-	-
10	General surface rehabilitation , including grassing of all denuded areas	112 192	1.00
11	River diversions	-	-
12	Fencing		
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	-
14	2 to 3 years of maintenance and aftercare	14 930	-

Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.00 (Flat)
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05 (Peri-Urban)

Calculation of closure costs**Table B.10 Template for Level 2: "Rules-base" assessment of the quantum for financial provision**

CALCULATION OF THE QUANTUM							
Mine:	Tja Naledi Beafase Investment Holding (Pty) Ltd			Location:	Barrage Bulk Sand Mine		
Evaluators:	Yolandie Greenmined Environmental	Coetzee	Date:	24/8/2017			
No.:	Description:	Unit:	Quantity	Master rate	Multiplication factor	Weighting factor 1	Amount (Rands)
			Step 4.5	Step 4.3	Step 4.3	Step 4.4	
1	Dismantling of processing plant & related structures (incl. overland conveyors & Power lines)	m ³	0.00	15.00	1.00	1.10	R 0.00
2 (A)	Demolition of steel buildings & Structures	m ²	0.00	203.00	1.00	1.10	R 0.00
2 (B)	Demolition of reinforced concrete buildings & structures	m ²	0.00	299.00	1.00	1.10	R 0.00
3	Rehabilitation of access roads	m ²	3000.00	36.00	1.00	1.10	R 118,800.00
4 (A)	Demolition & rehabilitation of electrified railway lines	m	0.00	352.00	1.00	1.10	R 0.00
4 (B)	Demolition & rehabilitation of non-electrified railway lines	m	0.00	192.00	1.00	1.10	R 0.00
5	Demolition of housing &/or administration facilities	m ²	0.00	405.00	1.00	1.10	R 0.00
6	Opencast rehabilitation including final voids & ramps	ha	1.00	212440.00	0.04	1.10	R 9,347.36
7	Sealing of shafts, adits & inclines	m ³	0.00	109.00	1.00	1.10	R 0.00
8 (A)	Rehabilitation of overburden & spoils	ha	1.30	141626.00	1.00	1.10	R 202,525.18
8 (B)	Rehabilitation of processing waste deposits & evaporation ponds (basic, salt producing waste)	ha	0.00	176393.00	1.00	1.10	R 0.00
8 (C)	Rehabilitation of processing waste deposits & evaporation ponds (acidic, metal-rich waste)	ha	0.00	512329.00	0.51	1.10	R 0.00
9	Rehabilitation of subsided areas	ha	0.00	118591.00	1.00	1.10	R 0.00
10	General surface rehabilitation	ha	0.00	112192.00	1.00	1.10	R 0.00
11	River diversions	ha	0.00	112192.00	1.00	1.10	R 0.00
12	Fencing	m		128.00	1.00	1.10	R 0.00
13	Water management	ha	0.00	42659.00	0.17	1.10	R 0.00
14	2 to 3 years of maintenance & aftercare	ha	9.90	14930.00	1.00	1.10	R 162,587.70
15 (A)	Specialist study					1.10	R 0.00
15 (B)	Specialist study					1.10	R 0.00

			R 493,260.24
Sub Total 1 (Sum of items 1 to 15 Above)			
Weighting factor 2 (step 4.4)		Change according to urban, peri-urban and remote	1.05
			R 517,923.25
		6.0% of Subtotal 1	R 31,075.40
2	Contingency	10.0% of Subtotal 1	R 51,792.33
			Sub Total 3
(Subtotal 1 plus sum of management & contingency)			R 600,790.97
			VAT (14%)
			R 84,110.74
(Subtotal 3 plus VAT)			GRAND TOTAL
			<u>R 684,901.71</u>

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total of **R 684 901.71**.

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

Herewith I, the person, whose name is stated below confirm that I am the person authorised to act as representative of the applicant in terms of the resolution submitted with the application. I, herewith confirm, that the company will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines.

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

- (a) Monitoring of Impact Management Actions**
- (b) Monitoring and reporting frequency**
- (c) Responsible persons**
- (d) Time period for implementing impact management actions**
- (e) Mechanisms for monitoring compliance**

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
whether listed or not listed			(FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	
(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc. Etc.)				

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
DEMARCATON OF SITE WITH VISIBLE BEACONS.	Maintenance of beacons	<ul style="list-style-type: none"> • Visible beacons need to be established at the corners of the processing area. • A 20m buffer area (if applicable) from any natural areas need to be demarcated. • A 30m buffer area from a watercourse needs to be demarcated if applicable. 	<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Ensure beacons are in place throughout the life of the activity. 	<ul style="list-style-type: none"> • Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
ESTABLISHMENT OF TEMPORARY OFFICE AND ABLUSTION INFRASTRUCTURE WITHIN	Media	N/A	Site Management	N/A

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
BOUNDARIES OF SITE.				
STRIPPING AND STOCKPILING OF TOPSOIL	Monitoring of visual impacts	<ul style="list-style-type: none"> • Ensure that the site have a neat appearance and is kept in good condition at all times. • Control the height of the stockpiles to minimize the visual impact on the surrounding environment. • Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status. 	Responsibility: <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: <ul style="list-style-type: none"> • Minimize the visual impact of the activity on the surrounding environment 	<ul style="list-style-type: none"> • Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL	Dust Monitoring: <ul style="list-style-type: none"> • The dust generated by the processing activities must be continuously 	Dust Handling and Monitoring: <ul style="list-style-type: none"> • Dust suppression equipment such as a water 	Responsibility: <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the 	Environmental Control Officer.

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	monitored, and addressed by the implementation of dust suppression methods.	car and water dispenser. The applicant already has this equipment available.	Environmental Control Officer. Role: <ul style="list-style-type: none"> • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. 	

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p>	<p>Noise Monitoring</p> <ul style="list-style-type: none"> The noise impact should be contained within the boundaries of the property, as it will represent the current activities. 	<p>Noise Handling and Monitoring:</p> <ul style="list-style-type: none"> Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition. Compliance with the appropriate legislation with respect to noise will be mandatory. 	<p>Responsibility:</p> <ul style="list-style-type: none"> Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> Ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. 	

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p>	<p>Management of weed or invader plants</p> <ul style="list-style-type: none"> • The presence of weed and/or invader plants must be continuously monitored, and any unwanted plants must be removed. 	<p>Management of weed or invader plants:</p> <ul style="list-style-type: none"> • Removal of weeds must be manually or by the use of an approved herbicide. 	<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Implement a weed and invader plant management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds. 	<ul style="list-style-type: none"> • Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
STRIPPING AND STOCKPILING OF TOPSOIL	Topsoil management	<p>Topsoil Handling:</p> <ul style="list-style-type: none"> • Excavating equipment to remove the first 500 mm of topsoil from the proposed work areas. The applicant already has this equipment available. • Berms to be made to direct storm- and runoff water around the stockpiled topsoil area. • Ensure that topsoil is being kept separate form overburden. 	<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Strip and stockpile the upper 500 mm of the soil and protect as topsoil. • Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. • Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. • Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. 	

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> • Topsoil heaps may not exceed 1.5 m in order to preserve microorganism within the topsoil. • Conduct the activity in accordance with the Best Practice Guideline for small-scale mining as stipulated by DWS. 	

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p>	<p>Waste Management:</p> <ul style="list-style-type: none"> • Management of waste must be a daily monitoring activity. • Hydrocarbon spills need to be cleaned immediately and the site manager must check compliance daily. 	<p>Waste Management:</p> <ul style="list-style-type: none"> • Closed containers for the storage of general of hazardous waste until waste is removed to the appropriate landfill site. • A hydrocarbon spill kit to enable sufficient clean-up of contaminated areas. • Drip trays must be available to place underneath equipment parked for the night. • Should a vehicle have a break down, it must be decommissioned immediately and removed 	<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litre closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either 	<ul style="list-style-type: none"> • Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		from site to be serviced. <ul style="list-style-type: none"> • Waste disposal register and file for the keeping of safe disposal records. • Ensure that hazardous substances if any are stored within a securely fenced area. 	for resale or for appropriate disposal at a recognized facility. <ul style="list-style-type: none"> • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. 	

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution. 	

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p>	<p>Loss of natural vegetation Protection of fauna</p>	<p>Management of buffer areas: <ul style="list-style-type: none"> • Site management has to ensure the use of visible beacons to demarcate the boundaries of the approved area. Protection of fauna: <ul style="list-style-type: none"> • Site management has to protect fauna that enters the processing area. </p>	<p>Responsibility: <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: <ul style="list-style-type: none"> • Contain all activities within the boundaries of the approved processing area. • Demarcate, signpost and manage the 20 m buffer area as no-go area around areas with natural vegetation. • Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for </p>	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			eggs or young.	

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p>	<p>Soil erosion: <ul style="list-style-type: none"> • Loss of reinstated topsoil after rehabilitation. </p>	<p>Erosion monitoring: <ul style="list-style-type: none"> • Grader to restore areas prone to soil erosion. • Planting of a cover crop to stabilize re-instated soil • Erosion prevention equipment. </p>	<p>Responsibility: <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role: <ul style="list-style-type: none"> • Control run-off water via temporary banks to ensure that accumulation of run-off does not cause down-slope erosion. • Only do topsoil spreading at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the </p> </p>	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			risk of heavy rainfall events is minimal. • Plant a cover crop immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. Fertilize the cover crop for optimum production. • Ensure rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation must not be considered complete until the first cover crop is well established. • Monitor all rehabilitated areas for erosion, and appropriately stabilized if any erosion occurs.	
STRIPPING AND STOCKPILING OF TOPSOIL	Protection of Cultural and Heritage Artefacts	Should any artefacts be discovered the area needs to be demarcated and work needs to be stopped.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>Role:</p> <ul style="list-style-type: none"> • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga. 	<p>monitoring by site management.</p> <ul style="list-style-type: none"> • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
EXCAVATION	Monitoring of visual impacts	<ul style="list-style-type: none"> • Ensure that the site have a neat appearance and is kept in good condition at all times. • Control the height of the stockpiles to minimize the 	<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. 	<ul style="list-style-type: none"> • Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		visual impact on the surrounding environment. • Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status.	Role: • Minimize the visual impact of the activity on the surrounding environment	monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
EXCAVATION	Dust Monitoring: • The dust generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Dust Handling and Monitoring: • Dust suppression equipment such as a water car and water dispenser. The applicant already has this equipment available.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Control the liberation of dust into the surrounding environment by the use of; inter	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			alia, water spraying and/or other dust-allaying agents. <ul style="list-style-type: none"> • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. 	fallout dust monitoring consultant. <ul style="list-style-type: none"> • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental
EXCAVATION	Noise Monitoring <ul style="list-style-type: none"> • The noise impact should be contained within the boundaries of the property, as it will represent the 	Noise Handling and Monitoring: <ul style="list-style-type: none"> • Site manager to ensure that the vehicles are equipped with silencers and 	Responsibility: <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	current activities.	maintained in a road worthy condition. • Compliance with the appropriate legislation with respect to noise will be mandatory.	Role: • Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the processing area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
EXCAVATION	Health and safety risk	• Health and safety Management:	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			Role: <ul style="list-style-type: none"> • Ensure workers have access to the correct personal protection equipment (PPE) as required by law. • Manage all operations in compliance with the Occupational Health and Safety Act as well as the Mine Health and Safety Act. 	management. <ul style="list-style-type: none"> • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control
EXCAVATION	Loss of natural vegetation Protection of fauna	Management of buffer areas: <ul style="list-style-type: none"> • Site management has to ensure the use of visible beacons to demarcate the boundaries of the approved area. 	Responsibility: <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: <ul style="list-style-type: none"> • Contain all activities within the boundaries of 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		Protection of fauna: • Site management has to protect fauna that enters the processing area.	the approved processing area. • Demarcate, signpost and manage the 20 m buffer area as no-go area around areas with natural vegetation. • Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young.	monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

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<p>EXCAVATION</p>	<p>Waste Management:</p> <ul style="list-style-type: none"> • Management of waste must be a daily monitoring activity. • Hydrocarbon spills need to be cleaned immediately and the site manager must check compliance daily. 	<p>Waste Management:</p> <ul style="list-style-type: none"> • Closed containers for the storage of general of hazardous waste until waste is removed to the appropriate landfill site. • A hydrocarbon spill kit to enable sufficient clean-up of contaminated areas. • Drip trays must be available to place underneath equipment parked for the night. • Should a vehicle have a break down, it must be decommissioned immediately and removed 	<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litre closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either 	<ul style="list-style-type: none"> • Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		from site to be serviced. <ul style="list-style-type: none"> • Waste disposal register and file for the keeping of safe disposal records. • Ensure that hazardous substances if any are stored within a securely fenced area. 	for resale or for appropriate disposal at a recognized facility. <ul style="list-style-type: none"> • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. 	

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution. 	

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EXCAVATION	Management of weed or invader plants • The presence of weed and/or invader plants must be continuously monitored, and any unwanted plants must be removed.	Management of weed or invader plants: • Removal of weeds must be manually or by the use of an approved herbicide.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Implement a weed and invader plant management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer
EXCAVATION	Protection of Cultural and Heritage Artefacts	Should any artefacts be discovered the area needs to be demarcated and work needs to be stopped.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the	• Throughout Construction, Operational and Decommissioning Phase

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			Environmental Control Officer. Role: <ul style="list-style-type: none"> • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga. 	<ul style="list-style-type: none"> • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS	Dust Monitoring: <ul style="list-style-type: none"> • The dust generated by the processing activities must be continuously monitored, and addressed 	Dust Handling and Monitoring: <ul style="list-style-type: none"> • Dust suppression equipment such as a water car and water dispenser. 	Responsibility: <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance

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	by the implementation of dust suppression methods.	The applicant already has this equipment available.	Role: <ul style="list-style-type: none"> • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. 	monitoring by site management. <ul style="list-style-type: none"> • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental

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	<p>Management of Access Roads</p> <ul style="list-style-type: none"> The condition of the access road must be continuously monitored. 	<p>Management of Access Roads:</p> <ul style="list-style-type: none"> Dust suppression equipment such as a water car and dispenser. Grader to restore the road surface when needed. 	<p>Responsibility:</p> <ul style="list-style-type: none"> Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> Divert storm water around the access roads to prevent erosion. Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. Repair rutting and erosion of the access roads caused by the processing activities 	<ul style="list-style-type: none"> Throughout Construction, Operational and Decommissioning Phase Daily compliance monitoring by site management. Quarterly compliance monitoring of site by an Environmental Control Officer. Annual compliance monitoring of site by an Independent Environmental Control

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	Noise Monitoring • The noise impact should be contained within the boundaries of the property, as it will represent the current activities.	Noise Handling and Monitoring: • Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition. • Compliance with the appropriate legislation with respect to noise will be mandatory.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the processing area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
	Waste Management:	Waste Management:	Responsibility:	• Throughout Operational

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	<ul style="list-style-type: none"> • Management of waste must be a daily monitoring activity. • Hydrocarbon spills need to be cleaned immediately and the site manager must check compliance daily. 	<ul style="list-style-type: none"> • Closed containers for the storage of general of hazardous waste until waste is removed to the appropriate landfill site. • A hydrocarbon spill kit to enable sufficient clean-up of contaminated areas. • Drip trays must be available to place underneath equipment parked for the night. • Should a vehicle have a break down, it must be decommissioned immediately and removed from site to be serviced. 	<ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litre closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a 	<p>and Decommissioning Phase</p> <ul style="list-style-type: none"> • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

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		<ul style="list-style-type: none"> • Waste disposal register and file for the keeping of safe disposal records. • Ensure that hazardous substances if any are stored within a securely fenced area. 	<p>recognized facility.</p> <ul style="list-style-type: none"> • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as 	

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			indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution.	

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<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>Noise Monitoring</p> <ul style="list-style-type: none"> The noise impact should be contained within the boundaries of the property, as it will represent the current activities. 	<p>Noise Handling and Monitoring:</p> <ul style="list-style-type: none"> Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition. Compliance with the appropriate legislation with respect to noise will be mandatory. 	<p>Responsibility:</p> <ul style="list-style-type: none"> Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> Ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. 	<ul style="list-style-type: none"> Throughout Construction, Operational and Decommissioning Phase Daily compliance monitoring by site management. Quarterly compliance monitoring of site by an Environmental Control Officer. Annual compliance monitoring of site by an Independent Environmental Control Officer.

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<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>Dust Monitoring: • The dust generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.</p>	<p>Dust Handling and Monitoring: • Dust suppression equipment such as a water car and water dispenser. The applicant already has this equipment available.</p>	<p>Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer.</p> <p>Role: • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.</p>	<p>• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental</p>

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<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>Management of Access Roads</p> <ul style="list-style-type: none"> The condition of the access road must be continuously monitored. 	<p>Road Condition</p>	<p>Responsibility:</p> <ul style="list-style-type: none"> Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> Divert storm water around the access roads to prevent erosion. Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. Repair rutting and erosion of the access roads caused by the processing activities 	<ul style="list-style-type: none"> Throughout Construction, Operational and Decommissioning Phase Daily compliance monitoring by site management. Quarterly compliance monitoring of site by an Environmental Control Officer. Annual compliance monitoring of site by an Independent Environmental Control

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<p>TRANSPORTATION OF SAND AND AGGREGATES FROM STOCKPILE AREA TO CLIENTS</p>	<p>Dust Monitoring. Noise Monitoring. Traffic Monitoring. Crime Monitoring.</p>	<p>Dust Monitoring. Noise Monitoring. Traffic Monitoring. Crime Monitoring.</p>	<p>Responsibility: <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: <ul style="list-style-type: none"> • Divert storm water around the access roads to prevent erosion. • Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access roads caused by the processing activities </p>	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

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			<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Divert storm water around the access roads to prevent erosion. • Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access roads caused by the processing activities 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

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	N/A	N/A	<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Divert storm water around the access roads to prevent erosion. • Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access roads caused by the processing activities 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

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			<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Divert storm water around the access roads to prevent erosion. • Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access roads caused by the processing activities 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

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			<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Divert storm water around the access roads to prevent erosion. • Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access roads caused by the processing activities 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

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			<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Divert storm water around the access roads to prevent erosion. • Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access roads caused by the processing activities 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

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			<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Divert storm water around the access roads to prevent erosion. • Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access roads caused by the processing activities 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

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			<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Divert storm water around the access roads to prevent erosion. • Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access roads caused by the processing activities 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

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			<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Divert storm water around the access roads to prevent erosion. • Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access roads caused by the processing activities 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

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<p>SCREENING OF SAND AND AGGREGATES</p>	<p>Dust Monitoring: • The dust generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.</p>	<p>Dust Handling and Monitoring: • Dust suppression equipment such as a water car and water dispenser. The applicant already has this equipment available.</p>	<p>Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer.</p> <p>Role: • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust.</p>	<p>• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an</p>

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	<p>Noise Monitoring</p> <ul style="list-style-type: none"> The noise impact should be contained within the boundaries of the property, as it will represent the current activities. 	<p>Noise Handling and Monitoring:</p> <ul style="list-style-type: none"> Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition. Compliance with the appropriate legislation with respect to noise will be mandatory. 	<ul style="list-style-type: none"> Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. <p>Responsibility:</p> <ul style="list-style-type: none"> Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> Ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. Ensure that all project related vehicles are 	<p>Independent Environmental</p> <ul style="list-style-type: none"> Throughout Construction, Operational and Decommissioning Phase Daily compliance monitoring by site management. Quarterly compliance monitoring of site by an Environmental Control Officer. Annual compliance monitoring of site by an

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	Independent Environmental Control Officer.

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<p>SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)</p>	<p>Topsoil management</p>	<p>Topsoil Handling:</p> <ul style="list-style-type: none"> • Excavating equipment to remove the first 500 mm of topsoil from the proposed work areas. The applicant already has this equipment available. • Berms to be made to direct storm- and runoff water around the stockpiled topsoil area. • Ensure that topsoil is being kept separate form overburden. 	<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Strip and stockpile the upper 500 mm of the soil and protect as topsoil. • Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. • Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. • Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> • Topsoil heaps may not exceed 1.5 m in order to preserve microorganism within the topsoil. • Conduct the activity in accordance with the Best Practice Guideline for small-scale mining as stipulated by DWS. 	

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	<p>Dust Monitoring:</p> <ul style="list-style-type: none"> The dust generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods. 	<p>Dust Handling and Monitoring:</p> <ul style="list-style-type: none"> Dust suppression equipment such as a water car and water dispenser. The applicant already has this equipment available. 	<p>Responsibility:</p> <ul style="list-style-type: none"> Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. Dampen the stockpiles during periods of high wind spells. Assess effectiveness of dust suppression equipment. Limit speed on the access roads to 40km/h to prevent the generation of excess dust. 	<ul style="list-style-type: none"> Throughout Construction, Operational and Decommissioning Phase Daily compliance monitoring by site management. Monthly compliance monitoring of site by fallout dust monitoring consultant. Quarterly compliance monitoring of site by an Environmental Control Officer. Annual compliance monitoring of site by an

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. 	Independent Environmental
	Health and safety risk	<ul style="list-style-type: none"> • Health and safety Management: 	Responsibility: <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: <ul style="list-style-type: none"> • Ensure workers have access to the correct personal protection equipment (PPE) as required by law. • Manage all operations in compliance with the Occupational Health and Safety Act as well as the Mine Health and Safety Act. 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
				Independent Environmental Control
	Noise Monitoring • The noise impact should be contained within the boundaries of the property, as it will represent the current activities.	• Stocked first aid box.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the processing area. • Ensure that all project related vehicles are	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	Independent Environmental Control Officer.
	Waste Management: <ul style="list-style-type: none"> • Management of waste must be a daily monitoring activity. • Hydrocarbon spills need to be cleaned immediately and the site manager must check compliance daily. 	<ul style="list-style-type: none"> • Level 1 certified first aider 	Responsibility: <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: <ul style="list-style-type: none"> • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litre closed container/bin inside the emergency service area. 	<ul style="list-style-type: none"> • Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

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			<ul style="list-style-type: none"> • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the 	Officer.

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. <ul style="list-style-type: none"> • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution. 	
	Topsoil management	<ul style="list-style-type: none"> • All appointments in terms of the Mine Health and Safety Act. 	Responsibility: <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance

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			<p>Role:</p> <ul style="list-style-type: none"> • Strip and stockpile the upper 500 mm of the soil and protect as topsoil. • Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. • Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. • Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. • Topsoil heaps may not exceed 1.5 m in order to preserve microorganism within the topsoil. • Conduct the activity in accordance with the Best Practice Guideline for small-scale mining 	<p>monitoring by site management.</p> <ul style="list-style-type: none"> • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			as stipulated by DWS.	
	Management of weed or invader plants • The presence of weed and/or invader plants must be continuously monitored, and any unwanted plants must be removed.	Management of weed or invader plants: • Removal of weeds must be manually or by the use of an approved herbicide.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Implement a weed and invader plant management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer

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	<p>Noise Monitoring</p> <ul style="list-style-type: none"> The noise impact should be contained within the boundaries of the property, as it will represent the current activities. 	<p>Noise Handling and Monitoring:</p> <ul style="list-style-type: none"> Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition. Compliance with the appropriate legislation with respect to noise will be mandatory. 	<p>Responsibility:</p> <ul style="list-style-type: none"> Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> Ensure workers have access to the correct personal protection equipment (PPE) as required by law. Manage all operations in compliance with the Occupational Health and Safety Act as well as the Mine Health and Safety Act. 	<ul style="list-style-type: none"> Throughout Construction, Operational and Decommissioning Phase Daily compliance monitoring by site management. Quarterly compliance monitoring of site by an Environmental Control Officer. Annual compliance monitoring of site by an Independent Environmental Control

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	Dust	Dust	<p>Responsibility:</p> <ul style="list-style-type: none"> • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Ensure workers have access to the correct personal protection equipment (PPE) as required by law. • Manage all operations in compliance with the Occupational Health and Safety Act as well as the Mine Health and Safety Act. 	<ul style="list-style-type: none"> • Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

NAME OF ACTIVITY	IMPACTS REQUIREING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	Crime	Crime	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure workers have access to the correct personal protection equipment (PPE) as required by law. • Manage all operations in compliance with the Occupational Health and Safety Act as well as the Mine Health and Safety Act.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control
	Access Road	Road Condition	Responsibility: • Site Manager to ensure compliance with the	• Throughout Construction, Operational

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			<p>guidelines as stipulated in the EMPR.</p> <ul style="list-style-type: none"> • Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> • Ensure workers have access to the correct personal protection equipment (PPE) as required by law. • Manage all operations in compliance with the Occupational Health and Safety Act as well as the Mine Health and Safety Act. 	<p>and Decommissioning Phase</p> <ul style="list-style-type: none"> • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

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	Health and safety risk	<ul style="list-style-type: none"> Health and safety Management: 	<p>Responsibility:</p> <ul style="list-style-type: none"> Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. <p>Role:</p> <ul style="list-style-type: none"> Ensure workers have access to the correct personal protection equipment (PPE) as required by law. Manage all operations in compliance with the Occupational Health and Safety Act as well as the Mine Health and Safety Act. 	<ul style="list-style-type: none"> Throughout Construction, Operational and Decommissioning Phase Daily compliance monitoring by site management. Quarterly compliance monitoring of site by an Environmental Control Officer. Annual compliance monitoring of site by an Independent Environmental Control

(f) Indicate the frequency of the submission of the performance assessment/environmental audit report.

The Mineral and Petroleum Resources Development Regulations stipulates that performance assessment reporting must be done annually. The applicant commits to submitting the performance assessment reports of the proposed processing activity annually to DMR for perusal.

(g) Environmental Awareness Plan

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

Once mining of the proposed area starts a copy of the Basic Assessment Report and Environmental Management Programme report will be handed to the site manager during the site establishment meeting. Issues such as topsoil handling, site clearance, fire principals and hazardous waste handling will be discussed. An induction meeting will be held with all the site workers to inform them of the Basic Rules of Conduct with regard to the environment.

The purpose of this section is to outline the methodology that will be used to educate the mine's employees and contractors of any environmental risks associated with their work and the manner in which these risks must be dealt with so as to avoid pollution and minimize the degradation of the environment.

Training will also address the specific measures and actions as listed in the EMPR. This Environmental Awareness Plan (EAP) is intended to supplement the Safety, Health and Environmental (SHE) training and awareness requirements.

The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments. An Environmental Control Officer needs to check compliance of the mining activities to the management programmes described in the EMPR.

Training Needs

A training needs analysis will be performed through all levels of the organization including those within the administration, plant and mining worker sectors. Each of the categories / levels of the organization have different responsibilities and roles, accordingly different knowledge requirements are applicable. These are summarized in Table 27 below.

After the training needs have been identified, it is the responsibility of the SHE Office to ensure that personnel attend the relevant identified training.

Table 27: Environmental Awareness Plan

OCCUPATION CATEGORY	ENVIRONMENTAL MANAGEMENT RESPONSIBILITY / ROLE	REQUIRED KNOWLEDGE AND INPUT	TRAINING REQUIRED	INTERVAL
Senior Management including Process Managers and Head of Department	Managing the Social & Environmental Assessment & Management System (SEAMS), and the Safety, Health & Environmental (SHE) Management System	Understanding the purpose of the SEAMS and SHE Management System	General in-house, management training	Once off
		Knowledge of the significant impacts as described in the EIA/EMP during the various phases		
		Knowledge of the commitments made in the EMP relevant to the various phases		
		Setting and reviewing the mine’s Environmental objectives		
		Directing the SEAMS and SHE management system, and monitoring their progress	Training on the legal register	Once off
		Accessing the legal register and searching for details		
Emergency preparedness and response				
Environmental Management Representative, SHE Officer & Internal Auditor	Managing the SEAMS and the SHE Management System Monitoring and auditing	Understanding the purpose of the SEAMS and SHE Management System	General in-house, management training	Once off
		Knowledge of the significant impacts as described in the EIA/EMP during the various phases		
		Knowledge of the commitments made in the EMP relevant to the various phases		
		Directing the SEAMS and SHE management system, and monitoring their progress		
		Current knowledge of South African regulatory requirements, best practice guidelines and applicable legislation	Training on the legal register	On going
		Emergency preparedness and response		



OCCUPATION CATEGORY	ENVIRONMENTAL MANAGEMENT RESPONSIBILITY / ROLE	REQUIRED KNOWLEDGE AND INPUT	TRAINING REQUIRED	INTERVAL
		Knowledge in spill management, stockpile management, discard management, water management and waste management	Meetings and Talk Topics	Continuous
		Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting		
		Knowledge of the SABS standards and other relevant legislation regarding the correct storage of chemicals	Training on the SABS standards and other legislation	Annual
		Knowledge of auditing techniques and report writing	Auditor training	Annual
Section Managers & Section Engineers	Implementation and daily management of the SEAMS and the SHE Management System	Understanding the purpose of the SEAMS and SHE Management System	General in-house, management training	Once off
		Knowledge of the relevant department's significant impacts as described in the EIA/EMP during the construction and operational phases		
		Actively implementing actions to achieve SEAMS Management Plans and Environmental Objectives.	Meetings and talk topics	Continuous
		Knowledge in stockpile management, discard management, water management and waste management		
		Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting		
		Knowledge in the correct storage of chemicals		
Engineering HOD & General Engineering Supervisor	Implementation and daily management of the SEAMS and the SHE Management System	Understanding the purpose of the SEAMS and SHE Management System	General in-house, management training	Once off
		Knowledge of the relevant department's significant impacts as described in the EIA/EMP during the construction and operational phases		
		Actively implementing actions to achieve SEAMS Management Plans and Environmental Objectives.		

OCCUPATION CATEGORY	ENVIRONMENTAL MANAGEMENT RESPONSIBILITY / ROLE	REQUIRED KNOWLEDGE AND INPUT	TRAINING REQUIRED	INTERVAL
		Knowledge in spill management and waste management Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting Knowledge in the correct storage of chemicals	Meetings and talk topics	Continuous
Mine Captain & General Engineering Supervisors	Implementation and daily management of the SEAMS and the SHE Management System	Understanding the purpose of the SEAMS and SHE Management System Knowledge of the relevant department's significant impacts as described in the EIA/EMP during the construction and operational phases Actively implementing actions to achieve SEAMS Management Plans and Environmental Objectives.	General in-house, management training	Once off
		Knowledge in spill management and waste management Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting Knowledge in the correct storage and handling of chemicals Understanding the requirements for not polluting the environment	Meetings and talk topics	Continuous
Supervisors, Shift Boss & Forman	General Environmental Awareness and job specific impacts	Understanding the purpose of the SEAMS and SHE Management System Knowledge of the relevant department's significant impacts as described in the EIA/EMP during the construction and operational phases Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting Knowledge in spill management and waste management Understanding the requirements for not polluting the environment	General in-house, management training	Once off
Operators,	General Environmental	General Awareness of aim and purpose of the SEAMS and SHE	Environmental Awareness	Annual



OCCUPATION CATEGORY	ENVIRONMENTAL MANAGEMENT RESPONSIBILITY / ROLE	REQUIRED KNOWLEDGE AND INPUT	TRAINING REQUIRED	INTERVAL
tradespersons & Floor Employees	Awareness and job specific impacts	Management System Understanding the SEAMS Management Plan relevant to their operations Understanding the requirements for not polluting the environment General understanding of the relevant Operational procedures, Emergency Response Plans and Incident reporting	Training	
General Administration Staff	General Environmental Awareness and job specific impacts	General Awareness of aim and purpose of the SEAMS and SHE Management System Understanding the SEAMS Management Plan relevant to their operations Understanding the requirements for not polluting the environment General understanding of the relevant Operational procedures, Emergency Response Plans and Incident reporting	Environmental Awareness Training	Annual
Security	General Environmental Awareness and job specific impacts	General Awareness of aim and purpose of the SEAMS and SHE Management System Understanding the requirements for not polluting the environment General understanding of the relevant Operational procedures, Emergency Response Plans and Incident reporting	Environmental Awareness Training	Annual

Specialized Skills

The Training Department in conjunction with the SHE Officer are responsible for ensuring job specific training for personnel performing tasks, which can cause significant environmental and social impacts (e.g. receipt of bulk hazardous chemicals/fuel, hazardous materials handling, responding to emergency situations etc.). The Mine Manager with the assistance of the SHE Officer must identify relevant personnel and training courses.

On the job training is an essential tool in environmental awareness. Employees must be given details of the expected environmental issues and concerns specifically related to their occupation. Employees must be trained on how to respond if an environmental problem or source of environmental pollution arises. The training will be on-going, and all new employees will be provided with the same standard of training as existing employees.

Review of Training Material

Effectiveness of the environmental management training will be done by the management through task observations and during internal and external audits.

All training material for presentation to personnel and contractors will be reviewed annually to ensure consistency with organizational requirements and best practice guidelines. In addition to this, annual monitoring reports, audit results and all incident reports will be reviewed, any short comings and non-compliancy will be highlighted and management measures incorporated or improved upon within the training material.

Records

Records from the implementation of this EAP will be kept and controlled in accordance with the SHE Management System Control of Records Procedure, which is required to be implemented so as to provide evidence of conformity and effective operation of the relevant requirements of the SHE management system.

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

The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments before any mining takes place. An Environmental Control Officer needs to check compliance of the mining activity to the management programmes described in the EMPR.

EMERGENCY RESPONSE PLAN AND PROCEDURES

As part of its management tools, a mine must have an Emergency Response Plan. These plans will be disseminated to all employees and contractors in the event of an emergency.

In the case of a medical accident or problem, the mine has first aid kits available at various points and an emergency box. A First Aid officer will be on duty at all times. In the event of an emergency the checklist of emergency response units must be consulted and the relevant units notified.

Communication is vital in an emergency and thus communication devices, such as mobile phones, two-way radios, pagers or telephones, must be placed around the mine. Should the emergency have the potential to affect the surrounding communities, they will be alerted via alarm signals or contacted in person.

Emergency services will be sourced from the nearest main town, Parys wherever possible. Contact details for the emergency services and local authorities are listed below; these will be displayed on site and made available to all employees and contractors.

Police Department:	10111
Ambulance:	018 610 8691
Hospital:	056 816 2100
DWS:	056 811 5834

The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

Site Management

- Stay within boundaries of site – do not enter adjacent properties;
- Keep tools and material properly stored;
- Smoke only in designated areas; and
- Use toilets provided – report full or leaking toilets.

Water Management and Erosion

- Check that rainwater flows around work areas and are not contaminated;
- Report any erosion;
- Check that dirty water is kept from clean water;
- Do not swim in or drink from streams;
- After a heavy rainstorm or at least every 3 months, all water pollution control structures like storm water berms and trenches will be checked for signs of damage or change in its capacity;
- Any damage to any water pollution structures will be repaired immediately; and
- Any of the above actions will be included in the performance assessment report to the Department of Mineral Resources (DMR).

Flooding

There is potential for flooding during the rainy season. This could result in a large volume of water flowing downstream or accumulating in a water containment facility and could cause major damage to equipment and endanger the lives of employees on site. Procedures must be put in place to ensure that there is a quick response to flood events and damage is kept to a minimum.

The procedure for flooding is as follows:

- DWS's flood warning system will be reviewed annually;
- The use of emergency pumps if the water floods the underground, where it may be exposed to contamination;
- Mine management will be made aware of any such event so they can take appropriate action to ensure production losses are kept to a minimum;
- All dams and water containment facilities will have a 0.8m freeboard and an overflow or outlet to ensure that no damage occurs to the facilities;
- All contaminated water will be contained on site, as far as possible and discharges to the environment will only occur if absolutely necessary in an extreme flood event.
- Check that rainwater flows around work areas and are not contaminated;
- Report any erosion;
- Check that dirty water is kept from clean water; and
- Do not swim in or drink from streams or the quarry.

Waste Management

- Take care of your own waste;
- Keep waste separate into labelled containers – report full bins;
- Place waste in containers and always close lid;
- Don't burn waste; and
- Pick-up any litter laying around.

Hazardous Waste Management (Petrol, Oil, Diesel, Grease)

Hydrocarbons such as diesel, petrol, and oil which are used as fuel for mine machinery which is kept on site, increases the possibility that spillage may occur. As this is a product mine there is also the possibility of a product spillage occurring. In the event of a spillage, procedures must be put into place to ensure that there are minimal impacts to the surrounding environment.

Diesel, engine oil and hydraulic oil are the most likely hydrocarbons identified during impact assessments that can result in an emergency situation.

The following procedure applies to a hydrocarbon spill:

- If any spills take place the contaminant together with the soil will be removed and placed in acceptable container to be removed with industrial waste to a recognised licence facility or licenced company.
- Bioremediation will be done on site to the satisfaction of DEAT
- A spill clean-up kit is available at the storage yard
- All personnel will be trained in spill clean-up methodologies.
- Every precaution will be taken to prevent the spill from entering the surface water environment;
- In the event of a large spillage, adequate emergency equipment for spill containment or collection, such as additional supplies of booms and absorbent materials, will be made available and if required, a specialised clean-up crew will be called in to decontaminate the area. The soil will be removed and treated at a special soil rehabilitation facility;
- If the spill is larger than 100 litres the Department of Environmental Affairs and Tourism (DEAT) will be notified by fax and or phone within 24 hours of the event.
- Reasonable measures must be taken to stop the spread of hydrocarbons and secure the area to limit access;
- Dispatch necessary services;
- The incident must be reported to the Environmental coordinator immediately;
- The Environmental Coordinator will assess the situation from the information provided, and set up an investigation team or relevant personnel. Included in this team could be the Mine Manager, Chief Safety Officer, the employee who reported the incident and any individual responsible for the incident;
- When investigating the incident, priority must be given to safety;
- Once the situation has been assessed, the Environmental Coordinator must report back to the Mine Manager;
- The Mine Manager and the investigation team must make a decision on what measures can be taken to limit the damage caused by the incident, and if possible any remediation measures that can be taken;
- The source / reason of the spill or leak will be addressed immediately;
- Never mix general waste with hazardous waste;
- Use only sealed, non-leaking containers;
- Keep all containers closed and store only in approved areas;
- Always put drip trays under vehicles and machinery;
- Empty drip trays after rain;
- Stop leaks and spills, if safe;
 - Keep spilled liquids moving away;
 - Immediately report the spill to the site manager/supervision;
 - Locate spill kit/supplies and use to clean-up, if safe;
 - Place spill clean-up wastes in proper containers; and

- Label containers and move to approved storage area.

Breakdown of vehicles or equipment outside vehicle maintenance yard:

If any equipment of vehicles breaks down inside the excavation area or outside the storage yard the following emergency procedure will be followed:

- Drip pans will be placed at all points where diesel, oil or any hydraulic fluid can drip and contaminate the oil;
- All efforts will be made to remove the vehicle or equipment to the storage area;
- If the vehicle or equipment cannot be removed the broken part will be drained of all fluid and the specific part removed to the service area;
- No repairs will be allowed to take place outside the maintenance yard or service area; and
- Any spills will be managed as described in the hydrocarbon section above.

Explosions

Explosions can occur in the plant and workshop areas when working with gas cylinders and chemicals. These could result in large numbers of employees being injured and requiring medical assistance.

The procedure to be followed is:

- Alternative evacuation routes will be devised, must a rock fall occur as a result of the explosion; and
- All relevant emergency response units must be notified and hospitals informed of incoming patients.

Discoveries:

- Stop work immediately;
- Notify site manager/supervisor; and
- Includes – Archaeological finds, Cultural artefacts, contaminated water, Pipes, Containers, Tanks and drums, any buried structures.

Air Quality:

- Wear protection when working in very dusty areas;
- Implement dust control measures:
 - Sweep paved roads;
 - Water all roads and work areas;
 - Minimize handling of material; and
 - Obey speed limit and cover trucks.

Driving and Noise

- Use only approved access roads;
- Respect speed limits;
- Only use turn-around areas – no crisscrossing through undisturbed areas;
- Avoid unnecessary loud noises; and
- Report or repair noisy vehicles.

Flora and Fauna

- Do not remove any plants or trees without approval of the site manager;
- Do not collect fire wood;
- Do not catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site;
- Report any animal trapped in the work area; and
- Do not set snares or raid nests for eggs or young.

Alien Invasive Management

The operator of the mine

- This refers to the project proponent, Tja Naledi. They will be responsible for the following:
 - Ensure that the requirements set out in this management plan are adhered to and implemented;
 - Allocate the responsibilities assigned to the Environmental Control Officer (ECO) to an independent suitably qualified individual to coordinate and monitor the alien invasive control activities on site; and
 - Provide all principal contractors, working on the alien invasive control programme, with a copy of this management plan to allow the contractors to cost for its requirements within their respective contracts.

The Environmental Control Officer (ECO)

- The ECO is responsible for monitoring and verifying the implementation of the management plan during the mining phases of the project. To effectively implement the management plan, the ECO must be aware of the findings, mitigation measures and conclusions of this management plan.

The Contractor or mine manager

- The contractor or mine manager, being any directly appointed company or person undertaking the implementation of works, will be responsible for complying with the management plan at all times during the mining and rehabilitation phases.

Fire Management

Veld fires and fires resulting from other sources must be handled with extreme caution. Fire extinguishers will be placed around the mine.

The following procedures apply to fires:

- In the event of a fire an alarm will be activated to alert all employees and contractors;
- Identify the type of fire and the appropriate extinguishing material. For example, water for a grass fire, and mono ammonium phosphate based fire extinguisher for chemical and electrical fires;

- In the event of a small fire the fire extinguishers placed around the mine will be used to contain and extinguish the fire;
- In the event of a large fire, the fire department will be notified and must react timeously;
- All staff will receive training in response to a fire emergency on site;
- A Fire Protection Association will be set up with the mine and surrounding land owners to facilitate communication during fire events and assist in fighting fires, where necessary;
- Fire breaks has been established and will be maintained around the mining area for the duration of the project;
- If possible all surrounding drains, such as storm water drains need to be covered and or protected to prevent any contaminated water from entering the drains
- In case of a chemical or petroleum fire, run-off from the area will be contained as far as possible using the most appropriate measures e.g. spill absorbent cushions, sand or a physical barrier;
- Contaminated run-off must be diverted into an oil sump, or cleaned up;
- All firefighting equipment will be inspected at least monthly to ensure that these are functioning;
- Do not light any fires on site, unless contained in a drum at demarcated area;
- Put cigarette butts in a rubbish bin;
- Do not smoke near gas, paints or petrol;
- Know the position of firefighting equipment;
- Report all fires; and
- Don't burn waste or vegetation.

In addition to the induction meeting to be held with the site employees to inform them of the basic steps towards environmental awareness, the operators of earth moving equipment must be informed of the following requirements:

- Mining within demarcated areas;
- No-go areas;
- Establishment of access roads;
- Handling of hazardous waste and their storage facilities;
- Handling of biodegradable and non-degradable waste;
- Vehicle maintenance;
- Mining methods to be followed;
- Handling and storing of topsoil;
- Sloping of excavations;
- Speed control in order to reduce dust;
- Emergency procedure awareness.
- Labourers must be informed of the following during “toolbox talks”:
- Reporting of unusual observations to management (e.g. fossils, graves, etc.);
- Reporting of spills to management;

- Felling or damaging trees for firewood not allowed;
- Making fires not allowed;
- Hunting and killing of animals not allowed;
- Demarcated areas for mining;
- Establishing of access roads and erection of gates in fence lines;
- Toilet facilities and hygiene measures;
- Handling of waste;
- Vehicle maintenance and vehicle maintenance yard;
- Handling of topsoil; and
- Emergency procedures awareness.

(h) Specific information required by the Competent Authority

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

The applicant undertakes to annually review and update the financial provision calculation, upon which it will be submitted to DMR for review and approved as being sufficient to cover the environmental liability at the time and for closure of the mine at that time.

Effectiveness of the environmental management training will be done by the management through task observations and during internal and external audits. All training material for presentation to personnel and contractors will be reviewed annually to ensure consistency with organizational requirements and best practice guidelines.

In addition to this, annual monitoring reports, audit results and all incident reports will be reviewed, any short comings and non-compliance will be highlighted and management measures incorporated or improved upon within the training material.

2) Undertaking

The EAP herewith confirms

- a) the correctness of the information provided in the reports X
- b) the inclusion of comments and inputs from stakeholders and I&AP's X
- c) the inclusion of inputs and recommendations from the specialist reports where relevant, and X
- d) that the information provided by the EAP to interested and affected parties and any response by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein X



Signature of the environmental assessment practitioner:

Greenmined Environmental

Name of Company:

21 FEBRUARY 2019

Date:

-END-

APPENDIX LIST

Appendix A	Main Application Map
Appendix A1	1:250 000 Map
Appendix B	Mine Activities Map
Appendix C	Surrounding Land Use Map
Appendix D	Rehabilitation Plan
Appendix E	Comments and Response Report
Appendix E1	Comments and Response Report
Appendix E2	Appendix A – Proof of Consultation
Appendix E3	Audio Recordings of Meetings Held with I&APs
Appendix E4	Database of I&APs
Appendix F	Supporting Impact Assessment
Appendix G	Photographs of the site
Appendix H	Specialist Studies
Appendix H1	Heritage Impact Assessment
Appendix H2	Cumulative Land Impact Assessment
Appendix H3	Ecological Impact Assessment
Appendix H4	Socio-Economic Assessment
Appendix H5	Air Quality Assessment
Appendix I	CV and Experience Record of EAP
Appendix J	Current Mining Right and EMP
Appendix K	Alien Invasive Management Plan
Appendix L	Zoning Letter from Attorneys
Appendix M	Water Use Licence Application