

PROPOSED EXTENSION OF A MINING PERMIT ON A PORTION OF THE FARM KOPPIES VLEI 622, THEUNESSEN MAGISTERIAL DISTRICT, FREE STATE PROVINCE.

FINAL SCOPING REPORT



SEPTEMBER 2016

REFERENCE NUMBER: FS30/5/1/3/2/1/10101MP

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mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

SCOPING REPORT

**FOR LISTED ACTIVITIES ASSOCIATED WITH MINING RIGHT
AND/OR BULK SAMPLING ACTIVITIES INCLUDING TRENCHING
IN CASES OF ALLUVIAL DIAMOND PROSPECTING.**

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

NAME OF APPLICANT: Blazecor 226 CC

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FILE REFERENCE NUMBER SAMRAD: FS30/5/1/3/2/1/10101MP

IMPORTANT NOTICE

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

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

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

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or permit are submitted in the exact format of, and provide all the information required in terms of this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet 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 order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

OBJECTIVE OF THE SCOPING PROCESS

- 1) The objective of the scoping process is to, through a consultative process-
 - (a) identify the relevant policies and legislation relevant to the activity;
 - (b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
 - (c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
 - (d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
 - (e) identify the key issues to be addressed in the assessment phase;
 - (f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site, and
 - (g) identify suitable measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.
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EXECUTIVE SUMMARY

Greenmined Environmental (Pty) Ltd was contracted by Blazecor 226 CC to amend the current Environmental Management Plan (EMP) according to the standard format provided by the Department of Mineral Resources (DMR) for Environmental Authorisations in terms of the National Environmental Management Act, 1998 and the National Environmental Management Waste Act, 2008, in respect of listed activities that have been triggered by applications in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (as amended) for Koppies Vlei Sand Mine.

The sand mine is located on a portion of Koppies Vlei 622, Theunissen District, Free State Province.

The mining methods will make use of mechanical excavation in order to win the sand; the material is then loaded and hauled out of the excavation to the stockpile area from where it will again be hauled to a washing and screening plant. The sand will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the site.

The aim of the amendment of the EMPR is to update the information in order to comply with the standards set by the Department of Mineral Resources. No additional specialist studies were deemed necessary as this is an existing quarry (operational since October 2014) which is not located in a sensitive or pristine area.

A site inspection was conducted on the 1st of September 2016 to obtain the most current information applicable to the site. The mining area is ± 2.9 ha (including extension) in extent and the mineable material occurs at an average depth of 6 metres. The total reserve is approximately 45 000 cubes.

The principal impacts emanating from a mining area such as the operations of Blazecor 226 CC (Koppies Vlei Sand Mine) represent visual intrusion, dust liberation, noise generation and hydrocarbon contamination. The list of monitoring programmes, to be implemented on the site, has been updated and defined in order to provide management with an effective management tool for mitigating the impact of the mining activity on the surrounding environment.

Monitoring of the following aspects are proposed:

- Dust monitoring
- Noise monitoring
- Management of weed and/or invader plants
- Surface and storm water monitoring
- Management of Health and Safety Risks
- Waste Management and Monitoring
- Management of Access Roads
- Topsoil Handling

SCOPING REPORT

2) Contact Person and correspondence address

a) Details of Greenmined Environmental

i) The EAP who prepared the report

Name of the Practitioner: Mrs. Sonette Smit (Greenmined Environmental)

Tel No.: 021 851 2673

Fax No.: 086 546 0579

E-mail address: Sonette.s@greenmined.co.za

ii) Expertise of the EAP

(1) The qualifications of the EAP

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

Mrs. Sonette Smit has is currently completing BA in Environmental Management:

UNISA –

Planet GIS Certified Officer

IPW training

Water Quality Monitoring

Full CV with evidence attached as appendix 1

(2) Summary of the EAP's past experience

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

See CV and project list attached as Appendix I

b) Description of the property.

Farm Name:	Koppies Vlei 622, Theunissen District
Application area (Ha)	2.9ha
Magisterial district	Theunissen Magisterial District
Distance and direction from nearest town	The site is situated approximately 15km south of Theunissen along the R30.
21 digit Surveyor General Code for each farm portion	F0030000000000622000

- c) **Locality map**
(Show nearest town, scale not smaller than 1:250000 as **Appendix 3**)

The requested map is attached as Appendix 3

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

i) **Listed and specified activities**

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1:10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site and attach as **Appendix 4**

Blazecor 226 CC intends to apply for an extension of mining permit to mine 2.9ha of a portion of Koppies Vlei 622, Theunissen magisterial district Free State Province for the mining of sand. This report forms part of an extension of the current mining area and updating of the current mining activities and infrastructure used on site. The proposed mining site will be an extension of the existing sand excavation previously disturbed by sand mining activities. The mining methods will make use of mechanical excavation in order to win the sand; the material is then loaded and hauled out of the excavation to the stockpile area from where it will again be hauled to a washing and screening plant. The sand will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the site.

The proposed mining area is approximately 2.9ha in extent (including current excavation) and the applicant intends to win material from the area for remaining live of the permit. The material from the mine will be used for the supply of sand to building projects to supply housing and other infrastructure in and around Theunissen. Blazecor 226 CC will make use of temporary infrastructure during the mining operations. Workers will be transported to and from the site daily.

NAME OF ACTIVITY (All activities including activities not listed) (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	Aerial extent of the Activity Ha or m ²	LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 OR GNR 546)/NOT LISTED
Demarcation of site with visible beacons	2.9ha	N/A	Not listed
Establishment of temporary within boundaries of site		N/A	Not listed
Strip and stockpile of topsoil	2.9ha	X	GNR 983 Listing Notice 1 Activity 35 GNR 984 Listing Notice 2 Activity 21 GNR 983

			Listing Notice 1 Activity 21
Excavation and loading of sand to be processed	2.5ha	X	GNR 983 Listing Notice 1 Activity 35 GNR 984 Listing Notice 2 Activity 21 GNR 983 Listing Notice 1 Activity 21
Washing and screening of sand	1.4ha	X	GNR 983 Listing Notice 1 Activity 35 GNR 984 Listing Notice 2 Activity 21 GNR 983 Listing Notice 1 Activity 21
Transportation of sand from mining area to clients	1 ha	X	GNR 983 Listing Notice 1 Activity 35 GNR 984 Listing Notice 2 Activity 21 GNR 983 Listing Notice 1 Activity 21
Landscape and replacement of topsoil over stripped area	2.4 ha	X	GNR 983 Listing Notice 1 Activity 35 GNR 983 <i>listing notice 1 activity 22</i>
Final rehabilitation of entire area	2.9ha	X	GNR 983 Listing Notice 1 Activity 35 GNR 983 <i>listing notice 1 activity 22</i>

ii) Description of the activities to be undertaken

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

The applicant, Blazecor 226 CC intends to mine 2.9ha over a certain portion of the Farm Koppies Vlei 622, Theunissen magisterial district. The mining procedure will entail excavation of the proposed footprint area.

GPS coordinates for the existing mining permit:

- A-26,67119°S; 28,48014°E
- B-26,67115°S; 28,47979°E
- C-26,66979°S; 28,47951°E
- D-26,66977°S; 28,47979°E

GPS coordinates for the section 102 extension:

- A-26,6712°S; 28,4801°E
- B-26,6698°S; 28,4798°E
- C-26,6698°S; 28, 4795°E
- D-26,6698°S; 28,4788°E
- E-26,6706°S; 28,4788°E
- F-26,6712°S; 28,4788°E
- G-26,6718°S; 28,4792°E
- H-26,6722°S; 28,4796°E
- I-26,6722°S; 28,4798°E

The applicant will:

- Mine the area through opencast excavations where the topsoil will be stripped separately and stockpiled.
- The sand will be removed with a 30 ton excavator and placed next to the excavation.
- The sand is will then be loaded and hauled out of the excavation to the stockpile area from where it will again be hauled to a washing and screening plant.
- The sand will be stockpiled and transported to clients via trucks and trailers.
- The topsoil will be placed back as a growth medium and the sides of the excavation will be sloped with acceptable contours (30°) to prevent soil erosion.
- The excavations will be 100m in length 100m wide and +/- 6 meters deep on average.
- Only one excavation will be opened at a time where after the previous section will be rehabilitated.
- The total estimated reserve of sand is 45000cubes taken at a production rate of 2000 cubes a month it will take 22 months to work.

The proposed activity will require washing and screening of sand. There will be no blasting or crushing on site. A mobile site office, workshop and service area (with concrete flooring). Chemical ablution facilities is currently present on the site. A generator will be used to supply power for the infrastructure on site until an Eskom power point is secured. Process water will be obtained from a borehole on the property, additional water may be required to be pumped from the adjacent stream (the applicant will apply for Water Use authorisation for this use). The water will mainly be used for washing of material and dust suppression of roads and mining area. **Potable** water will daily be transported to site. The solid waste produced during the operational phase of the project will be transported from site to the nearest landfill site. Approximately 3 workers will be employed at the site. Mining will be done in daylight hours. From time to time it may be required to work an alternative Saturday.

Trucks leaving the site will use the existing gravel farm road that connects to the R30 road from where the trucks go towards the Theunissen.

The mining activities will consist of the following:

- Stripping and stockpiling of topsoil,
- Excavating,
- Washing and screening,
- Stockpiling and transporting,
- Sloping and landscaping,
- Replacing the topsoil and vegetating the disturbed area.

The mining site will contain the following:

- Excavating Equipment
- Earth Moving Equipment
- Washing and Screening infrastructure
- Settlement pond for processed water
- Water pump in sand pit
- Site Office
- Site vehicles
- Parking area for visitors and site vehicles
- Site Storage Area
- Bunded diesel and oil storage facilities
- Generator on bunded area
- Chemical Ablution Facilities
- Demarcated general and hazardous waste area

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process).	REFENCE WHERE APPLIED
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) - Section 27	Application for a mining Permit Ref No: FS 30/5/1/3/2/10101 MP
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014	Application for a Environmental Authorisation Ref

<ul style="list-style-type: none"> • Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 12 • Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 21 • Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 22: • Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 35: • Environmental Impact Assessment Regulations Listing Notice 2 of 2014 Activity 21: 	No: FS 30/5/1/3/2/10101 MP
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) and amendments	Assessment of biophysical environment
Mine Health and Safety Act, 1996 (Act No 29 of 1996)	The mitigation measures proposed for the site includes specifications of the MHSA
National Heritage Resources Act No 25 of 1999	Assessment of the cultural and heritage environment
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	Assessment of biophysical environment
Land Use Planning Ordinance (Ordinance 15 of 1985)	Land use zoning requirements
Public Participation Guideline in terms of the NEMA EIA Regulations	Used during the public participation process

f) **Need and desirability of the proposed activities.**

(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).

The applicant Blazecor 226 CC is well aware of the demand of sand for the construction industry that is used in the Theunissen area.

In the light of the above the applicant has obtained a mining Permit to commercially source the available sand on a portion of the Farm Koppies Vlei 622, Theunissen magisterial district, Free State Province. This report forms part of an extension of the current mining area and updating of the current mining activities and infrastructure used on site. The mining of sand from the property will also enable the landowner to diversify the income generating activities on the property, extending it from agriculture to include small scale mining.

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

The applicant requests the Environmental Authorisation to be valid for a five year period in order to correspond with the validity of the mining permit.

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

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

i) **Details of all alternatives considered**

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

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

Blazecor 226 CC identified the need for sand in the area due to an increase in construction and building projects. As mentioned earlier this report forms part of an extension of the current mining area and updating of the current mining activities and infrastructure used on site. The excavation area on the property of the applicant has previously been used for mining purposes.

In this light the applicant identified the proposed area as preferred and only viable site alternative. The processing of material on an external site were not found to be the best option with regard to the cost effectiveness of transporting of material to an offsite washing and screening plant. In the light of the above the impacts associated with washing and screening of material on another site is believed to have a higher significance without the need or motivation to justify it.

1. **Temporary Infrastructure (Preferred Alternative) vs Permanent Infrastructure:**

a. The use of temporary infrastructure will entail the use of infrastructure and machinery that is either track-based or can be removed without difficulty. Temporary infrastructure with concrete flooring to be used in the mining method will entail a temporary washing and screening plant, storage facility and chemical toilet, with servicing of vehicles and equipment being done off-site at the existing workshop of the applicant. The off-site office will also be used for all administration purposes relating to the project.

i. **Positive Aspects:** The positive aspects associated with the use of temporary infrastructure firstly enable the applicant to move the infrastructure within the boundaries of the mining area as mining of the mineral progresses. Secondly the decommissioning phase is facilitated as the removal of infrastructure from the mining area during the rehabilitation of the site is easy and highly effective.

- b. The use of permanent infrastructure will entail the construction of an office building with ablution facilities, and installation of a permanent vehicle service area.
 - i. The use of permanent infrastructure will increase the impact of the proposed project on the environment as it will entail the establishment of more structures, lengthen the period required for rehabilitation as well as increase the rehabilitation amount as the permanent infrastructure will either have to be decommissioned or be maintained after the closure of the site.
 - ii. The construction of permanent infrastructure at the site will also increase the visual impact of the proposed project on the surrounding environment and additional mitigation measures will have to be implemented to address the impact.

In the light of the above the use of temporary infrastructure is deemed to be the most viable preferred alternative.

2. No-go Alternative:

The no-go alternative entails no change to the status quo and is therefore a real alternative that needs to be considered. The sand to be mined at the site will be used for the construction industry, if however the no-go alternative is implemented the applicant will not be able to expand the existing mining area and establish a washing and screening plant, not being able to process the mineral present in the area. The processing of material on an external site were not found to be the best option with regard to the cost effectiveness of transporting of material to an offsite washing and screening plant, impact on roads and road users due to long distance hauling of sand.

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

- The applicant will not be able to expand the existing mining area and establish a washing and screening plant, not being able to process the mineral present in the area,
- The application, if approved, would allow the applicant to upgrade the mining area 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,
- The applicant will not be able to diversify the income of the property,

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.

An application for environmental authorisation will be submitted in terms of section 22 of the mineral and petroleum resources development act, 2002 (act no 28 of 2002) and the national environmental management act, 1998 (act 107 of 1998 nema) as well as the environmental impact assessment regulations as amended 2014

Limited public participation was done as this is only an amendment the current Environmental Management Plan (EMP) according to the standard format provided by the Department of Mineral Resources (DMR) for Environmental Authorisations in terms of the National Environmental Management act, 1998 and the National Environmental Management Waste Act, 2008, in respect of listed activities that have been triggered by applications in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (as amended) for Koppies Vlei Sand Mine. This report will be sent for public comments on the 7th of September 2016 as initial public participation that was done was not complying with regulation 21()(a) of the EIA Regulations.

iii) Summary of issues raised by I&As

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

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those must be consulted were in fact consulted		Date Comments Received	Issues raised	EAP's response to issues raised by the applicant
<u>AFFECTED PARTIES</u>				
Landowner/s	X			
Landowner on the farm Koppies Vlei 622) Mr. H.C Eksteen	X		No comments received	Didn't have any objection.
Lawful occupier/s of the land				
(Landowner on the farm Koppies Vlei 622) Mr. H.C Eksteen	X		No comments received	Didn't have any objection.
Landowners or lawful on adjacent properties	X			
Mr H.C Eksteen (Neighbour of the farm Riverdene on the south western side)	X		No comments received	Didn't have any objection.
Mr H.S Eksteen (Neighbour of the farm Riverdene on the north western side)	X		No comments received	Didn't have any objection.
Mr J. A Pienaar (Neighbour of the farm Lekkerleven on the western side)	X		No comments received	Didn't have any objection.

iv) The Environmental attributes associated with the sites

(1) Baseline Environment

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

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

GEOGRAPHICAL AFFECTED ENVIRONMENT

VISUAL EXPOSURE:

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 should 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.

PHYSICAL AFFECTED ENVIRONMENT

GEOLOGY & SOILS

Restricted to Jurassic dolerite intrusion (sills) embedded within sediments of the Adelaide Subgroup (Beaufort Group and Karoo Supergroup) Typical feature of this habitat is shallow (only 1-5cm thick) layer of sand Aeolian origin that overlies sheets of dolerite. Dominant land typis Ea, followed by Dc and Fa (the last-named on the Karoo Supergroup sediments).

SURFACE AND GROUND WATER:

The Vet River is located within 3km distance of the application area.

A borehole is present on the farm, which is currently used for stock watering by the landowner.

A water use application will be submitted for the use of water for washing of sand and dust suppression on roads.

BIOLOGICAL AFFECTED ENVIRONMENT

VEGETATION

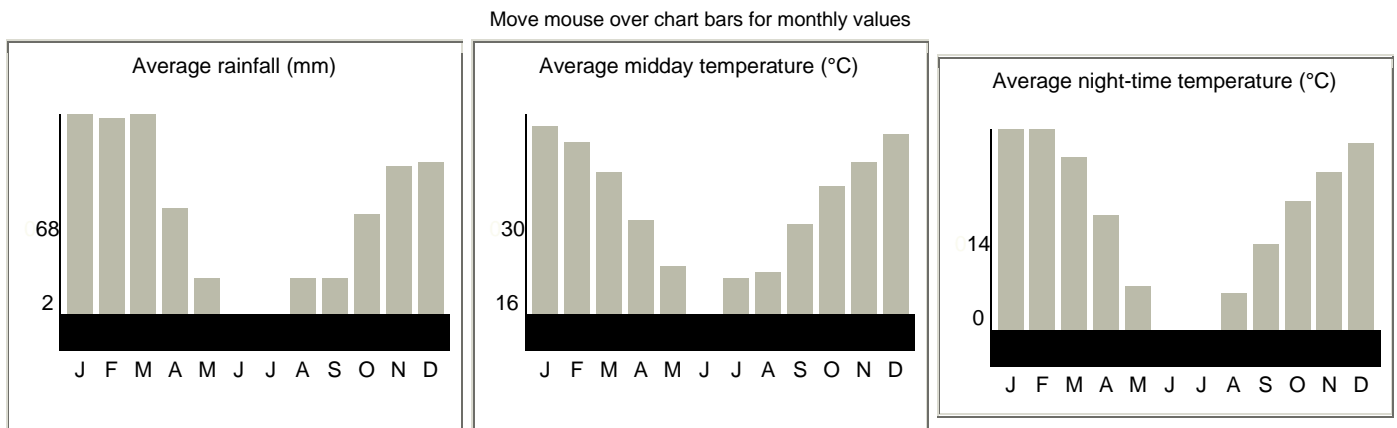
Plateaus or slightly sloping flanks of dolerite outcrops supporting low shrub land dominated by dwarf small-leaved karroid and succulent shrubs. Grasses are restricted to depressions and crevices filled with fine soils. Remarkable is the presence of abundant geophytes herbs. Solitary shrubs or small shrub groups are occasionally present especially in habitats where root penetration into deeper crevices is possible.

FAUNA

No animals were spotted during the site investigation. Animals that may occur in the area will be very similar to those found in and around Theunissen. Small animals that are common in this area are: Steenbuck, Duiker, Jackal and Meerkat.

CLIMATE:

Bloemfontein normally receives about 407mm of rain per year, with most rainfall occurring mainly during summer. The chart below (lower left) shows the average rainfall values for Bloemfontein per month. It receives the lowest rainfall (2mm) in June and the highest (68mm) in January. The monthly distribution of average daily maximum temperatures (centre chart below) shows that the average midday temperatures for Bloemfontein range from 16°C in June to 29.2°C in January. The region is the coldest during July when the mercury drops to 0°C on average during the night. Consult the chart below (lower right) for an indication of the monthly variation of average minimum daily temperatures.



SOCIO-ECONOMIC AFFECTED ENVIRONMENT

VISUAL EXPOSURE:

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 should 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 and noise Quality:

The air and noise ambiance of the study area is representative of that of an agricultural environment in which farming equipment operates with occasional high dust emissions from denuded areas. The traffic on the R30 and surrounding roads also contribute to air and noise emissions.

As the sand mining will not require any blasting or crushing to be done the expected impact of the activity on the air quality is deemed to be low. If needed dust suppression will be implemented on the access roads to the site.

The noise impact of the proposed mining activity is deemed to be of low significance. The mining methods will make use of mechanical excavation in order to win the sand; the material is then loaded and hauled out of the excavation to the stockpile area from where it will again be hauled to a washing and screening plant. The sand will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the site.

The mining activity will contribute the noise generation of one excavator and plant, approximately 8 -15 trucks per day. The noise impact of the proposed activity is expected to be representative of the traffic travelling along the R30.

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. Blazecor 226 CC will make use of temporary infrastructure with concrete flooring during the mining operations. Workers will be transported to and from the site daily.

(b) Description of the current land uses.

A portion of the Farm Koppies Vlei 622, Theunissen magisterial district, Free State Province is surrounded by other farms. The land use on the farm and surrounding areas are mainly for agricultural purposes. Additional workers required will be sourced from the local community. The material from the mine will be used for the supply of sand to building projects to supply housing and other infrastructure in and around Theunissen. Blazecor 226 CC will make use of temporary infrastructure during the mining operations. Workers will be transported to and from the site daily. The mining of sand from the property will also enable the landowner to diversify the income generating activities on the property, extending it from agriculture to include small scale mining. The activity will therefore have a positive impact on the surrounding environment as it will aid infrastructure development of the area.

Natural area – The Farm and screening plant. The sand will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the site.

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

Environmental features

GEOGLOGY & SOILS

Restricted to Jurassic dolerite intrusion (sills) embedded within sediments of the Adelaide Subgroup (Beaufort Group and Karoo Supergroup) Typical feature of this habitat is shallow (only 1-5cm thick) layer of sand Aeolian origin that overlies sheets of dolerite. Dominant land typis Ea, followed by Dc and Fa (the last-named on the Karoo Supergroup sediments).

VEGETATION:

Plateaus or slightly sloping flanks of dolerite outcrops supporting low shrub land dominated by dwarf small-leaved karroid and succulent shrubs. Grasses are restricted to depressions and crevices filled with fine soils. Remarkable is the presence of abundant geophytes herbs. Solitary shrubs or small shrub groups are occasionally present especially in habitats where root penetration into deeper crevices is possible.

FAUNA:

There were no endangered fauna noted and or made aware by the different interested and affected parties since the initial public participation process

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 should be informed and managed to ensure that no fauna at the site is harmed. The fauna that has been spotted on site comprise of hares and goats. Upon commencement of the proposed mining activities, the fence surrounding the property should be maintained to prevent large animals such as goats entering the site

SURFACE AND GROUND WATER:

Open water or streams are located within 3km distance of the application area. A borehole is present on the farm, which is currently used for stock watering by the landowner. A water use application will be submitted for the use of water for washing of sand and dust suppression on roads.

INFRASTRUCTURE.

As the proposed footprint area is currently used for agricultural purposes, no infrastructure exists within the boundaries of the mining area that could be impacted by the proposed activity. The existing roads will be used to gain access to the mining area. Continuous maintenance of the access road will be done by the applicant for the duration of the operational phase.

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 6.

v) Impacts identified

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultants with affected parties together with the significance, probability and duration of the impacts)

The following potential impacts were identified for the proposed project. 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, therefore the worst case scenario and should be seen as a preliminary assessment.

STRIPPING AND STOCKPILING OF TOPSOIL:

Visual intrusion associated with the establishment of the mining area

Rating: Low to medium

Degree of Mitigation: Partial

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	3	3	2.6	2	4	3	7.8

Dust nuisance caused by the disturbance of the soil

Rating: Medium

Degree of Mitigation: Partial

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	3	2	2.3	3	2	2.5	5.7

Noise nuisance caused by machinery stripping and stockpiling the topsoil

Rating: Medium

Degree of Mitigation: Partial

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	3	1	2.6	5	5	5	13

Infestation of the topsoil heaps by weeds or invader plants

Rating: Low – Medium

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	3	1	2.6	4	4	4	10.4

Loss of topsoil due to incorrect storm water management

Rating: Medium

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	3	1	2.6	5	3	4.5	11.7

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Medium – High

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	3	1	2	3	3	3	6

EXCAVATION:

Visual intrusion associated with the excavation activities

Rating: Medium – High

Degree of Mitigation: Partial

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	3	4	3	4	4	4	12

Dust nuisance due to excavation activities

Rating: Medium

Degree of Mitigation: Partial

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	3	3	2.6	4	5	4.5	11.7

Noise nuisance generated by excavation equipment

Rating: Medium

Degree of Mitigation: Partial

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	3	4	3	4	5	4.5	13.5

Unsafe working conditions for employees

Rating: Medium – High

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	3	4	3	5	5	5	15

Negative impact

on the fauna and flora of the area

Rating: Low

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	3	1	2	5	2	3.5	7

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Medium

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
3	3	1	2.3	3	2	2.5	5.7

Weed and invader plant infestation of the area

Rating: Low – Medium

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
3	3	1	2.3	5	2	3.5	8.7

LOADING AND TRANSPORTING:

Dust nuisance due to loading and vehicles transporting the material

Rating: Medium

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	4	3	3	5	5	5	15

Degradation of access roads

Rating: Medium

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
3	3	4	4	5	5	5	20

Noise nuisance caused by vehicles

Rating: Medium

Degree of Mitigation: Partial

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
3	3	3	3	5	5	5	15

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Medium

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
3	3	1	2.3	4	5	4.5	10.3

SLOPING AND LANDSCAPING DURING REHABILITATION:

Soil erosion

Rating: Low – Medium

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
4	3	1	2.6	3	3	3	7.8

Health and safety risk posed by un-sloped areas

Rating: Medium – High

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
4	3	1	2.6	3	3	3	7.8

Dust nuisance caused during sloping and landscaping activities

Rating: Low – Medium

Degree of Mitigation: Partial

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	3	1	2	4	5	4.5	9

Noise nuisance caused by machinery

Rating: Low – Medium

Degree of Mitigation: Partial

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	1	2	1.6	3	5	4	6.4

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low – Medium

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
3	3	1	2.3	3	1	2	4.6

REPLACING OF TOPSOIL AND REHABILITATION OF DISTURBED AREA:

Loss of reinstated topsoil due to the absence of vegetation

Rating: Low – Medium

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
3	3	1	2.3	3	2	2.5	5.8

Infestation of the area by weed and invader plants

Rating: Low – Medium

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
3	3	1	2.3	4	2	3	6.9

vi) Methodology used in determining the significance of environmental impacts

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

Methodology for the assessment of the potential environmental, social and cultural impacts

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 judgment
- 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
- 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).

Impact

The positive or negative effects on human well-being and / or the environment.

Consequence

The intermediate or final outcome of an event or situation OR it is the result, on the environment, of an event.

Likelihood

A qualitative term covering both probability and frequency.

Frequency

The number of occurrences of a defined event in a given time or rate.

Probability

The likelihood of a specific outcome measured by the ratio of a specific outcome to the total number of possible outcomes.

Environment

Surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation (ISO 14004, 1996).

Methodology that will be used

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

Environmental Significance = Overall Consequence x Overall Likelihood

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 below.

Determination of Severity / Intensity

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 1 will be used to obtain an overall rating for severity, taking into consideration the various criteria.

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

Determination of Duration

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.

Rating of Duration:

Rating	Description
1	Up to ONE MONTH
2	ONE MONTH to THREE MONTHS (QUARTER)
3	THREE MONTHS to ONE YEAR
4	ONE to TEN YEARS
5	Beyond TEN YEARS

Determination of Extent/Spatial Scale

Extent or spatial scale is the area affected by the event, aspect or impact.

Rating of Extent / Spatial Scale:

Rating	Description
1	Immediate, fully contained area
2	Surrounding area
3	Within Business Unit area of responsibility
4	Within the farm/neighboring farm area
5	Regional, National, International

Determination of Overall Consequence

Overall consequence is determined by adding the factors determined above and summarized below, and then dividing the sum by 3.

Example of calculating Overall Consequence

Consequence	Rating
Severity	Example 4
Duration	Example 2
Extent	Example 4
SUBTOTAL	10
TOTAL CONSEQUENCE: (Subtotal divided by 3)	3.3

Determination of Likelihood:

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 tables 6 and 7.

Determination of Frequency

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

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

Determination of Probability

Probability refers to how often the activity or aspect has an impact on the environment.

Rating of Probability:

Rating	Description
1	Almost never / almost impossible
2	Very seldom / highly unlikely
3	Infrequent / unlikely / seldom
4	Often / regularly / likely / possible
5	Daily / highly likely / definitely

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 Overall Environmental Significance:

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.

Determination of Overall Environmental Significance

Significance or Risk	Low	Low-Medium	Medium	Medium-High	High
Overall Consequence X Overall Likelihood	1 - 2.9ha	5 - 9.9	10 - 12.9ha	15 – 19.9	20 - 25

Qualitative description or magnitude of Environmental Significance

This description is qualitative and is an indication of the nature or magnitude of the Environmental Significance. It also guides the prioritisations and decision making process associated with this event, aspect or impact.

Description of Environmental Significance and related action required

Significance	Low	Low-Medium	Medium	Medium-High	High
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real, and potentially substantial in relation to other impacts. Can pose a risk to company	Impact is real and substantial in relation to other impacts. Pose a risk to the company. Unacceptable	Impact is of the highest order possible. Unacceptable. Fatal flaw.
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine potential increase in risk. Where possible improve	Implement monitoring. Investigate mitigation measures and improve management measures to reduce risk, where possible.	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

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.

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

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

The extension of mining permit to mine 2.9ha of a portion of Koppies Vlei 622, Theunissen magisterial district Free State Province for the mining of sand. This report forms part of an extension of the current mining area and updating of the current mining activities and infrastructure used on site. The proposed mining site will be an extension of the existing sand excavation previously disturbed by sand mining activities. Upon closure of the mining area, the land will revert back to agriculture.

Due to the remote location of the sand excavation 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.

The mining of sand from the property will also enable the landowner to diversify the income generating activities on the property, extending it from agriculture to include small scale mining. The activity will therefore have a positive impact on the surrounding environment as it will aid infrastructure development of the area.

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

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

The following preliminary mitigation measures are proposed to address/minimize the impact of the proposed activity on the surrounding environment:

Visual Mitigation:

In order to mitigate the visual impact of the proposed activity on the surrounding environment the following mitigation measures are proposed:

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

Dust Handling:

- 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.
- 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.

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 mining area.
- All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.

Management of weed or invader plants:

- A weed and invader plant control management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of Conservation of Agricultural Act (Act No 43 1983).
- Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used:
 - "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.

Waste Management:

- Regular vehicle maintenance may only take place within the temporary service bay area. If emergency repairs is needed on equipment not able to move to the service bay area, 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 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 recognised facility.
- Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing it at a recognised facility. Proof should be filed.
- Suitable covered receptacles should 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, should be stored in a container with a closable lid at a collecting point and collected on a regular basis

and disposed of at a recognised landfill site. Specific precautions should be taken to prevent refuse from being dumped on or in the vicinity of the mine area.

- Biodegradable refuse generated should be handled as indicated above.

Protection of fauna and flora:

The risk on the fauna and flora of the footprint area as well as the surrounding environment, as a result of the proposed mining activities, can be reduced to being low through the implementation of the mitigation measures listed below:

- The site manager should ensure that no fauna is caught, killed, harmed, sold or played with.
- Workers should 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.
- No plants or trees may be removed without the approval of the ECO.

Management of Access Roads:

- Storm water should be diverted around the access roads to prevent erosion.
- Vehicular movement must be restricted to existing access routes to prevent crisscrossing of tracks through undisturbed areas.
- Rutting and erosion of the access road caused as a result of the mining activities should be repaired by the applicant.

Storm water Handling:

- Storm water must be diverted around the topsoil heaps, mining areas and access roads to prevent erosion and loss of material.
- Mining must be conducted only 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:
 - 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.
 - Dirty water must be collected and contained in a system separate from the clean water system.
 - Dirty water must be prevented from spilling or seeping into clean water systems.
 - The storm water management plan must apply for the entire life cycle of the mine and over different hydrological cycles (rainfall patterns).
 - The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management plan.

Management of Health and Safety Risks:

- 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.

Topsoil Handling:

- The first 300 mm of topsoil should be removed in strips and stored along the boundary of the mining area. Stockpiling of topsoil must be done to protect it from erosion, mixing with other material. The topsoil must be used to cover the rehabilitated area and improve the establishment of natural vegetation.
- The temporary topsoil stockpiles of each removed strip should be kept free of weeds.
- Topsoil stockpiles should be placed on a levelled area and measures should be implemented to safeguard the piles from being washed away in the event of heavy rains/storm water.
- Topsoil heaps should not exceed 3 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- Storm- and runoff water should be diverted around the stockpile area and access roads to prevent erosion.

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

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

Keeping in mind that the proposed processing project is of very small scale and is proposed to make use of temporary infrastructure comprising the washing and screening plant and chemical toilet the design of the site does not currently dictate any specific layout demands.

x) Motivation where no alternative sites were considered.

Not applicable

xi) Statement motivating the preferred site.

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

The open cast mining of the excavation area has been identified as the most cost effective method to produce the desired sand. Due to the remote location of the excavation area the potential impacts on the surrounding environment, associated with open cast mining, is deemed to be of low significance. It is proposed that all mining related infrastructure will be contained within the boundary of the mining area. As no permanent buildings will be established on site the layout/position of the temporary infrastructure will be determined by the mining progress and available space within the 2.9ha ha mining area.

i) Plan of study for the Environmental Impact Assessment process

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

Various project alternatives were considered during the planning phase of the project. These included the following:

1. Site Alternative 1 entails the extension of mining area of a 2.9 ha area within the boundaries of the following GPS Coordinates:

Decimal degrees	Degrees; Minutes: Seconds
■ A-26,6712°S; 28,4801°E	■ A 26°41'9.90"S; 28°28'48.36"E
■ B-26,6698°S; 28,4798°E	■ B 26°40'11.28"S; 28°28'47.28"E
■ C-26,6698°S; 28,4795°E	■ C 26°40'11.28"S; 28°28'46.20"E
■ D-26,6698°S; 28,4788°E	■ D 26°40'11.28"S; 28°28'43.68"E
■ E-26,6706°S; 28,4788°E	■ E 26°40'14.16"S; 28°28'43.68"E
■ F-26,6712°S; 28,4788°E	■ F 26°40'16.32"S; 28°28'43.68"E
■ G-26,6718°S; 28,4792°E	■ G 26°40'18.48"S; 28°28'45.12"E
■ H-26,6722°S; 28,4796°E	■ H 26°40'19.92"S; 28°28'46.56"E
■ J-26,6722°S; 28,4798°E	■ J 26°40'19.92"S; 28°28'47.28"E

The applicant investigated the possibility of the processing of material on an external site, however this were not found to be the best option with regard to the cost effectiveness of transporting of material to an offsite washing and screening plant.

This alternative was however found not to be the preferred alternative due to the following reasons:

Blazecor 226 CC identified the need for sand in the area due to an increase in construction and building projects. As mentioned earlier this report forms part of an extension of the current mining area and updating of the current mining activities and infrastructure used on site. The excavation area on the property of the applicant has previously been used for mining purposes.

In this light the applicant identified the proposed area as preferred and only viable site alternative. The processing of material on an external site were not found to be the best option with regard to the cost effectiveness of transporting of material to an offsite washing and screening plant. In light of the above the impacts associated with washing and screening of material on another site is believed to have a higher significance without the need or motivation to justify it.

2. Temporary Infrastructure (Preferred Alternative) vs Permanent Infrastructure:

- a. The use of temporary infrastructure will entail the use of infrastructure and machinery that is either track-based or can be removed without difficulty. Temporary infrastructure with concrete

flooring to be used in the mining method will entail a temporary washing and screening plant, storage facility and chemical toilet, with servicing of vehicles and equipment being done off-site at the existing workshop of the applicant. The off-site office will also be used for all administration purposes relating to the project.

- i. **Positive Aspects:** The positive aspects associated with the use of temporary infrastructure firstly enable the applicant to move the infrastructure within the boundaries of the mining area as mining of the mineral progresses. Secondly the decommissioning phase is facilitated as the removal of infrastructure from the mining area during the rehabilitation of the site is easy and highly effective.
- b. The use of permanent infrastructure will entail the construction of an office building with ablution facilities, and installation of a permanent vehicle service area.
 - i. The use of permanent infrastructure will increase the impact of the proposed project on the environment as it will entail the establishment of more structures, lengthen the period required for rehabilitation as well as increase the rehabilitation amount as the permanent infrastructure will either have to be decommissioned or be maintained after the closure of the site.
 - ii. The construction of permanent infrastructure at the site will also increase the visual impact of the proposed project on the surrounding environment and additional mitigation measures will have to be implemented to address the impact.

In the light of the above the use of temporary infrastructure is deemed to be the most viable preferred alternative.

2. No-go Alternative:

The no-go alternative entails no change to the status quo and is therefore a real alternative that needs to be considered. The sand to be mined at the site will be used for the construction industry, if however the no-go alternative is implemented the applicant will not be able to expand the existing mining area and establish a washing and screening plant, not being able to process the mineral present in the area. The processing of material on an external site were not found to be the best option with regard to the cost effectiveness of transporting of material to an offsite washing and screening plant, impact on roads and road users due to long distance hauling of sand.

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

- The applicant will not be able to expand the existing mining area and establish a washing and screening plant, not being able to process the mineral present in the area,
- The application, if approved, would allow the applicant to upgrade the mining area 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,
- The applicant will not be able to diversify the income of the property,

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

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

Environmental aspects to be assessed as part of the EIA process will include the following:

1) VISUAL EXPOSURE:

- 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 should 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.

2) ABLUTION, WASTE WATER & WASTE DISPOSAL:

- Ablution facilities will consist of chemical toilets hired from a contractor and serviced regularly.
- Any effluents containing oil, grease or other industrial substances will be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility.
- Spills would be cleaned up 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.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., will be stored in a container at a collecting point and collected on a regular basis and disposed of at a recognised landfill site.
- Biodegradable refuse generated will be handled as indicated above.
- No waste will be burned or buried on site.

3) DUST:

- Speed on the access road will be limited to 40km/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.

4) NOISE:

- It will be ensured that employees and staff conduct themselves in an acceptable manner while on site.
- All mining vehicles will be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.

5) ACCESS ROUTE:

- ✦ The existing farm road to the area will be used to provide the applicant with access. The access road is in poor condition and will have to be upgraded.
- ✦ Should any other access roads to the mining area be required it will be established in consultation with the landowner however existing roads will be used as far as practicable.
- ✦ All new roads will be selected as far as possible to avoid watercourses and steep gradients. Adequate drainage and erosion protection in the form of cut-off berms or trenches will be provided where necessary.
- ✦ The roads to be established to the site will be below the threshold of the EIA regulations of the National Environmental Management Act, 1998 (Act No 107 of 1998) as amended December 2014.

6) SURFACE AND GROUND WATER:

- ✦ The proposed activities are not expected to have a negative impact on any surface and ground water of the area.
- ✦ Open water or streams are located within 3km distance of the application area.
- ✦ A borehole is present on the farm, which is currently used for stock watering by the landowner.
- ✦ A water use application will be submitted for the use of water for washing of sand and dust suppression on roads.

7) Other aspects that will be discussed in more detail in the EIA report will be:

iii. Description of aspects to be assessed by specialists

ARCHAEOLOGICAL AND CULTURAL:

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. As the footprint of the excavating area falls over an area previously used for mining, the activity is not anticipated to have a negative impact on any archaeological or cultural aspects. An archaeological study will be undertaken in order to confirm the above.

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

The impact assessment component of the EIA is subdivided into several environmental aspects to be studied as listed below:

- ✦ Air and Noise Quality / Access Route to be used
- ✦ Surface and Groundwater
- ✦ Groundcover & Hydrology
- ✦ Proposed alternatives including the no-go alternative

Greenmined will use in-house specialists to review the environmental aspects which will be assessed as part of the environmental impact assessment process. The environmental aspects briefly described in the Scoping Report will be updated, and site and technology specific impacts and mitigation recommendations will be made and be reviewed by the project team.

v. The proposed method of assessing duration significance

The significance of the identified impacts will be determined using the approach outlined in Section 2 vi) Methodology Used in Determining and Ranking the Significance. The environmental significance assessment methodology is based on the Overall Consequence x Overall Likelihood.

Consequence analysis is a mixture of quantitative and qualitative information and the outcome can be positive or negative. For the purpose of determining the environmental significance in terms of consequence, the following factors were chosen: Severity/Intensity, Duration and Extent/Spatial Scale.

The determination of likelihood is a combination of Frequency and Probability.

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.

Qualitative description or magnitude of Environmental Significance is qualitative and is an indication of the nature or magnitude of the Environmental Significance. It also guides the prioritisations and decision making process associated with this event, aspect or impact.

Assessing duration significance forms part of the environmental significance determination of the impacts and will be assessed accordingly.

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

The EAP has been in continuous consultation with the competent authority (DMR) throughout the application process.

- This was done by Dera Environmental Consultants.

DMR will be requested to comment on the Draft Scoping. Any comments received will be included in the Final Scoping Report.

- Comments on this report was received and included in this report.

Should DMR accept the Final Scoping Report the draft EIA report, including all investigations, assessments and specialist studies, will be submitted to DMR for comments.

The aspects to be assessed as part of the environmental impact assessment process will be added to the draft EIA report that will be distributed to all registered I&AP's and stakeholders for a 30 days commenting period.

Any additional requirements will be added to the Final EIA report to be submitted to DMR for approval. Upon receipt of the Environmental Authorisation the EAP will be in consultation with DMR until granting of the amended Mining Permit.

It is proposed that the EIA process will entail the following steps:

1. Application for Environmental Authorisation to DMR
2. DMR responds with reference number
3. Draft Scoping Report for perusal by I&AP's and stakeholders (including DMR)
4. Final Scoping Report (FSR) submitted to DMR
5. DMR decision on FSR
6. Draft EIA report for perusal by I&AP's and stakeholders (including DMR)
7. Final EIA report submitted to DMR
8. DMR decision on Final EIA report
9. Issuing of the amended Mining Permit

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

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

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

Limited public participation was done as this is only an amendment to the current Environmental Management Plan (EMP) according to the standard format provided by the Department of Mineral Resources (DMR) for Environmental Authorisations in terms of the National Environmental Management Act, 1998 and the National Environmental Management Waste Act, 2008, in respect of listed activities that have been triggered by applications in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (as amended) for Koppies Vlei Sand Mine. This report will be sent for public comments on the 7th of September 2016 as initial public participation that was done was not complying with regulation 21()(a) of the EIA Regulations.

The Final Scoping Report and specialist studies, will be submitted to DMR for comments. This report will be sent for public comments on the 7th of September 2016 as initial public participation that was done was not complying with regulation 21()(a) of the EIA Regulations.

The aspects to be assessed as part of the environmental impact assessment process will be added to the draft EIA report that will be distributed to all registered I&AP's and stakeholders for a 30 days commenting period.

The I&AP's and Stakeholders to be provided with the Final Scoping report for their perusal will include the following:

- ▣ Mr HC Eksteen (landowner)
- ▣ Mr HS Eksteen
- ▣ Mr J. A Pienaar
- ▣ Masilonyana Local Municipality
- ▣ Masilonyana Local Municipality (Ward councillor -)
- ▣ Thabo Mofutsanyana District Municipality
- ▣ Department of Agriculture, Rural Development and Land Administration
- ▣ Department of Economic Development, Environment and Tourism
- ▣ Department of Water and Sanitation
- ▣ Department of Labour
- ▣ South African Heritage Resource Agency
- ▣ Department of Agriculture, Rural Development, Land and Environmental Affairs
- ▣ Transnet
- ▣ Eskom

All issues, comments and recommendations received on the Final Scoping report will be incorporated into the Draft EIA report and EMPr to be submitted for further comments.

All the issues, comments and suggestions raised during the comment period on the Draft EIA Report/EMPr will be added to the Comments and Response Report (CRR) that will accompany the Final EIA Report/EMPr.

The Final EIA report/EMPr will be submitted to the DMR for a decision about the proposed project.

2. Details of the engagement process to be followed

(Describe the process to be undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not the attended public meetings and records of such consultation will be required in the EIA at a later stage).

Public participation during the impact assessment phase of the EIA will entail a review of the findings of the EIA, presented in the Draft EIA and EMPr Reports. These reports will be made available for public comment as described above.

I&APs will be advised timeously of the availability of these reports and how to obtain them. They will be encouraged to comment in writing (mail or email). Ample notification of due dates will be provided.

All the issues, comments and suggestions raised during the comment period on the Draft EIA Report/EMPr will be added to the Comments and Response Report (CRR) that will accompany the Final EIA Report/EMPr.

The Final EIA report/EMPr will be submitted to the DMR for a decision about the proposed project.

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

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

The Draft EIA report will be the subsequent document circulated to the registered I&AP's and stakeholders for their perusal.

The Environmental Impact Assessment Report and Environmental Management Programme Report template prescribed by DMR in terms of the National Environmental Management Act, 1998 in respect of listed activities that have been triggered by applications in terms of the MPRDA, 2002 will be used to describe information with regard to the proposed mining project.

The research and analysis with regard to the project will be processed and interpreted to compile the information required in the abovementioned template to be distributed for public comment.

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

The EIA process for the extension of a sand mining project mine 2.9ha of a portion of Koppies Vlei 622, Theunissen magisterial district Free State Province for the mining of sand is depicted below. This report forms part of an extension of the current mining area and

updating of the current mining activities and infrastructure used on site. The proposed mining site will be an extension of the existing sand excavation previously disturbed by sand mining activities. Upon closure of the mining area, the land will revert back to agriculture.

Tasks undertaken during environmental impact assessment:

1. Application for amended Mining Permit and Environmental Authorisation to DMR
2. DMR responds with reference number
3. Announcement of EIA and MP application to I&APs and stakeholders
4. Draft Scoping Report for perusal by I&AP's and stakeholders
5. Final Scoping Report (FSR) submitted to DMR
6. DMR decision on FSR
7. Impact Assessment Process
 - Project description and site environmental baseline
 - Impact assessment
 - Mitigation measures and recommendations
 - EMPr compilation
 - Cumulative impacts assessment
8. Draft EIA report for perusal by I&AP's and stakeholders
9. Final EIA report submitted to DMR
10. DMR decision on Final EIA report
11. Announcement of Environmental Authorisation and Appeal Procedure
12. Opportunity to Appeal
13. Issuing of the amended Mining Permit

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

ACTIVITY Whether listed or not listed	POTENTIAL IMPACT	MITIGATION TYPE	POTENTIAL FOR RESIDUAL RISK
(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..)	(modify, remedy, control or stop) Through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc) E.g. Modify through alternative method. Control through noise control	

		Control through management and monitoring through rehabilitation.	
Demarcation of site with visible beacons	No impact could be identified other than the beacons being outside the boundaries of the approved mining permit area	Control through proper site management	LOW -MEDIUM
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	LOW -MEDIUM
Stripping and stockpiling of topsoil	<ul style="list-style-type: none"> -Visual impact due to the removal of the topsoil -Dust nuisance from denuded areas - Surface disturbance - Soil erosion due to absence of vegetation. 	<ul style="list-style-type: none"> -Control through proper site management - Control through dust suppression measures 	LOW -MEDIUM
Excavation and loading of sand to be processed	<ul style="list-style-type: none"> - Dust nuisance from excavation -Noise nuisance generated by excavation equipment -Infestation of mining area and soil heaps with weeds/invaser plants -Contamination of surface or groundwater due to hazardous spills not being cleaned -Negative impact on fauna that may enter the area, -Potential impact of mining activities on the runoff and infiltration of storm water. - Degradation of the gravel access roads 	<ul style="list-style-type: none"> - Control through proper site management - design measures - Control through dust suppression measures - Control through noise control measures - Control / remedy through implementation of an alien invasive clearing/control plan - Control through proper waste management and use of mechanically sound equipment. Remedy through immediate corrective actions. - Modify through alternative site - Control / remedy through storm-water control measures - Control through proper road maintenance 	MEDIUM

Washing sand and Screening sand	<ul style="list-style-type: none"> - water contamination due to washing - noise pollution due to screening -Dust nuisance due to screening 	<ul style="list-style-type: none"> - Control through proper site management - Control / remedy through storm-water control measures - Control through noise control measures 	MEDIUM
Transportation of sand from stockpile area to clients	<ul style="list-style-type: none"> - Dust nuisance from transporting sand -Noise pollution generated by vehicles - Degradation of the gravel access roads 	<ul style="list-style-type: none"> - Control through proper site management - Control through noise control measures - Control through dust suppression measures - Control through proper road maintenance 	MEDIUM-HIGH
Landscape and replacement of topsoil over stripped area	<ul style="list-style-type: none"> -Noise pollution -Dust nuisance from disturbance of soil. - Infestation of weeds and invader plants. 	<ul style="list-style-type: none"> - Control / remedy through implementation of an alien invasive clearing/control plan - Control through proper site management - Control through noise control measures - Control through dust suppression measures 	MEDIUM
Final rehabilitation of entire area	<ul style="list-style-type: none"> -Noise pollution - Soil erosion due to absence of vegetation - Infestation of weeds and invader plants 	<ul style="list-style-type: none"> - Control through proper site management - Control through noise control measures - Control through dust suppression measures - Control/remedy through implementation of alien invasive plant management plan and after care - Control / Prevent through implementation of storm-water control and vegetation of denuded areas. 	LOW-MEDIUM

i) Other Information required by the competent Authority

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

- (1) **Impact on the socio-economic conditions of any directly affected person.** (Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or 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 **Appendix 2.19.1** and confirm that the applicable mitigation is reflected in 2.5.3, 2.11.6 and 2.12 herein)

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

- Dust nuisance due to the liberation of dust along the gravel access road.
The liberation of dust during the operational phase will be limited to the immediate vicinity and can be controlled through the spraying of water on the roads. The impact on the surrounding area is deemed to be of low significant. There will be no residual impact after closure.
- Noise nuisance caused by mining activities.
The noise impact of the mine is deemed to be of low significance, as it will mainly be contained to the immediate area. The closest residence to the mining area is (approximately 1800 m). The residents of the surrounding properties are all more than 1,5 km from the mining area.

- (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 that Act, attach the investigation report as **Appendix 2.19.2** and confirm that the applicable mitigation is reflected in 2.5.3, 2.11.6 and 2.12 herein)

The footprint of the existing excavation area falls over a area previously used for mining therefore the activity is not anticipated to have a negative impact on any archaeological or cultural aspects. An archaeological study will be undertaken in order to confirm the above. The proposed opening of the site was extended to SAHRIS for the significant heritage overview of the site and will be discussed in the EA report

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

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

Not applicable

3. UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I Sonette Smit herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from Stakeholders and Interested and Affected parties has been correctly recorded in the report.



Signature of the EAP

DATE: 23/02/2016

4. UNDERTAKING REGARDING LEVEL OF AGREEMENT

I Sonette Smit herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with Interested and Affected Parties and Stakeholders has been correctly recorder and reported herein.



Signature of the EAP

DATE: 05/09/2016

- END -