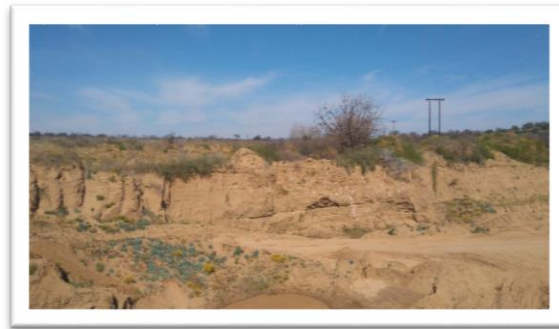




mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

ENVIRONMENTAL IMPACT ASSESSMENT REPORT And ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT



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
TEL NO:	057 733 0612
FAX NO:	057 733 2682
POSTAL ADDRESS:	PO Box 202, Theunissen, 9410
PHYSICAL ADDRESS:	28 Potgieter Street, Theunissen, 9410
FILE REFERENCE NUMBER SAMRAD:	FS30/5/1/3/2/1/10101MP

1. 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 Regulation, 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 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 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 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The objective of the environmental impact assessment process is to, through a consultative process-

- (a) determine the policy and legislative context within the activity is located and document how the proposed activity complies with and responds to the policy and legislative context,
- (b) describe 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 the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment,
- (d) determine the –
 - (i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives, and
 - (ii) degree to which these impacts-
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources, and
 - (cc) can be avoided, managed or mitigated;
- (e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
- (f) identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity;
- (g) identify suitable measures to manage, avoid or mitigate identified impacts, and
- (h) identify residual risks that need to be managed and monitored.

PART A
**SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT
REPORT**

3. Contact Person and correspondence address

a) **Details of Greenmined Environmental**

In terms of NEMA the proponent must appoint an independent Environmental Assessment Practitioner (EAP) to undertake the EIA of any activities regulated in terms of the aforementioned Act. Blazecor 226 CC appointed Greenmined Environmental to undertake the study needed. Greenmined Environmental has no vested interest in Blazecor 226 CC or the proposed project and hereby declares its independence as required by the EIA Regulations.

i) Details of the EAP

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

Tel No.: 021 851 2673

Fax No.: 086 546 0579

Cell No: 084 5855706

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 is currently completing BA in Environmental Management through UNISA and has the following additional expertise:

Planet GIS Certified Officer

IPW training

Water Quality Monitoring

Full CV with evidence attached as appendix 1

Summary of the EAP's past experience

(In carrying out the Environmental Impact Assessment Procedure)

(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	F00300000000000622000

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 the aforesaid main and listed activities, and infrastructure to be placed on site

Blazecor 226 CC intends applying for an extension of its mining permit to mine sand on 2.9ha of a portion of 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 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 processed through a washing plant from where the water will be pumped to a settling pond within the quarry, this water will then evaporate and the dry residue will be used as filling for rehabilitation. 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 the remaining life 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.

See attached as Appendix B a copy of the plan and schematic indication of the proposed processing activities.

(i) **Listed and specified activities**

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 m²	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	1ha	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	1ha	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	0.9 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	2.9 ha	X	GNR 983 Listing Notice 1 Activity 35 GNR 983 listing notice 1 activity 22
Final rehabilitation of entire area	2.9ha	X	GNR 983 Listing Notice 1 Activity 35 GNR 983 listing notice 1 activity 22
Demarcation of site with visible beacons	2.9ha	N/A	Not listed

(ii) Description of the activities to be undertaken

(Describe Methodology or technology to be employed, including the type of commodity to be mined 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 method 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 processed through a washing plant from where the water will be pumped to a settling pond within the quarry, this water will then evaporate and the dry residue will be used as filling for rehabilitation.
- 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 45000 m³ taken at a production rate of 2000 m³ a month it will take 22 months to complete the mining process.

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) will be established. Chemical ablution facilities are 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 and it may be necessary to pump additional water from the adjacent stream (A Water Use authorisation application for this use is currently in process). 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, proof of this removal will be kept on file at the applicants office. Approximately 3 workers will be employed at the site. Mining will be done during 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 settling pond
- 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);	REFERENCE WHERE APPLIED (i.e. Where in this document has it been explained how the development complies with and responds to the legislation and policy context)	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT (E.g in terms of the National Water Act: Water use license has/has not been applied for).
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	Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) - Section 27
National Environmental Management Act, 1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 <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: 	Application for a Environmental Authorisation 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 <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:
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) and amendments	Assessment of biophysical environment	National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) and amendments
Mine Health and Safety Act, 1996 (Act No 29 of 1996)	The mitigation measures proposed for the site includes	Mine Health and Safety Act, 1996 (Act No 29 of 1996)

	specifications of the MHTSA	
National Heritage Resources Act No 25 of 1999	Assessment of the cultural and heritage environment	National Heritage Resources Act No 25 of 1999
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	Assessment of biophysical environment	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
Land Use Planning Ordinance (Ordinance 15 of 1985)	Land use zoning requirements	Land Use Planning Ordinance (Ordinance 15 of 1985)
Public Participation Guideline in terms of the NEMA EIA Regulations	Used during the public participation process	Public Participation Guideline in terms of the NEMA EIA Regulations
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	Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) - Section 27
National Environmental Management Act, 1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 i) Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 12 ii) Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 21 iii) Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 22: iv) Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 35: Environmental Impact Assessment Regulations Listing Notice 2 of 2014 Activity 21:	Application for a Environmental Authorisation 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 <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:

National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) and amendments	Assessment of biophysical environment	National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) and amendments
---	---------------------------------------	---

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 for sand required for use in the construction industry 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) Motivation for the preferred development footprint within the approved site including a full description of the process followed to reach the proposed development footprint within the approved 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.

The open cast mining of the excavation area has been identified as the most cost effective method to produce the desired sand. The proposed method will not produce any residual waste that has to be disposed of. Residual waste water will be pumped to a settlement pond in the quarry, be left to evaporate and the dry residue will be used as filling for the rehabilitation process. Due to the remote location of the excavation area the potential impacts on the surrounding environment, associated with open cast mining, are deemed to be of low significance. It is proposed that all mining related infrastructure will be contained within the boundary of the mining area.

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 processed through a washing plant from where the water will be pumped to a settling pond within the quarry, this water will then evaporate and the dry residue will be used as filling for rehabilitation. 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 the remaining life 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.

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 processed through a washing plant from where the water will be pumped to a settling pond within the quarry, this water will then evaporate and the dry residue will be used as filling for rehabilitation
- 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 45000 m³ taken at a production rate of 2000 m³ a month it will take 22 months to complete the mining process.

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) will be established. Chemical ablution facilities are 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 (A Water Use authorisation application for this use is currently in process). 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, proof of this removal will be kept on file at the applicants office. Approximately 3 workers will be employed at the site. Mining will be done during 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 settling pond
- 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

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.

Blazecor 226 CC identified the need for sand in the area due to an increase in construction and building projects. As mentioned above 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 light hereof the applicant identified the proposed area as preferred and only viable site alternative. The processing of material on an external site was not found to be the preferred option having 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.

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 was 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.

Site Alternative 1 (preferred site) entails the section 102 extension of the mining area by a 2.9ha area within the boundaries of the following GPS Coordinates:

SITE ALTERNATIVE 1 (PREFERRED ALTERNATIVE) – Extension of 102				
NO	LATITUDE (SOUTH)	LONGITUDE (EAST)	LATITUDE (SOUTH) DD	LONGITUDE (EAST) DD
A	26°41'9.90"S;	28°28'48.36"E	26.6712°S	28.4801°E
B	26°40'11.28"S;	28°28'47.28"E	26.6698°S	28.4798°E
C	26°40'11.28"S;	28°28'46.20"E	26.6698°S	28.4795°E
D	26°40'11.28"S;	28°28'43.68"E	26.6698°S	28.4788°E
E	26°40'14.16"S;	28°28'43.68"E	26.6706°S;	28.4788°E
F	26°40'16.32"S;	28°28'43.68"E	26.6712°S	28.4788°E
G	26°40'18.48"S;	28°28'45.12"E	26.6718°S	28.4792°E
H	26°40'19.92"S;	28°28'46.56"E	26.6722°S	28.4796°E
I	26°40'19.92"S;	28°28'47.28"E	26.6722°S	28.4798°E



Figure 1: Satellite view indicating the position of the proposed mining area is approximately 2.9ha in extent (excluding current excavation).

Site Alternative 1 was identified during the inspection phase, and was selected as the preferred alternative due to the following (positive) reasons:

1. 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 light hereof the applicant identified the proposed area as preferred and only viable site alternative. The processing of material on an external site was not found to be the best option having 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.

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.

3. 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 attend 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).

During the Final Scoping public participation process the stakeholders and I&AP's were informed of the project by means of I&AP comment/notification letters that were either delivered by hand or sent directly to the contact persons on the 12 September 2016. A 30 days commenting period was allowed.

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 of 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 which 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 Final Scoping report was sent for public comments on the 7th of September 2016 as the initial public participation that was done did not comply with regulation 21()(a) of the EIA Regulations.

The Final Scoping Report (FSR) was subsequently compiled and distributed to all the registered I&AP's and stakeholders. The I&AP's and stakeholders who did not register during the initial public participation phase were notified, by means of a letter, that the FSR is available for their perusal should they be interested. A 30 days commenting period was allowed for perusal of the documentation and submission of comments. The comments received during this period were added to the Amended Final Scoping Report submitted to DMR for approval. The Final Scoping Report is still being reviewed by DMR, comments received by Stakeholders and I&AP's will be forwarded to DMR for their perusal.




The Draft EIA report will be distributed to the registered I&AP's and stakeholders for their perusal over a 30 days commenting period. The comments received on the Draft EIA report will be incorporated into the Final EIA report to be submitted for decision making to DMR.

The comments and responses report with proof of the public participation process thus far is attached as Appendix F.

iii) Summary of issues raised by I&AP's

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

Interested and Affected Parties		Date Comments Received	Issues Raised	EAP's 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 names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.					
AFFECTED PARTIES					
Landowner/s					
Mr HC Eksteen (Landowner)	X	29 September 2016	No response received	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	Appendix 8 & 9
Lawful occupiers/s of the land					
Mr. Willem Botha (Client: Blazecor 226 CC)	X	29 September 2016	No response received	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	Appendix 8 & 9
Mr. HS Eksteen	X	29 September 2016	No response received	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	Appendix 8 & 9
Mr. JA Pienaar		29 September 2016	No response received	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the	Appendix 8 & 9

				Department on the 13 th of October 2016.	
Landowners or lawful occupiers on adjacent properties	X				
Surrounding landowners:  Mr. Willem Botha  Mr. HS Eksteen  Mr. JA Pienaar	X	29 September 2016	No comments received	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	Appendix 8 & 9
Municipal councillor: Masilonyana Mr. Simon Chere Mangooejane	X	21 September 2016	No response received.	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	Appendix 8 & 9
Municipality : Masilonyana Mr. David Nthau	X	12 September 2016	No response received.	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	Appendix 8 & 9
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA, etc	X				
Department of Economic Small Business Development, Tourism and Environmental Affaris	X	12 September 2016	No response received.	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the	Appendix 8 & 9

				Department on the 13 th of October 2016.	
Department of Public Works, and Infrastructure	X	12 September 2016	No response received.	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	Appendix 8 & 9
Department of Agriculture and Rural Development	X	12 September 2016	No response received.	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	Appendix 8 & 9
Department of Labour	X	12 September 2016	No response received.	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	Appendix 8 & 9
Department of Police, Roads and Transport	X		No response received.	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	Appendix 8 & 9
Department of Water Affaris & Sanitation	X		No response received.	Commenting period ends on the 12 th of October 2016. An updated report including all responses and	Appendix 8 & 9

				comments will be send to the Department on the 13 th of October 2016.		
Communities						
Masilonyana Municipality	Local	X	12 September 2016	No response received.	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	Appendix 8 & 9
Lejweleputswa Municipality	District	X	12 September 2016	No response received.	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	Appendix 8 & 9
Dep. Land Affairs		N/A				
Traditional Leaders		N/A				
Dept. Environmental Affairs		X	12 September 2016	No response received.	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	Appendix 8 & 9

Other Competent Authorities affected					
Eskom	X		No response received	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	
South African Heritage Resource Agency	X		No response received	Commenting period ends on the 12 th of October 2016. An updated report including all responses and comments will be send to the Department on the 13 th of October 2016.	
<u>OTHER AFFECTED PARTIES</u>					
<u>INTERESTED PARTIES</u>					

iv) The Environmental attributes associated with the development footprint alternatives. (The environmental attributed 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).

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 for the use of water from the borehole for washing of sand and dust suppression on roads and an additional application for the use of water from the Vet river as an alternative resource (if ever required) is currently in process.

BIOLOGICAL AFFECTED ENVIRONMENT

VEGETATION

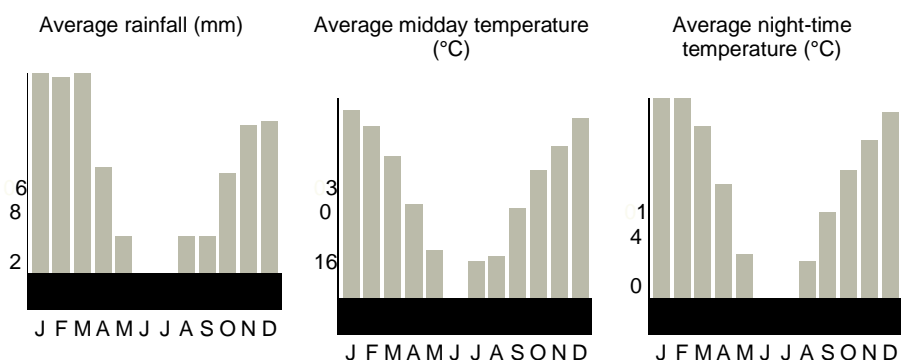
Plateaus or slightly sloping flanks of dolerite outcrops supporting low shrub land dominated by dwarf small-leaved karroid and succulent shrubs. Grasses are restricted to depressions and crevices filled with fine soils. Remarkable is the presence of abundant geophytes herbs. Solitary shrubs or small 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, Duikeer, Jackal and Meerkat.

CLIMATE:

Bloemfontein normally receives about 407 mm 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 (2 mm) in June and the highest (68 mm) 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 processed through a washing plant from where the water will be pumped to a settling pond within the quarry, this water will then evaporate and the dry residue will be used as filling for rehabilitation. 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. A sections of the farm have previously been used for sand mining purposes the bulk of the income is generated from agricultural activities.

(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 for the use of water from the borehole for washing of sand and dust suppression on roads and an additional application for the use of water from the Vet river as an alternative resource (if ever required) is currently in process.

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.

(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.

v) 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 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

POTENTIAL POSITIVE IMPACTS

- Work opportunities for the local community,
- Reduction of sand cost to the district due to short traveling distance.
- Should the proposed site (site alternative 1) be approved an already disturbed area can be used for the establishment of the processing activities, and no natural vegetation will be impacted on.
- Contribution to the construction building industry that is an important economic sector in the Theunissen area.
- Opportunity to landowner to diversify income on the property.

Associated Positive Impacts – Temporary Infrastructure:

- Low intensity site establishment,
- Easy movement of infrastructure as project progress,
- Complete removal of infrastructure at closure of the activity.

vi) 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 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 recognized 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 realized (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 organization 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 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 affects 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 summarized 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 - 4.9	5 - 9.9	10 - 14.9	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 prioritizations 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 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 of 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, proof of this removal will be kept on file at the

applicants office. 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) Motivation where no alternative sites were considered.

N/A

x) Statement motivating the alternative development location within the overall site. (Provide a statement motivating 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 (with concrete flooring) will be determined by the mining progress and available space within the 2.9ha ha mining area.

h) 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 should 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 processing 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.

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	1	2	2	4	3	6

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	1	2	2	2	2	4

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	2	2	2	4

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		
3	1	1	1.6	2	2	2	3.2

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	1	2	4	4	4	8

Dust nuisance due to excavation activities

Rating: Medium

Degree of Mitigation: Partial

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

Noise nuisance generated by excavation equipment

Rating: Medium

Degree of Mitigation: Partial

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
1	3	1	1.6	4	5	4.5	7.2

Unsafe working conditions for employees

Rating: Medium – High

Degree of Mitigation: Fully Mitigated

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
2	3	1	2	5	5	5	10

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	3	2	2.5	5.7

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	2	2	2	6.6

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

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

i) 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).

ACTIVITY Whether listed or not listed. (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	POTENTIAL IMPACT (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc...etc...etc.)	ASPECTS AFFECTED	PHASE In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	SIGNIFICANCE If not mitigated.	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc) E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	SIGNIFICANCE If not mitigated.
Demarcation 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	Control through proper site management	N/A
Establishment of temporary office and ablution infrastructure within boundaries of site.	If the infrastructure is established within the boundaries of the approved mining	N/A	Construction / Site Establishment phase	N/A	Control through proper site management	N/A

	area no impact could be identified					
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
	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
	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

	Infestation of the topsoil heaps by weeds and invader plants.	Biodiversity	Operational phase	Low – Medium	<u>Control & Remedy:</u> Implementation of weed control	Low
	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	Medium
	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

WASHING AND SCREENING SAND	Visual impact associated with the washing and screening activities	The visual impact may affect the aesthetics of the landscape.	Operational phase	Medium	<u>Control:</u> Implementation of proper housekeeping	Low – Medium
	Dust nuisance due to washing and screening 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
	Noise nuisance generated by washing and screening activities	The noise impact should be contained within the boundaries of the property, and will relate to the existing equipment operating on-site.	Operational phase	Medium	<u>Control:</u> Noise management	Low – Medium
	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water	Operational phase	Medium	<u>Control:</u> Waste management	Low

		pollution if not addressed				
	Weeds and invader plant infestation of the area	Biodiversity	Operational phase	Low – Medium	<u>Control</u> & <u>Remedy</u> : Implementation of weed control	Low – Medium
EXCAVATION	Visual intrusion associated with the excavation activities	The visual impact may affect the aesthetics of the landscape.	Operational phase	Medium - High	<u>Control</u> : Implementation of proper housekeeping	Low – Medium
	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
	Noise nuisance generated by excavation equipment	The noise impact should be contained within the boundaries of the property, and will represent the current noise	Operational phase	Medium	<u>Control</u> : Noise control measures	Low – Medium

		levels of the farm.				
	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 the DWA	Low
	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
	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	Low	<u>Control:</u> Implementation of fauna protection measures	Low

	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
	Weed and invader plant infestation of the area	Biodiversity	Operational phase	Low - Medium	<u>Control & Remedy:</u> Implementation of weed control	Low - medium
LOADING AND TRANSPORTING	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	Operational phase	Medium	<u>Control:</u> Noise control measures	Low - Medium

		represent the current noise levels of the farm.				
	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

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
	Dust nuisance caused during landscaping activities	Should dust levels become excessive it may have an impact on surrounding land owners.	Decommissioning phase	Low – Medium	<u>Control:</u> Dust suppression	Low
	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 area upon decommissioning	Low - Medium
	Noise nuisance caused by machinery	Should noise levels become excessive it may have an impact on surrounding land owners.	Decommissioning phase	Low – Medium	<u>Control:</u> Noise management	Low

	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
	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> Storm water management	Low
	Weeds and invader plant infestation of the area	Biodiversity	Decommissioning phase	Low – Medium	<u>Control</u> & <u>Remedy:</u> Implementation of weed control	Low

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

j) 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.
NONE			

k) Environmental impact statement

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

The key findings of the environmental impact assessment entail the following:

Project proposal:

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 processed through a washing plant from where the water will be pumped to a settling pond within the quarry, this water will then evaporate and the dry residue will be used as filling for rehabilitation. 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 life 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.

Vegetation:

- The proposed (site alternative 1) footprint area identified for the processing activity has previously been disturbed by agricultural processes and mining therefore no natural areas or vegetation needs to be disturbed as a result of the proposed project.

Land Use:

- The proposed excavation area will be established in an area that was previously used for mining purposes as well as agriculture. The excavation area will therefore not have to compete with other land uses at the site. Upon closure of the mining area, the land will revert back to agricultural grazing.
- Due to the remote location of the excavation area 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.

Hydrology:

- The proposed (Site alternative 1) processing area will be more than 100m from any natural water source.
- Storm water management and erosion prevention measures must be implemented on-site.

Cultural and Heritage Environment:

- 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 during the mining operations. Workers will be transported to and from the site daily

Socio-Economic 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 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.
- Dust will be generated by the proposed operation through the movement of machinery and vehicles. Dust suppression measures should 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 R35 and other public roads surrounding the property contributes to the ambient noise of the area. The noise to be generated at the proposed excavation area

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 should 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:

- 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.

(ii) Finale Site Map

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

See the map, indicating site activities attached as Appendix B.

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

The positive impacts associated with the project include:

- ✚ Work opportunities to three workers,
- ✚ Should Site Alternative 1 be approved an already disturbed area can be used for the establishment of the processing activities, and no riparian vegetation will be impacted on.
- ✚ Contribution to the construction industry that is an important economic sector in the Theunissen (Free State) area.
- ✚ Opportunity for the landowner to diversify income on the property

Associated Positive Impacts – Temporary Infrastructure:

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

Additional negative impacts associated with the project that was deemed to have a Low – Medium or higher significance/risk includes:

- ✚ Visual intrusion due to the proposed project
Low – Medium
- ✚ Dust nuisance stemming from proposed project
Low – Medium
- ✚ Noise nuisance due to proposed activity
Low – Medium
- ✚ Impact on the access roads
Low – Medium
- ✚ Health and safety risk posed by un-sloped areas
Low – Medium

I) 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 conditions of authorisation.

Management Objectives	Responsibility	Management Role
Visual Aspect	<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 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	<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 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.

Management Objectives	Responsibility	Management Role
Noise 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"> ✚ No crushing or screening allowed on Sundays. ✚ 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.
Management of weed/invader plants	<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"> ✚ 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.
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 1.5 m 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 20 m buffer area as no-go area around areas with natural vegetation.

Management Objectives	Responsibility	Management Role
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.
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 regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs is needed on site ensure drip trays is present. Ensure all waste products are disposed of in a 200 liter 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 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 disposal needs to be at the recognized landfill site proof of this removal will be kept on file at the applicants office. Prevent refuse from being dumped on or near the processing area. ✚ Biodegradable refuse to be handled as indicated above.
Storm water 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"> ✚ Divert storm water around the processing and stockpile areas to prevent erosion. ✚ Stockpile topsoil heaps along the northern and western boundaries of the study area to divert runoff water away from the processing area.

Management Objectives	Responsibility	Management Role
		<ul style="list-style-type: none"> ✚ Weekly monitor the stockpiles and if any signs of erosion become apparent implement soil erosion protection measures. ✚ Continuously monitor the effectiveness of the storm water infrastructure. ✚ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.
Management of access roads	<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 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 proposed activities.
After care on rehabilitated areas	<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. ✚ Monitor all rehabilitated areas for erosion, and appropriately stabilized if any erosion occurs.
Health and Safety Risk	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</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

Management Objectives	Responsibility	Management Role
	Compliance to be monitored by the Environmental Control Officer.	Safety Act as well as the Mine Health and Safety Act.
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>	<p>✚ Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities.</p> <p>✚ Notify Heritage and the ECO immediately.</p>

Final proposed alternatives.

(Provide an explanation for the final layout of the infrastructure and activities on the overall site as shown on the final site map together with the reasons why they are the final proposed alternatives, which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment)

As explained under point *g) Motivation for preferred development footprint.*

The initial proposal was updated to incorporate the matters raised during the assessment process. This led to the final layout of infrastructure and activities on the overall site as shown in the final site map attached Appendix B:

- The establishment of the processing area proposed under Site Alternative 1 using temporary infrastructure.

m) Aspects for inclusion as conditions of Authorisation.

Any aspects, which have not formed part of the EMP that must be made conditions of the Environmental Authorisation

The management objectives listed in this report under *Point L Proposed impact management objectives* above should be considered for inclusion in the environmental authorisation.

Additional to those conditions the following must be considered as conditions of the Environmental Authorisation:

- A water use license application will be applied for, as the client may require supplementary water from the Vet rivier. The main water use application will be for the borhehole situated on the property.

n) 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. No uncertainty with regard to the proposed project or the receiving environment could be identified.

o) Reasoned opinion as to whether the proposed activity should or should not be authorised

i) Reasons why the activity should be authorized or not.

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

ii) Conditions that must be included in the authorisation

(1) Specific conditions to be included into the compilation and approval of EMPr

The management objectives listed in this report under *Point L Proposed impact management objectives* and listed below must be included into the compilation and approval of the EMPr:

- Visual Aspect
- Dust Handling
- Noise Handling
- Management of weed/invader plants
- Topsoil Management
- Protection of Natural Vegetation
- Fauna Management
- Waste Management
- Storm Water Management
- Management of Access Roads
- After Care on Rehabilitated Areas
- Health and Safety Risks
- Protection of Cultural of Heritage Artefacts

(2) Rehabilitation requirements

The applicant must adhere to the following rehabilitation requirements:

Rehabilitation of the excavated area:

- Due to the impracticality of importing large volumes of fill to restore the excavation area area to its original topography, the rehabilitation option is to develop the excavation area into a minor landscape feature.

- This will entail sloping the excavation faces with acceptable contours (30°) to prevent soil erosion.
- Dry residue from the settling pond will be used as filling for rehabilitation.
- Fill and topsoil could be placed over the slopes to provide a suitable medium for the establishment of vegetation. The floor of the excavation area should 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.

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 (30°) to prevent soil erosion.
 - 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.
 - 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, temporary housing 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 applicants 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 Category 1 weeds according to CARA (Conservation of Agricultural Recourses Act, 1983 – Act 43;

Regulations 15 & 16 (as amended in March 2001) 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.

p) Period for which the Environmental Authorisation is required.

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

q) 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 Environmental Impact Assessment Report and the Environmental Management Programme report.

r) Financial Provision

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

v) Explain how the aforesaid amount was derived.

The annual amount required to manage and rehabilitate the environment was estimated to be R 70 000. Please see the explanation as to how this amount was derived at attached as Appendix I – Financial and Technical Competence.

vi) Confirm that this amount can be provided for 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 processing operation will be self-funded through income generated by sales of the aggregate, and will therefore be funded by BLAZECOR 226 CC.

s) Deviations from the approved scoping report and plan of study.

i) Deviations from the methodology used in determining the significance of potential environmental impacts and risks.

(Provide a list of activities in respect of which the approved scoping report was deviated from, the reference in this report identifying where the deviation was made, and a brief description of the extent of the deviation).

No deviation from the methodology used in determining the significance of potential environmental impacts and risks were deemed necessary. The methodology described in the Scoping Report was also used in the Environmental Impact Assessment Report.

ii) Motivation for the deviation.

N/A

t) 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 219.1** 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:

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 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, 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 should 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 R30 and other public roads surrounding the property contributes to the ambient noise of the area. The noise to be generated at the proposed excavation area 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 should 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 (Site alternative 1) footprint area will not require the building of any permanent structures. The proposed production of aggregate on the property will also reduce the amount of trucks delivering aggregate, 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 that Act, attach the investigation report as **Appendix 219.2** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6 and 2.12 herein).

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 during the mining operations. Workers will be transported to and from the site daily.

Other matter 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**)

The site alternatives investigated during the impact assessment process were done at the hand of information obtained during the site investigation, public participation process as well as desktop studies conducted of the study area. As discussed earlier the following alternatives were considered:

1. Site Alternative 1 – Blazecor 226 CC identified the need for sand in the area due to an increase in construction and building projects. As mentioned above 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 light hereof the applicant identified the proposed area as preferred and only viable site alternative. The processing of material on an external site was not found to be the preferred option having 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. Site alternative 2 – N/A.
3. No-go Alternative

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1) Draft environmental management programme.

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

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

- b) Description of the Aspects of the Activity** (Confirm that the requirement 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 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 in 2.4 herein)

Rehabilitation of the excavated area:

- Due to the impracticality of importing large volumes of fill to restore the excavation area area to its original topography, the rehabilitation option is to develop the excavation area into a minor landscape feature.
- This will entail sloping the excavation faces with acceptable contours (30°) to prevent soil erosion.
- Dry residue from the settling pond will be used as filling for rehabilitation.
- Fill and topsoil could be placed over the slopes to provide a suitable medium for the establishment of vegetation. The floor of the excavation area should 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.

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, 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.
 - Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10cm above the surrounding ground surface.
 - 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 200 mm 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, temporary housing 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 applicants 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 Category 1 weeds according to CARA (Conservation of Agricultural Recourses Act, 1983 – Act 43; Regulations 15 & 16 (as amended in March 2001) 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 excavation 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.

- ii) The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity.**

Due to the nature of the proposed processing activity at site alternative 1, it is believed that the risk of environmental damage or pollution is of low significance. If site management implement the mitigation measures as prescribed in this document, it is believed that the impact on the receiving environment can be adequately controlled.

- iii) Potential risk of Acid Mine Drainage.** (Indicate whether or not the mining can result in acid mine drainage).

N/A

- iv) Steps taken to investigate, assess, and evaluate the impact of acid mine drainage.**

N/A

- v) Engineering or mine design solutions to be implemented to avoid or remedy acid mine drainage.**

N/A

- vi) Measures that will be put in place to remedy any residual or cumulative impact that may result from acid mine drainage.**

N/A

- vii) Volumes and rate of water use required for the mining, trenching or bulk sampling operation.**

N/A

- viii) Has a water use license been applied for?**

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 for the use of water from the borehole for washing of sand and dust suppression on roads and an additional application for the use of water from the Vet river as an alternative resource (if ever required) is currently in process.

ix) Impacts to be mitigated in their respective phases

Measures to rehabilitate the environment affected by the undertaking of any listed activity

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
(as listed in 2.11.1)	of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	(volumes, tonnages and hectares or m ²)	(describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
DEMARCATIION OF SITE WITH VISIBLE BEACONS	Construction / Site Establishment phase	2.9 ha	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. MHPA, 1996 OHSA, 1993	Beacons need to be in place throughout the life of the activity.
ESTABLISHMENT OF MOBILE WASHING AND	Construction / Site Establishment phase	1.4ha	Site management must ensure that infrastructure is	Compliance to standards stipulated in the:	Throughout operational phase

<p>SCREENING PLANT AND ABLUTION INFRASTRUCTURE.</p>			<p>erected within the boundaries of the approved processing area.</p>	<ul style="list-style-type: none"> ✚ MPRDA, 2008 ✚ OHS&S, 1993 	
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p> <p style="text-align: center;">&</p> <p>WASHING AND SCREENING OF STOCKPILED SAND</p> <p style="text-align: center;">&</p> <p>EXCAVATION</p>	<p>Operational phase</p>	<p>2.9 ha</p>	<p>Visual Mitigation:</p> <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. 	<p>Land use zoning:</p> <ul style="list-style-type: none"> ✚ Free State LUPA, 2014 ✚ Masilonyana Municipality: Land Use Planning Bylaws, 2015 ✚ The property is zoned for agriculture as primary use. 	<p>Throughout operational phase</p>
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p> <p style="text-align: center;">&</p> <p>WASHING AND SCREENING OF STOCKPILED SAND</p> <p style="text-align: center;">&</p>	<p>Operational phase</p> <p style="text-align: center;">&</p> <p>Decommissioning phase</p>	<p>2.9 ha</p>	<p>Dust Handling:</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. 	<p>Dust Handling:</p> <ul style="list-style-type: none"> ✚ NEM:AQA, 2004 Regulation 6(1) 	<p>Throughout operational and decommissioning phases</p>

<p style="text-align: center;">LOADING AND TRANSPORTING</p> <p style="text-align: center;">&</p> <p style="text-align: center;">SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA</p> <p style="text-align: center;">&</p> <p style="text-align: center;">EXCAVATION</p>			<ul style="list-style-type: none"> ✚ 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 style="text-align: center;">STRIPPING AND STOCKPILING OF TOPSOIL</p> <p style="text-align: center;">&</p> <p style="text-align: center;">WASHING AND SCREENING OF STOCKPILED SAND</p> <p style="text-align: center;">&</p> <p style="text-align: center;">SLOPING, LANDSCAPING AND REPLACEMENT OF</p>	<p style="text-align: center;">Operational phase</p> <p style="text-align: center;">&</p> <p style="text-align: center;">Decommissioning phase</p>	<p style="text-align: center;">2.9 ha</p>	<p><u>Noise Handling:</u></p> <ul style="list-style-type: none"> ✚ No washing or screening allowed on Sundays. ✚ 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 	<p><u>Noise 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 style="text-align: center;">Throughout operational and decommissioning phases</p>

<p style="text-align: center;">TOPSOIL OVER DISTURBED AREA & EXCAVATION</p>			<p>equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.</p>		
<p style="text-align: center;">STRIPPING AND STOCKPILING OF TOPSOIL & WASHING AND SCREENING OF STOCKPILED SAND & SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA</p>	<p style="text-align: center;">Operational phase & Decommissioning phase</p>	<p style="text-align: center;">2.4 ha</p>	<p><u>Management of weed- or invader plants:</u></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 Conservation of Agricultural Act (Act No 43 1983). ✚ 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 	<p><u>Management of weed- or invader plants:</u></p> <ul style="list-style-type: none"> ✚ CARA, 1983 ✚ All species regarded as Category 1 weeds according to CARA need to be eradicated from site. 	<p style="text-align: center;">Throughout operational and decommissioning phases</p>

			<p>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>Operational phase</p>	<p>2.4 ha</p>	<p><u>Loss of topsoil due to incorrect storm water management</u></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 	<p><u>Loss of topsoil due to incorrect storm water management:</u></p> <ul style="list-style-type: none"> CARA, 1983 NEMA, 1998 NWA, 1998 The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. 	<p>Throughout operational phase</p>

			<p>be continuously monitored.</p> <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"> ▪ 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. 		
--	--	--	---	--	--

			<ul style="list-style-type: none"> ▪ Dirty water must be prevented from spilling or seeping into clean water systems. ▪ Storm water management must apply for the entire life cycle of the site 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. 		
<p style="text-align: center;">STRIPPING AND STOCKPILING OF TOPSOIL</p> <p style="text-align: center;">&</p> <p style="text-align: center;">WASHING AND SCREENING OF STOCKPILED SAND</p> <p style="text-align: center;">&</p>	Operational phase	2.9 ha	<p><u>Negative impact on fauna that may enter the area:</u></p> <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. 	<p><u>Negative impact on fauna that may enter the area:</u></p> <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 phase

<p style="text-align: center;">LOADING AND TRANSPORTING</p> <p style="text-align: center;">&</p> <p style="text-align: center;">EXCAVATION</p>			<ul style="list-style-type: none"> ✚ No snares may be set or nests raided for eggs or young. 		
<p style="text-align: center;">STRIPPING AND STOCKPILING OF TOPSOIL</p> <p style="text-align: center;">&</p> <p style="text-align: center;">WASHING AND SCREENING OF STOCKPILED SAND</p> <p style="text-align: center;">&</p> <p style="text-align: center;">LOADING AND TRANSPORTING</p> <p style="text-align: center;">&</p> <p style="text-align: center;">SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA</p> <p style="text-align: center;">&</p> <p style="text-align: center;">EXCAVATION</p>	<p style="text-align: center;">Operational phase</p> <p style="text-align: center;">&</p> <p style="text-align: center;">Decommissioning phase</p>	<p style="text-align: center;">2.9 ha</p>	<p><u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u></p> <ul style="list-style-type: none"> ✚ Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs is 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 liter 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 	<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. 	<p style="text-align: center;">Throughout operational and decommissioning phases</p>

			<p>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, proof of this removal will be kept on file at the applicants office. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. 		
--	--	--	---	--	--

			<ul style="list-style-type: none"> Biodegradable refuse generated must be handled as indicated above. 		
LOADING AND TRANSPORTING	Operational phase	Access road	<p><u>Impact on the access roads:</u></p> <ul style="list-style-type: none"> Storm water must 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. The applicant must repair rutting and erosion of the access road caused because of the processing activities. 	<p><u>Degradation of the gravel access road:</u></p> <ul style="list-style-type: none"> NRTA, 1996 The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification action must be done. 	Throughout operational phase

<p style="text-align: center;">SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA</p>	<p style="text-align: center;">Decommissioning phase</p>	<p style="text-align: center;">2.4 ha</p>	<p><u>Erosion of returned topsoil after rehabilitation:</u></p> <ul style="list-style-type: none"> ✦ Storm water must be controlled via temporary banks to prevent run-off causing down-slope erosion. ✦ Topsoil spreading may only be done at a time of year when vegetation cover can be established as quickly as possible. This will minimize erosion of returned topsoil by both rain and wind. 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. ✦ A cover crop must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum production. It is important that rehabilitation be taken up to the point of cover crop stabilization. 	<p><u>Erosion of returned topsoil after rehabilitation:</u></p> <ul style="list-style-type: none"> ✦ CARA, 1983 ✦ 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. 	<p style="text-align: center;">Throughout decommissioning phase</p>
---	--	---	---	--	---

			<p>Rehabilitation cannot be considered complete until the first cover crop is well established.</p> <ul style="list-style-type: none"> The rehabilitated area must be monitored for erosion, and appropriately stabilized should any erosion occurs. 		
FINAL REHABILITATION	Decommissioning phase	2.9 ha	<p><u>Final rehabilitation:</u></p> <ul style="list-style-type: none"> Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and weed / alien clearing. All infrastructure, equipment, temporary equipment and other items used during the operational phase will be removed from the site (section 44 of the MPRDA). Waste material of any description, including receptacles, scrap, rubble and tires, will be removed entirely from the area and disposed of 	<p><u>Final Rehabilitation:</u></p> <ul style="list-style-type: none"> MPRDA, 2008 Free State LUPO, 2014 Masilonyana Local Municipality: Land Use Planning Bylaws, 2015 Final rehabilitation needs to be done within a period specified by the Regional Manager of DMR. 	Throughout decommissioning phase

			<p>at a recognized landfill facility, proof of this removal will be kept on file at the applicants office. It will not be permitted to be buried or burned on the site.</p> <ul style="list-style-type: none"> ✚ Weed / Alien clearing will be done in a sporadic manner during the operational phase. ✚ Species regarded as Category 1 weeds according to CARA (Conservation of Agricultural Recourses Act, 1983 – Act 43; Regulations 15 & 16 (as amended in March 2001) need to be eradicated from the site. ✚ Final rehabilitation shall be completed within a period specified by the Regional Manager. 		
--	--	--	---	--	--

e) Impact Management Outcomes

(A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated

in paragraph ());

ACTIVITY whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	ASPECTS AFFECTED	PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..) E.g. <ul style="list-style-type: none"> • Modify through alternative method. • Control through noise control • Control through management and monitoring • Remedy through rehabilitation. 	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Demarcation of site with visible beacons	No impact could be identified other than the beacons being outside the boundaries of the approved mining right area.	N/A	Construction / Site Establishment phase	Control through management and monitoring	Clearly visible beacons need to be placed at the boundaries of the mining area.
Establishment of temporary office and ablution	If the infrastructure is established within	N/A	Construction / Site Establishment phase	Control through management and monitoring	♦ The infrastructure needs to be within the

infrastructure within boundaries of site	the boundaries of the approved mining area no impact could be identified.					boundaries of the mining area. <ul style="list-style-type: none"> ◆ The ablution facilities need to be kept clean and in working order. The supplier need to service the ablution facilities weekly.
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of agricultural land for duration of mining (S1)	Agricultural use	Operational phase	<u>Control:</u> Signed use agreement with landowner		Impact mitigated until rehabilitation can be implemented and the area can be returned to agricultural use.
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		Impact mitigated until rehabilitation can be implemented and the area can be returned to agricultural 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		<ul style="list-style-type: none"> ◆ Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. ◆ Gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit.

					<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 site.	Operational phase	<u>Control:</u> Noise control measures	<ul style="list-style-type: none"> ◆ Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the noise standards of SANS 10103:2008. ◆ Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
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 the weed/invader plant management plan	<ul style="list-style-type: none"> ◆ The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of topsoil due to incorrect storm water management.	Loss of topsoil will affect the rehabilitation of the mining area and the future use of the area.	Operational phase	<u>Control:</u> Storm water management	<ul style="list-style-type: none"> ◆ The impact should be avoided through the implementation of storm water and soil management.
EXCAVATION AND LOADING OF SAND TO BE SOLD	Reduction in soil depth	Decrease depth of suitable rooting material will affect the	Operational phase	<u>Control:</u> Implementation of proper topsoil management and rehabilitation	<ul style="list-style-type: none"> ◆ The impact should be avoided through correct replacement of topsoil to

		agricultural potential of the site.			ensure the effective rehabilitation of the area.
EXCAVATION AND LOADING OF SAND TO BE SOLD	Dust nuisance due to loading of sand	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	<u>Control:</u> Dust suppression	<ul style="list-style-type: none"> ◆ Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. ◆ Gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit. ◆ NEM:AQA, 2004 Regulation 6(1)
EXCAVATION AND LOADING OF SAND TO BE SOLD	Noise nuisance generated by excavation equipment	The noise impact should be contained within the boundaries of the property, and will relate to the existing equipment operating on-site.	Operational phase	<u>Control:</u> Noise management	<ul style="list-style-type: none"> ◆ Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the noise standards of SANS 10103:2008. ◆ Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.

EXCAVATION AND LOADING OF SAND TO BE SOLD	Negative impact on the fynbos (S1)	Biodiversity	Operational phase	<u>Control:</u> Management of buffer areas and demarcation of work areas	<ul style="list-style-type: none"> ◆ The impact should be avoided through the implementation of the mitigation measures stipulated in this document. ◆ NEM:BA, 2004.
EXCAVATION AND LOADING OF SAND TO BE SOLD	Negative impact on the fynbos (S2)	Biodiversity	Operational phase	<u>Modify:</u> Consider use of a less sensitive area	<ul style="list-style-type: none"> ◆ The impact should be avoided through the implementation of the mitigation measures stipulated in this document. ◆ NEM:BA, 2004.
EXCAVATION AND LOADING OF SAND TO BE SOLD	Negative impact on fauna that may enter the area	Biodiversity	Operational phase	<u>Control:</u> Management of employees working on-site and fauna entering the area	<ul style="list-style-type: none"> ◆ The impact should be avoided through the implementation of the mitigation measures stipulated in this document. ◆ NEM:BA, 2004.
EXCAVATION AND LOADING OF SAND TO BE SOLD	Impaired soil drainage resulting in water logging in potential root zone	Agricultural potential	Operational phase	<u>Control:</u> Topsoil management and rehabilitation	<ul style="list-style-type: none"> ◆ The impact should be avoided through the implementation of the mitigation measures stipulated in this document with regard to rehabilitation of the area.
EXCAVATION AND LOADING OF SAND TO BE SOLD	Contamination of surface or groundwater due to	Contamination may cause	Operational phase	<u>Control:</u> Waste management	<ul style="list-style-type: none"> ◆ The impact should be avoided through the

	hazardous spills not cleaned	surface or ground water contamination if not addressed			<p>implementation of the precautionary principal.</p> <ul style="list-style-type: none"> ◆ Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.
EXCAVATION AND LOADING OF SAND TO BE SOLD	Infestation of mining area and soil heaps with weeds/invasers plants	Biodiversity	Operational phase	<u>Control & Remedy:</u> Implementation of weed control	<ul style="list-style-type: none"> ◆ The impact should be avoided through the eradication of Category 1 weeds/invaser plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.
EXCAVATION AND LOADING OF SAND TO BE SOLD	Potential impact of mining activities on the runoff and infiltration of storm water.	The impact may affect the groundwater	Operational phase	<u>Control:</u> Implementation of geohydrological assessment and the monitoring program proposed by DWS	<ul style="list-style-type: none"> ◆ Applicant to comply with buffer area and standards to be determined by DWS.
TRANSPORTATION OF SAND FROM MINING AREA TO CLIENTS	Dust nuisance due to vehicles transporting the sand from site	Should dust levels become excessive it may have an impact on surrounding landowners.	Operational phase	<u>Control:</u> Dust suppression	<ul style="list-style-type: none"> ◆ Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. ◆ Gravimetric dust levels has to comply with the standard published in the

					<p>NIOSH guidelines – Particulates >1/10th of the occupational exposure limit.</p> <ul style="list-style-type: none"> ◆ NEM:AQA, 2004 Regulation 6(1).
TRANSPORTATION OF SAND FROM MINING AREA TO CLIENTS	Noise nuisance caused by vehicles transporting the sand from site	The noise levels of the surrounding environment may temporarily increase during the operational phase, affecting the ambient noise levels.	Operational phase	<u>Control:</u> Noise management	<ul style="list-style-type: none"> ◆ Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the noise standards of SANS 10103:2008. ◆ All mining vehicles should be in a road worthy condition in terms of the Road Transport Act, 1987
TRANSPORTATION OF SAND FROM MINING AREA TO CLIENTS	Degradation of access roads	All road users will be affected	Operational phase	<u>Control & Remedy:</u> Road management	<ul style="list-style-type: none"> ◆ The impact should be avoided through the implementation of the mitigation measures proposed in this document.
TRANSPORTATION OF SAND FROM MINING AREA TO CLIENTS	Increase in dust particles and noise levels negatively affecting poultry farming at Droogelaagte.	Poultry farming of Droogelaagte	Operational phase	<u>Control:</u> Dust and noise management	<p>The impact has to be avoided through compliance with the following standards:</p> <ul style="list-style-type: none"> ◆ NEM:AQA, 2004 Regulation 6(1) ◆ All mining vehicles should be in a road worthy condition in terms of the Road Transport Act, 1987.

REPLACEMENT OF TOPSOIL OVER MINED-OUT AREA AND FINAL REHABILITATION	Erosion of returned topsoil after rehabilitation	Soil erosion will may affect the agricultural potential of the site after closure of the mine.	Operational and Decommissioning phase	<u>Control:</u> Soil management	<ul style="list-style-type: none"> ◆ The impact should be avoided through the implementation of the mitigation measures stipulated in this document.
REPLACEMENT OF TOPSOIL OVER MINED-OUT AREA AND FINAL REHABILITATION	Creation of uneven surfaces or steep slopes	Impact will prevent or hinder future cultivation.	Decommissioning phase	<u>Control:</u> Effective rehabilitation	<ul style="list-style-type: none"> ◆ The impact should be avoided through the implementation of the mitigation measures stipulated in this document.

f) Impact Management Actions

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

<p>ACTIVITY</p> <p>whether listed or not listed</p> <p>(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)</p>	<p>POTENTIAL IMPACT</p> <p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)</p>	<p>MITIGATION TYPE</p> <p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)</p> <p>E.g.</p> <ul style="list-style-type: none"> • Modify through alternative method. • Control through noise control • Control through management and monitoring • Remedy through rehabilitation. 	<p>TIME PERIOD FOR IMPLEMENTATION</p> <p>Describe the time period when the measures in the environmental management programme must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or . Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.</p>	<p>COMPLIANCE WITH STANDARDS</p> <p>(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>
<p>Demarcation of site with visible beacons</p>	<p>No impact could be identified other than the beacons being outside the boundaries of the approved mining right area.</p>	<p>Control through management and monitoring</p>	<p>Beacons need to be in place throughout the life of the mine.</p>	<p>Mining is only allowed within the boundaries of the approved mining area.</p> <p>◆ MHSA, 1996</p>

				<ul style="list-style-type: none"> ◆ OHSA, 1993
Establishment of temporary office and ablation 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 management and monitoring	Site establishment and operational phase	<p>Compliance to standards stipulated in the:</p> <ul style="list-style-type: none"> ◆ MPRDA, 2008 ◆ OHSA, 1993
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of agricultural land for duration of mining	<u>Control:</u> Signed use agreement with landowner	Throughout operational phase	<p><u>Impact on agricultural land:</u></p> <ul style="list-style-type: none"> ◆ CARA, 1983 ◆ Protection against loss of agricultural land and soil
STRIPPING AND STOCKPILING OF TOPSOIL	Visual impact due to removal of topsoil.	<u>Control:</u> Implementation of proper housekeeping	Throughout operational phase	<p><u>Land use zoning:</u></p> <ul style="list-style-type: none"> ◆ LUPO, 2014 ◆ The property is zoned for agriculture as primary use
STRIPPING AND STOCKPILING OF TOPSOIL	Dust nuisance caused by the disturbance of soil.	<u>Control:</u> Dust suppression	Throughout operational phase	<p><u>Dust Handling:</u></p> <ul style="list-style-type: none"> ◆ NEM:AQA, 2004 Regulation 6(1) ◆ Monthly fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 <

				<p>Dust Fall < 1 200 mg/m²/day.</p> <ul style="list-style-type: none"> ◆ Quarterly gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit.
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p>	<p>Noise nuisance caused by machinery stripping and stockpiling the topsoil</p>	<p><u>Control:</u> Noise control measures</p>	<p>Throughout operational phase</p>	<p><u>Noise Handling:</u></p> <ul style="list-style-type: none"> ◆ NEM:AQA, 2004 Regulation 6(1) ◆ All mining vehicles should be in a road worthy condition in terms of the Road Transport Act, 1987 ◆ Noise zones needs to be demarcated and personnel should not be allowed to enter high-risk areas without hearing protection if needed.
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p>	<p>Infestation of the topsoil heaps by weeds and invader plants.</p>	<p><u>Control & Remedy:</u> Implementation of weed control and weed/invader plant management plan</p>	<p>Throughout operational phase</p>	<p><u>Management of weed- or invader plants:</u></p> <ul style="list-style-type: none"> ◆ CARA, 1983 ◆ All species regarded as Category 1 weeds

				according to CARA need to be eradicated from site.
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of topsoil due to incorrect storm water management	<u>Control:</u> Storm water management	Throughout operational phase	<p><u>Loss of topsoil due to incorrect storm water management:</u></p> <ul style="list-style-type: none"> ◆ CARA, 1983 ◆ NEMA, 1998 ◆ NWA, 1998 ◆ The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes
EXCAVATION	Dust nuisance from denuded areas	<u>Control:</u> Dust suppression	Throughout operational phase	<p><u>Dust Handling:</u></p> <ul style="list-style-type: none"> ◆ NEM:AQA, 2004 Regulation 6(1) ◆ Monthly fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day.

				<ul style="list-style-type: none"> ◆ Quarterly gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit.
EXCAVATION	Noise nuisance generated by excavation equipment	<u>Control:</u> Noise management	Throughout operational phase	<p><u>Noise Handling:</u></p> <ul style="list-style-type: none"> ◆ NEM:AQA, 2004 Regulation 6(1) ◆ All mining vehicles should be in a road worthy condition in terms of the Road Transport Act, 1987 ◆ Noise zones needs to be demarcated and personnel should not be allowed to enter high risk areas without hearing protection if needed
EXCAVATION	Negative impact on the natural vegetation	<u>Control:</u> Management of buffer areas and demarcation of work areas	Throughout operational phase	<p><u>Negative impact on the natural vegetation:</u></p> <ul style="list-style-type: none"> ◆ NEM:BA, 2004

EXCAVATION	Negative impact on fauna that may enter the area	<u>Control:</u> Management of employees working on-site	Throughout operational phase	<p><u>Negative impact on fauna that may enter the area:</u></p> <ul style="list-style-type: none"> ◆ NEM:BA, 2004 ◆ The mine has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the mining activities.
EXCAVATION	Impaired soil drainage resulting in water logging in potential root zone	<u>Control:</u> Topsoil management and rehabilitation	Throughout operational phase	<p><u>Impaired soil drainage resulting in water logging in potential root zone:</u></p> <ul style="list-style-type: none"> ◆ CARA, 1983 ◆ NWA, 1998 ◆ NEM:BA, 2004 ◆ 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.
EXCAVATION	Contamination of surface or groundwater due to hazardous spills not cleaned	<u>Control:</u> Waste management	Throughout operational phase	<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 should be taken to prevent groundwater contamination. The precautionary principal must apply.
EXCAVATION	Infestation of mining area and soil heaps with weeds/invaders plants	<u>Control & Remedy:</u> Implementation of weed control and weed/invader plant management plan	Throughout operational phase	<p><u>Management of weed- or invader plants:</u></p> <ul style="list-style-type: none"> ◆ CARA, 1983 ◆ All species regarded as Category 1 weeds according to CARA need to be eradicated from site.
EXCAVATION	Potential impact of mining activities on the runoff and infiltration of storm water.	<u>Control:</u> Implementation of geohydrological assessment and the monitoring program proposed by DWS	Throughout operational phase	<p><u>Potential impact of mining activities on the runoff and infiltration of storm water</u></p> <ul style="list-style-type: none"> ◆ NWA, 1998 ◆ CARA, 1983 ◆ Applicant to comply with buffer area and standards to be determined by DWS.
TRANSPORTATION OF SAND FROM MINING AREA TO CLIENTS	Dust nuisance due to vehicles transporting the sand from site	<u>Control:</u> Dust suppression	Throughout operational phase	<p><u>Dust Handling:</u></p> <ul style="list-style-type: none"> ◆ NEM:AQA, 2004 Regulation 6(1)

				<ul style="list-style-type: none"> ◆ Monthly fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. ◆ Quarterly gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit
<p>TRANSPORTATION OF SAND FROM MINING AREA TO CLIENTS</p>	<p>Noise nuisance caused by vehicles transporting the sand from site</p>	<p><u>Control:</u> Noise management</p>	<p>Throughout operational phase</p>	<p><u>Noise Handling:</u></p> <ul style="list-style-type: none"> ◆ NEM:AQA, 2004 Regulation 6(1) ◆ All mining vehicles should be in a road worthy condition in terms of the Road Transport Act, 1987 ◆ Noise zones needs to be demarcated and personnel should not be allowed to enter high risk areas without hearing protection if needed

<p>TRANSPORTATION OF SAND FROM MINING AREA TO CLIENTS</p>	<p>Degradation of gravel access roads</p>	<p><u>Control & Remedy:</u> Road management</p>	<p>Throughout operational phase</p>	<p><u>Degradation of the gravel access road:</u></p> <ul style="list-style-type: none"> ◆ NRTA, 1996 ◆ LUPO, 2014 ◆ The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification needs to be implemented.
<p>TRANSPORTATION OF SAND FROM MINING AREA TO CLIENTS</p>	<p>Increase in dust particles and noise levels negatively affecting poultry farming at Droogelaagte.</p>	<p><u>Control:</u> Dust and noise management</p>	<p>Throughout operational phase</p>	<p><u>Increase in dust particles and noise levels negatively affecting poultry farming at Droogelaagte:</u></p> <ul style="list-style-type: none"> ◆ NEM:AQA, 2004 Regulation 6(1) ◆ All mining vehicles should be in a road worthy condition in terms of the Road Transport Act, 1987
<p>REPLACEMENT OF TOPSOIL OVER MINED-OUT AREA AND FINAL REHABILITATION</p>	<p>Erosion of returned topsoil after rehabilitation</p>	<p>Control: Soil management</p>	<p>Throughout decommissioning phase</p>	<p><u>Erosion of returned topsoil after rehabilitation:</u></p> <ul style="list-style-type: none"> ◆ CARA, 1983 ◆ NEM:BA, 2004 ◆ MPRDA, 2008

				<ul style="list-style-type: none"> ◆ 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.
<p>REPLACEMENT OF TOPSOIL OVER MINED-OUT AREA AND FINAL REHABILITATION</p>	<p>Creation of uneven surfaces or steep slopes</p>	<p>Control: Effective rehabilitation</p>	<p>Throughout decommissioning phase</p>	<p><u>Creation of uneven surfaces or steep slopes:</u></p> <ul style="list-style-type: none"> ◆ CARA, 1983 ◆ NEM:BA, 2004 ◆ MPRDA, 2008 ◆ Rehabilitation has to prevent uneven surface slopes in order to prevent hindrance of future cultivation.

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 Regulation 22 (2) (d) as described in 2.4 herein.**

The closure objectives entail the sloping, landscaping and replacement of the topsoil over the processing area in order to rehabilitate the disturbance. The stockpiled topsoil will be spread over the disturbed area to a depth of at least 500 mm.

Final rehabilitation will entail the removal of all infrastructure and equipment from the site. Final sloping, landscaping, levelling and top dressing will be done on all areas. 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**

This report, the Draft EIA Report, includes all the environmental objectives in relation to closure and will be made available for perusal of the landowner, I&AP's and stakeholders. Any additional comments received on the draft report will be incorporated into the Final EIA report.

- (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.

(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:

The decommissioning phase will entail the final rehabilitation of the mining site. Final landscaping, levelling and top dressing will be done on all areas not yet rehabilitated. 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:

The mining plan should be such that topsoil is stockpiled for the minimum possible time by rehabilitating different mining blocks progressively as the mining process continues.

To ensure minimum impact on drainage, it is important that no depressions are left in the mining floor. A surface slope (even if minimal) must be maintained across the mining floor in the drainage direction, so that all excavations are able to drain excess water, in this case the mining floor should be sloped as much as possible as free draining this excavation will not be possible.

After mining, any steep slopes at the edges of excavations, must be reduced to a minimum and profiled to blend with the surrounding topography.

The stockpiled topsoil must then be evenly spread over the entire mining area, so that there is a depth of 500 mm of sandy topsoil above the underlying clay. The depth should be monitored during spreading to ensure that coverage is adequate and even.

Topsoil spreading should only be done 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, before vegetation is established, is minimized. The best time of year is 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.

A cover crop must be planted and established immediately after spreading of topsoil to stabilize the soil and protect it from erosion. The cover crop should be fertilized for optimum production. It is important that rehabilitation is taken up to the point of crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established.

The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs.

On-going alien vegetation control must keep the area free of alien vegetation after mining.

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and weed / alien clearing.

All infrastructure, equipment, temporary equipment and other items used during the mining period will be removed from the site (section 44 of the MPRDA).

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 applicants 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 Category 1 weeds according to CARA (Conservation of Agricultural Recourses Act, 1983 – Act 43;

Regulations 15 & 16 (as amended in March 2001) need to be eradicated from the site.

Final rehabilitation shall be completed within a period specified by the Regional Manager.

- (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

Risk ranking

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

Primary risk ranking (either Table B.12 or B.13)	C (Low risk)
Revised risk ranking (B.14)	N/A

Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low
--	-----

Level of information

According to Step 4.2:

Level of information available	Extensive
--------------------------------	-----------

Identify closure components

According to Table B.5 and site-specific conditions

Comp onent No.	Main description	Applicability of closure components (Circle Yes or No)	
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		NO
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		
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		
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.

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of processing plant and related structures (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		
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		
7	Sealing of shafts, adits and inclines		
8(A)	Rehabilitation of overburden and spoils	105842	1
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		
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	14 085	1

Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.00
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05

Calculation of closure costs

CALCULATION OF THE QUANTUM							
Mine:	Koppies Vlei 622, Theunissen District			Location:	Koppies Vlei		
Evaluators:	Sonette Smit			Date:	2016-09-29		
No	Description	Unit	A Quantity	B Master rate	C Multiplication factor	D Weighting factor 1	E=A *B*C*D Amount (Rand)
			Step 4.5	Step 4.3	Step 4.3	Step 4.4	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m3	0	14	1	1	R 0.00
2(A)	Demolition of steel buildings and structures	m2	0	191	1	1	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	282	1	1	R 0.00
3	Rehabilitation of access roads	m2	0	34	1	1	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	332	1	1	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	181	1	1	R 0.00
5	Demolition of housing and/or administration facilities	m2	0	382	1	1	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	0	200 415	0.04	1	R 20 041.50
7	Sealing of shaft, audits and inclines	m3	0	103	1	1	R 0.00

8(A)	Rehabilitation of overburden and spoils	ha	0	133 610	1	1	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	166 408	1	1	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	483 329	0.51	1	R 0.00
9	Rehabilitation of subsided areas	ha	0	111 878	1	1	R 0.00
10	General surface rehabilitation	ha	2.9	105 842	1	1	R 306941.80
11	River diversions	ha	0	105 842	1	1	R 0.00
12	Fencing	m	0	121	1	1	R 0.00
13	Water Management	ha	0	40 244	0.17	1	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	2.9	14 085	1	1	R 40 846.50
15(A)	Specialists study	Sum	0				R 0.00
15(B)	Specialists study	Sum	0				R 0.00
Sum of items 1 to 15 above							R 347788.30
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R 863 554.8		Sub Total 1	R 365177.75

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00		R 21910.66
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00		-
2	Contingency	10.0% of Subtotal 1		R 36517.77
Sub Total 2 (Subtotal 1 plus management and contingency)				R 423606.15
Vat (14%)				R 59304.86
GRAND TOTAL (Subtotal 3 plus VAT)				R 482911.01

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 482911.01

(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 the environmental management programme and reporting thereon, including

- g) Monitoring of Impact Management Actions**
- h) Monitoring and reporting frequency**
- i) Responsible persons**
- j) Time period for implementing impact management actions**
- k) Mechanism for monitoring compliance**

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Demarcation 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 20 m buffer area (if applicable) from any natural areas need to be demarcated. 	Responsibility: <ul style="list-style-type: none"> ✚ Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. 	Throughout Operational Phase <ul style="list-style-type: none"> ✚ Daily compliance monitoring by site management.

		<ul style="list-style-type: none"> A 30 m buffer area from a watercourse needs to be demarcated if applicable. 	<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 beacons are in place throughout the life of the activity. 	<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.
Establishment of mobile washing and screening and ablation infrastructure within boundaries of site.	<ul style="list-style-type: none"> All infrastructure to be established inside the boundaries of the processing area. Waste monitoring programme to be implemented 	<ul style="list-style-type: none"> Washing and screening infrastructure and chemical toilet to be placed inside the boundaries of the approved area. Waste disposal spreadsheets to be completed throughout operational phase and proof of safe disposal filed for auditing purposes. 	<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"> Contain all activities to the approved boundaries of the area. Ensure proper waste management at the site. 	<p>Throughout Construction 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.
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p> <p>&</p> <p>WASHING AND SCREENING OF STOCKPILED SAND & EXCAVATION</p>	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. 	<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"> Minimize the visual impact of the activity on the surrounding environment. 	<p>Throughout Operational 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.

<p style="text-align: center;">STRIPPING AND STOCKPILING OF TOPSOIL</p> <p style="text-align: center;">&</p> <p style="text-align: center;">WASHING AND SCREENING OF STOCKPILED SAND</p> <p style="text-align: center;">&</p> <p style="text-align: center;">LOADING AND TRANSPORTING</p> <p style="text-align: center;">&</p> <p style="text-align: center;">SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA & EXCAVATION</p>	<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. ✚ Add water sprayers to the washing and screening infrastructure to control dust emissions from conveyor belts. ✚ 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>Throughout Construction, Operational 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.
<p style="text-align: center;">STRIPPING AND STOCKPILING OF TOPSOIL</p> <p style="text-align: center;">&</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>	<p>Throughout Construction, Operational 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.

<p>WASHING AND SCREENING OF STOCKPILED SAND</p> <p>&</p> <p>SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA & EXCAVATION</p>			<ul style="list-style-type: none"> ✚ No washing and screening allowed over Sundays. ✚ 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"> ✚ Annual compliance monitoring of site by an Independent Environmental Control Officer.
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p> <p>&</p> <p>WASHING AND SCREENING OF STOCKPILED SAND</p> <p>&</p> <p>SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA</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. 	<p>Throughout Operational 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.
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p> <p>&</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. 	<p>Responsibility:</p> <ul style="list-style-type: none"> ✚ Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. 	<p>Throughout Construction, Operational and Decommissioning Phase</p> <ul style="list-style-type: none"> ✚ Daily compliance monitoring by site management.

<p>SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA</p>		<ul style="list-style-type: none"> ✚ Berms to be made to direct storm- and runoff water around the stockpiled topsoil area. 	<ul style="list-style-type: none"> ✚ 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. ✚ 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. 	<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.
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p>	<p>Loss of natural vegetation</p>	<p>Management of buffer areas:</p> <ul style="list-style-type: none"> ✚ Site management has to ensure the use of visible beacons to demarcate the boundaries of the approved area. 	<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"> ✚ Contain all activities within the boundaries of the approved processing area. 	<p>Throughout Construction, Operational 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.

			<ul style="list-style-type: none"> Demarcate, signpost and manage the 20 m buffer area as no-go area around areas with natural vegetation. 	
<p>STRIPPING AND STOCKPILING OF TOPSOIL & WASHING AND SCREENING OF STOCKPILED SAND & LOADING AND TRANSPORTING & EXCAVATION</p>	<p>Protection of fauna</p>	<p>Protection of fauna:</p> <ul style="list-style-type: none"> Site management has to protect fauna that enters the processing area. 	<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 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. 	<p>Throughout Construction, Operational 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.
<p>STRIPPING AND STOCKPILING OF TOPSOIL & WASHING AND SCREENING OF STOCKPILED SAND & LOADING AND TRANSPORTING &</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 cleanup 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. Waste disposal register and file for the keeping of safe disposal records. 	<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 is needed on site ensure drip trays is present. Ensure all waste products are disposed of in a 200 liter closed container/bin inside the emergency service area. 	<p>Throughout Operational 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.

<p align="center">SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA & EXCAVATION</p>			<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 recognized landfill site at Morgenzon. Prevent refuse from being dumped on or near the processing area. ✚ Biodegradable refuse to be handled as indicated above. 	
<p align="center">LOADING AND TRANSPORTING</p>	<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>Throughout Construction, Operational 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.

			<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"> ✚ Annual compliance monitoring of site by an Independent Environmental Control Officer.
<p style="text-align: center;">SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA</p>	<p>Soil erosion:</p> <ul style="list-style-type: none"> ✚ Loss of reinstated topsoil after rehabilitation. 	<p>Erosion monitoring:</p> <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>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 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. 	<p>Throughout Construction, Operational 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.

			<ul style="list-style-type: none"> ✚ 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. 	
<p>STRIPPING AND STOCKPILING OF TOPSOIL</p> <p>&</p> <p>WASHING AND SCREENING OF STOCKPILED SAND</p> <p>&</p> <p>LOADING AND TRANSPORTING</p> <p>&</p> <p>SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA</p> <p>&</p> <p>EXCAVATION</p>	Health and safety risk	<p>Health and safety Management:</p> <ul style="list-style-type: none"> ✚ Stocked first aid box. ✚ Level 1 certified first aider ✚ All appointments in terms of the Mine Health and Safety Act. 	<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. 	<p>Throughout Construction, Operational 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.

<p style="text-align: center;">STRIPPING AND STOCKPILING OF TOPSOIL</p> <p style="text-align: center;">&</p> <p style="text-align: center;">WASHING AND SCREENING OF STOCKPILED SAND</p> <p style="text-align: center;">&</p> <p style="text-align: center;">LOADING AND TRANSPORTING</p> <p style="text-align: center;">&</p> <p style="text-align: center;">SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA</p> <p style="text-align: center;">&</p> <p style="text-align: center;">EXCAVATION</p>	<p>Protection of Cultural and Heritage Artefacts</p>	<p>Should any artefacts be discovered the area needs to be demarcated and work needs to be stopped.</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"> ✚ Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. ✚ Notify Heritage Free State and the ECO immediately. ✚ Work may only commence once the area was cleared by Heritage Free State. 	<p>Throughout Construction, Operational 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.
---	--	---	---	--

l) Indicate the frequency of the submission of the performance assessment report.

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

m) 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 the processing activity starts, a copy of the Environmental Management Programme 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.

(2) Manner in which risks 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 activity takes place. An Environmental Control Officer needs to check compliance of the processing activities to the management programmes described in the EMPr.

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
- 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

 **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
- Pick-up any litter laying around

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


- 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
 - Label containers and move to approved storage area

 **Discoveries:**

- Stop work immediately
- Notify site manager/supervisor
- 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:
 - Water all roads and work areas
 - Minimize handling of material
 - 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
- Report or repair noisy vehicles

 **Vegetation and Animal life:**

- 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
- Do not set snares or raid nests for eggs or young

 **Fire Management:**

- Do not light any fires on site, unless contained in a drum at demarcated area
- Put cigarette butts in a rubbish bin
- Know the position of firefighting equipment
- Report all fires
- Don't burn waste or vegetation

(3) 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 project at that time.

2) UNDERTAKING

The EAP herewith confirms

- a) the correctness of the information provided in the reports

- b) the inclusion of comments and inputs from stakeholders and I&AP's;

- c) the inclusion of inputs and recommendations from the specialist reports where relevant; and

- d) the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed;

-END-