PROPOSED MINING OF AGGREGATE ON THE REMAINING EXTENT OF THE FARM BLOEMHOF 14, MAGISTERIAL DISTRICT PARYS, FREE STATE PROVINCE

DRAFT SCOPING REPORT

MARCH 2018

REFERENCE NUMBER: FS 30/5/1/3/2/ MR

PREPARED FOR:

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ABBREVIATIONS

BID	Background Information Document
DSR	Draft Scoping Report
DEAT	Department of Environment, Agriculture and Tourism
DMR	Department of Mineral and Resources
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPR	Environmental Management Programme
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
FS	Free State Province
GN	Government Notice
GNR	Government Notice Regulation
I&AP's	Interested and Affected Parties
IWULA/IWMMP	Integrated Water Use Licence Application / Integrated Waste Water Management Plan
LED	Local Economic Development
NEMA	National Environmental Management Act, 1998
MHSA	Mine Health and Safety Act
MPRDA	Minerals and Petroleum Resources Development Act, 2002
PPP	Public Participation Process
PPE	Personal Protective Equipment
Ptn	Portion
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SHE	Safety, Health and Environmental
SLP	Social and Labour Plan
WMA	Water Management Area

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

NAME OF APPLICANT:	*Inzalo Crushing and Aggregates (Pty) Ltd*
TEL NO:	*011 966 4300*
FAX NO:	*086 612 8117*
POSTAL ADDRESS:	*PO Box 26730, East Rand, Kempton Park*
PHYSICAL ADDRESS:	*93 – 94 Maple Street, Pomona, Kempton Park*
FILE REFERENCE NUMBER SAMRAD:	*FS 30/5/1/3/2/ MR*

IMPORTANT NOTICE

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

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

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

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

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

1) The objective of the scoping process is to, through a consultative process-

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

SCOPING REPORT

2. Contact Person and correspondence address

a) Details of:

i. The EAP who prepared the report

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

ii. Expertise of the EAP

(1) **The qualifications of the EAP**

(with evidence attached as Appendix 1).

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

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

(Attached the EAP's curriculum vitae as Appendix 2)

Yolandie Coetzee is an Environmental Consultant with 7 years' experience in the environmental sector. She specialized the last 5 years in the rehabilitation of mines where she conducted the conceptual rehabilitation and management designs and the closure plans and programs. She has also been involved in a number of other environmental projects including railway sidings, filling stations, abattoir's, logistics hub and mining sites where she compiled environmental management plans, environmental impact assessments, environmental audits, due diligences, IWULA's / IWWMP's and alien invasive encroachment programs. She studied at the University of Potchefstroom where she has successfully completed her undergraduate degree in microbiology and biochemistry and her Honours degree in environmental sciences. See a list of past project attached as Appendix I.

b) Description of the property.

Farm Name:	Remaining extent of the farm Bloemhof 14, Parys, Free State Province.
Application area (Ha)	25.4ha
Magisterial district:	Parys
Distance and direction from the nearest town	Situated approximately 75 km North of Kroonstad Free State Province
21 digit Surveyor General Code for each farm portion	F02500000000001400000

c) Locality map

(show nearest town, scale not smaller than 1:250000 attached as Appendix 3).

The requested map is attached as Appendix A1.

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

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

Inzalo Crushing and Aggregates (Pty) Ltd intends to apply for a Mining Right to mine 25.4ha of the remaining extent of the farm Bloemhof 14, which falls in the Parys Administrative District, Free State Province.

The area earmarked for the proposed mining falls on a section of the farm that was previously used as an existing quarry and the intention of this application is to increase the existing quarry. The mining methods will make use of blasting means of explosives in order to loosen the hard rock, the material is then loaded and hauled out of the excavation to the mobile crushing and screening plants. The aggregate will be stockpiles 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 25.4ha is extent and the applicant, Inzalo Crushing and Aggregates (Pty) Ltd, intents to win material from the area for at least 20 years. The aggregate / stone gravel to be removed from the quarry will be used for road construction in the vicinity. The proposed quarry will therefore contribute to the upgrading / maintenance of road infrastructure in and around the Koppies / Parys area.

The mining activities will consist out of the following:

- Stripping and stockpiling of topsoil;
- Blasting;

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

The mining site will contain the following:

- Drilling equipment;
- Excavating equipment;
- Earth moving equipment; and
- Mobile crushing and screening plants.

A generator will be used to power the infrastructure on site until an Eskom connection can be secured. Water from the existing pit will be pumped out of the quarry and reused for mineral processing and dust suppression. See the requested map attached as **Error! Reference source not found.**.

i. Listed and specified activities

NAME OF ACTIVITY (E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc **E.g. for mining –** excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Aerial extent of the activity Ha or m²**	**LISTED ACTIVITY Mark with an X where applicable or affected**	**APPLICABLE LISTING NOTICE (GNR 324, GNR 325, GNR 326 OR GNR 327)**
Demarcation of site with visible beacons	25.4ha	N/A	Not listed
Establishment of temporary office and ablution infrastructure within boundaries of site		*N/A*	*Not listed*
• Strip and Stockpile of topsoil • Blasting • Excavation and loading of aggregates to be processed	25.4ha	X	GNR 325 Environmental Impact Assessment Regulations Listing

NAME OF ACTIVITY **(E.g. For prospecting –** drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc **E.g. for mining –** excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Aerial extent of the activity Ha or m^2**	**LISTED ACTIVITY Mark with an X where applicable or affected**	**APPLICABLE LISTING NOTICE (GNR 324, GNR 325, GNR 326 OR GNR 327)**
• Crushing and screening of aggregates • Transportation of aggregates from mining area to clients • Landscape and replacement of topsoil over stripped area • Final rehabilitation of the entire area			Notice 2 of 2014 Activity 17 (Mining Right area): *Any activity including the operation of that activity which requires a mining right in terms of section 22 of the Mineral and Petroleum Resources Development Act, 2002 (act No. 28 of 2002), including associated infrastructure, structures and earthworks directly related to the extraction of a mineral resource or the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.*
• Strip and Stockpile of topsoil • Blasting • Excavation and loading of aggregates to be processed • Crushing and screening of aggregates • Transportation of aggregates from mining area to clients • Landscape and replacement of topsoil over stripped area	25.4ha	X	GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2017 Activity 22: *The decommissioning of any activity requiring –* *(i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources*

NAME OF ACTIVITY **(E.g. For prospecting –** drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc **E.g. for mining –** excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Aerial extent of the activity Ha or m^2**	**LISTED ACTIVITY Mark with an X where applicable or affected**	**APPLICABLE LISTING NOTICE (GNR 324, GNR 325, GNR 326 OR GNR 327)**
• Final rehabilitation of the entire area			*Development Act, 2002 (Act No. 28 of 2002); or* *(ii) a prospecting right, mining right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure;* *but excluding the decommissioning of an activity relating to the secondary processing of a –* *(a) mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource; or* *(b) petroleum resource, including the refining of gas, beneficiation, oil or petroleum products; –* *in which case activity 31 in this Notice applies.*
• Strip and Stockpile of topsoil • Excavation and loading of aggregates to be processed • Landscape and replacement of topsoil over stripped area • Final rehabilitation of the entire area	25.4ha	X	GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2017 Activity 27 (Mining Area): *The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.*

NAME OF ACTIVITY (E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc **E.g. for mining –** excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Aerial extent of the activity Ha or m^2**	**LISTED ACTIVITY Mark with an X where applicable or affected**	**APPLICABLE LISTING NOTICE (GNR 324, GNR 325, GNR 326 OR GNR 327)**
• Strip and Stockpile of topsoil • Blasting • Excavation and loading of aggregates to be processed • Final rehabilitation of the entire area	25.4ha	X	GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2017 Activity 28 (Mining and Stockpile area): *Commercial and industrial developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.*
• Strip and Stockpile of topsoil • Blasting • Excavation and loading of aggregates to be processed • Crushing and screening of aggregates • Transportation of aggregates from mining area to clients • Landscape and replacement of topsoil over stripped area • Final rehabilitation of the entire area	25.4ha	X	GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2017 Activity 35 (Mining and Stockpile area): *The expansion of residential, retail, recreational, tourism, commercial or institutional developments on land previously used for mining or heavy industrial purposes, where the increased development footprint will exceed 1 000 square meters; excluding—* *(i) where such land has been remediated in terms of part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; or*

NAME OF ACTIVITY (E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc **E.g. for mining –** excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Aerial extent of the activity Ha or m^2**	**LISTED ACTIVITY Mark with an X where applicable or affected**	**APPLICABLE LISTING NOTICE (GNR 324, GNR 325, GNR 326 OR GNR 327)**
			(ii) where an environmental authorisation has been obtained for the decommissioning of such a mine or industry in terms of this Notice or any previous NEMA notice; or *(iii) where a closure certificate has been issued in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) for such land.*

iii. Description of the activities to be undertaken

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

The proposed mining site will be an extension of the existing quarry pit previously distributed by stone aggregate mining activities. The mining methods will make use of blasting means of explosives in order to loosen the hard rock, the material is then loaded and hauled out of the excavation to the mobile crushing and screening plants. The aggregate will be stockpiles and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the site.

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

Preferred Alternative	
Decimal Degrees	**Degrees; Minutes: Seconds**
A27.0548894°S; 27.5625444°E	A27°3'17.6018"S; 27°33'45.1598"E
B27.0513029°S; 27.5650583°E	B27°3'4.6904"S; 27°33'54.2099"E
C27.0483198°S; 27.5596529°E	C27°2'53.9513"S; 27°33'34.7504"E
D27.0502365°S; 27.5575594°E	D27°3'0.8514"S; 27°33'27.2138"E
A27.0548894°S; 27.5625444°E	A27°3'17.6018"S; 27°33'45.1598"E

ALTERNATIVE SITE DESCRIPTION

The following alternative site was assessed for the proposed mining but found not environmentally and practically suitable. The site still has a green status and the natural area will need to be disturbed for the quarry to be established.

Site Alternative	
Decimal Degrees	**Degrees; Minutes; Seconds**
A27.05248°S; 27.5601234°E	A27°3'8.928"S; 27°33'36.4442"E
B27.0497502°S; 27.5622447°E	B27°2'59.1007"S; 27°33'44.0809"E
C27.0518223°S; 27.5660146°E	C27°3'6.5603"S; 27°33'57.6526"E
D27.0560016°S; 27.5637109°E	D27°3'21.6058"S; 27°33'49.3592"E
A27.05248°S; 27.5601234°E	A27°3'8.928"S; 27°33'36.4442"E

An application for a Mining Right in terms of Section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) [MPRDA] was submitted to the Department of Mineral Resources (DMR).

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

- GNR 325 Environmental Impact Assessment Regulations Listing Notice 2 of 2014 Activity 17 (Mining Right area):

  Any activity including the operation of that activity which requires a mining right in terms of section 22 of the Mineral and Petroleum Resources Development Act, 2002 (act No. 28 of 2002), including associated infrastructure, structures and earthworks directly related to the extraction of a mineral resource or the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.

- GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 22 (Mining Area):

  The decommissioning of any activity requiring –
  (i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002); or
  (ii) a prospecting right, mining right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure;
  but excluding the decommissioning of an activity relating to the secondary processing of a –
  (a) mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource; or
  (b) petroleum resource, including the refining of gas, beneficiation, oil or petroleum products; –
  in which case activity 31 in this Notice applies.

- GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 27 (Mining and Stockpile Area):

  The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.

- GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 28 (Mining and Stockpile area):

  Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or before 01 April 1998 and where such development will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.

- GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 35 (Mining and Stockpile area)

  The expansion of residential, retail, recreational, tourism, commercial or institutional developments on land previously used for mining or heavy industrial purposes, where the increased development footprint will exceed 1 000 square meters; excluding—
  (i) where such land has been remediated in terms of part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; or

(ii) where an environmental authorisation has been obtained for the decommissioning of such a mine or industry in terms of this Notice or any previous NEMA notice; or
(iii) where a closure certificate has been issued in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) for such land.

Other legislation triggered by the proposed project includes:

- An application for a Mining Right in terms of Section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) has been submitted to the Department of Mineral Resource.

Site Establishment / Construction phase:

During the site establishment phase the applicant have to fence the footprint area and clear the topsoil from the applied area, it should be noted that there is very little topsoil on site.

Upon stripping, the topsoil will be stockpiled along the boundaries of the mining area to be used during the rehabilitation phase. Topsoil stripping will be restricted to the areas to be used for aggregate stockpiling and mining. The complete A-horizon (topsoil – the top 100 – 200 mm of soil which is generally darker coloured due to high organic matter content) will be removed. If it is unclear where the topsoil layer ends the top 300 mm of soil has to be stripped. The topsoil will be stockpiled in the form of a berm alongside the boundary of the mining area where it will not be driven over, contaminated, flooded or moved during the operational phase. The topsoil berm will measure a maximum of 1.5 m high and should be planted with indigenous grass species if vegetation does not naturally establish within 6 months of stockpiling to prevent soil erosion and to discourage growth of weeds. The roots of the grass will also improve the viability of the soil for rehabilitation purposes.

The proposed mining area was previously used for aggregate mining and therefore no construction phase is applicable. The area need to be cleared of topsoil and an access road already exist. The expansion of the quarry pit will be handled as part of the operational phase of the quarry. As the infrastructure are temporary the use of infrastructure and machinery that is either track-based or can be removed without difficulty. Temporary infrastructure to be used in the mining method will entail a temporary weighbridge and chemical toilet, with servicing of vehicles and equipment being done on-site at the workshop and washbay of the applicant. An on-site office will also be used for all administration purposes relating to the project.
During the site establishment phase the applicant, have to demarcate the boundaries of the site and fence the entire mining area.

The applicant will introduce the processing equipment to the area during the site establishment phase. The equipment to be introduced on site will entail the following:

- Drilling Equipment;
- Excavating Equipment;
- Earth Moving Equipment;
- Crushing and Screening infrastructure;
- Site Office (120m^2);
- Site vehicles;
- Parking area for visitors and site vehicles;
- Vehicle service area (48m^2);
- Wash bay (24m^2);
- Workshop (24m^2);
- Salvage Yard (100m^2);
- Bunded diesel and oil storage facilities (136m^2);
- Generator on bunded area;
- Ablution Facilities (4);
- Weigh Bridge (18m^2); and
- Demarcated general and hazardous waste area (50m^2).

The mining activities will consist out of the following:

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

The mining site will contain the following:

- Drilling equipment;
- Excavating equipment;
- Earth moving equipment; and
- Mobile crushing and screening plants.

Operational phase:

During the operational phase Inzalo Crushing and Aggregates (Pty) Ltd makes use of blasting by means of emulsion explosives in order to loosen the hard rock, this material will be crushed and screened to produce aggregate. Blasting occurs approximately twice every month.

Mine area:

- Demarcating the mining area:
- The mining area will be clearly demarcated by means of beacons at its corners, and along its boundaries if there is no visibility between the corner beacons.
- Permanent beacons will be firmly erected and maintained in their correct position throughout the life of the operation.
- The blasted material is loaded with earth moving equipment onto tipper trucks, which carts it to the crushing plant. Here it is fed into the crushers by means of a system of conveyor belts. After crushing and screening has taken place in the plant the crushed material is transported to the stockpile area. This activity will be continuous throughout the operation phase.

Mineral Processing:

- The mining methods will make use of blasting by means of explosives in order to loosen the hard rock and the material will then be loaded and hauled out of the excavation and loaded onto a mobile crusher plant in the mining area. The aggregate will then be stockpiled and transported to clients via transporting trucks and trailers. Gravel will be recovered mechanically with drilling equipment, excavating equipment, earth-moving equipment, mobile crushing & screening plants. The aggregate / stone gravel that is recovered will be loaded on tipper trucks from where it will be transport to an area where it will be screened and stockpiled. Blasting noise will be instantaneous and of short duration. This will only occur once every two to three weeks. The blasted material is primarily crushed in the quarry by the blast. It is then loaded with earth moving equipment into trucks, which carts it to the crushing plant. Here it is fed into the crushers by means of a system of conveyor belts. After the crushing and screening has taken place in the plant the crushed material is transported into stockpile.
- Deliveries are made from the aggregate stockpiles. Delivery is by truck or alternatively it is collected by the client's transport.
- Approximately thirty workers will be employed at the site

Working hours:

- All proceedings will be undertaken in 24 hours' day shifts to meet schedule demands.
- Two Shifts will be worked:
    - Sunrise to Sunset

- Sunset to Sunrise

Plant Residue Disposal:

- No plant residue is generated that need to be disposed. Unsuited material will be put back into the excavations.

Roads and Transport:

- The site is located of the N1 at the R723 Heilbron / Vredefort off ramp. Turn right on the R723 and left in the direction of Heilbron. Continue approximately 1.2 km and turn left at the unnamed public road towards the Bloemhof Farm continue 1.7km to the farm gates.

Haul trucks will travel along the existing farm road up to the unnamed public road. Turning right they will travel along the existing road, as illustrated below.

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

- In the event that new roads need to be constructed, these roads will be selected as far as possible to avoid watercourses and steep gradients. Adequate drainage and erosion protection in the form of cut-off berms or trenches will be provided where necessary.

- Any new roads to be established to the site will be below the threshold of the EIA regulations of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended June 2014
- The existing farm road will be used as access road to the site. Should a portion of the access road need to be newly constructed in future the following will be adhered to:
    - The route will be selected that a minimum number of bushes or trees are felled and existing fence lines will be followed as far as possible.
    - Adequate drainage and erosion protection in the form of cut-off berms or trenches will be provided where necessary.

Water:

- Process water will be obtained from the existing quarry pit. The water will mainly be used for dust suppression purposes on the crusher plant, roads and mining area. The mining activities will require process water that will be sourced from the quarry pit. A water use authorisation application is in process for dust suppression. Potable water will be transported to site daily. The solid waste produced during the operational phase of the project will be transported from site to the nearest landfill site.

Decommissioning phase:

- The closure objectives for the mining area is to be made safe, and the remainder of the site to be returned to agricultural use. The perimeter of the site will be subject to top-dressed with topsoil and vegetated with an appropriate grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil.
- Control of weeds and alien invasive plant species is an important aspect after topsoil replacement and seeding (if applicable) has been done in an area.
- Site management will implement an alien invasive plant management plan during the 12 months' aftercare period to address germination of problem plants in the area.

The decommissioning activities will consist of the following:

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

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (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**
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) • Section 22	Application for a Mining Right Ref No: FS 30/5/1/3/2/ MR
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2017	Application for environmental authorisation Ref No: FS 30/5/1/3/2/ MR
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) and amendments	Assessment of the Biophysical Environment
Mine Health and Safety Act, 1996 (Act No 29 of 1996)	The mitigation measures proposed for the site includes specifications of the MHSA
National Heritage Resources Act No. 25 of 1999	Assessment of the Cultural and Heritage Environment
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) Land Use Planning Ordinance (Ordinance 15 of 1985)	Assessment of biophysical environment Land use zoning requirements
Free State Nature Conservation Ordinance 8 of 1969	Biophysical Environment
Ngwathe Local Municipality Spatial Planning and Land Use Management By-law 2015	Part A(iv)(1)(b) Description of the current land uses
Free State Town Planning and Land Related By-Laws	
Ngwathe Local Municipality Integrated Development Plan	Part A(iv)(1)(b) Description of the current land uses
Public Participation Guideline in terms of the NEMA EIA Regulations	Used during the public participation process

f) Need and desirability of the proposed activities.

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

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

g) Period for which the environmental authorisation is required

The applicant requests the Environmental Authorisation to be valid for a 20-year period in order to correspond with the validity of the mining right.

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

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

i. Details of the alternatives considered.

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

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

The applicant identified two alternative sites for the proposed mining activity namely:

1. **Site Alternative 1 (S1) (Preferred Alternative):** The Applicant, Inzalo intends to apply for a mining right, 25.4ha, on the remaining extent of farm Bloemhof 14, within the boundaries of the following GPS Coordinates:

Preferred Alternative	
Decimal Degrees	**Degrees; Minutes: Seconds**
A27.0548894°S; 27.5625444°E	A27°3'17.6018"S; 27°33'45.1598"E
B27.0513029°S; 27.5650583°E	B27°3'4.6904"S; 27°33'54.2099"E
C27.0483198°S; 27.5596529°E	C27°2'53.9513"S; 27°33'34.7504"E
D27.0502365°S; 27.5575594°E	D27°3'0.8514"S; 27°33'27.2138"E
A27.0548894°S; 27.5625444°E	A27°3'17.6018"S; 27°33'45.1598"E

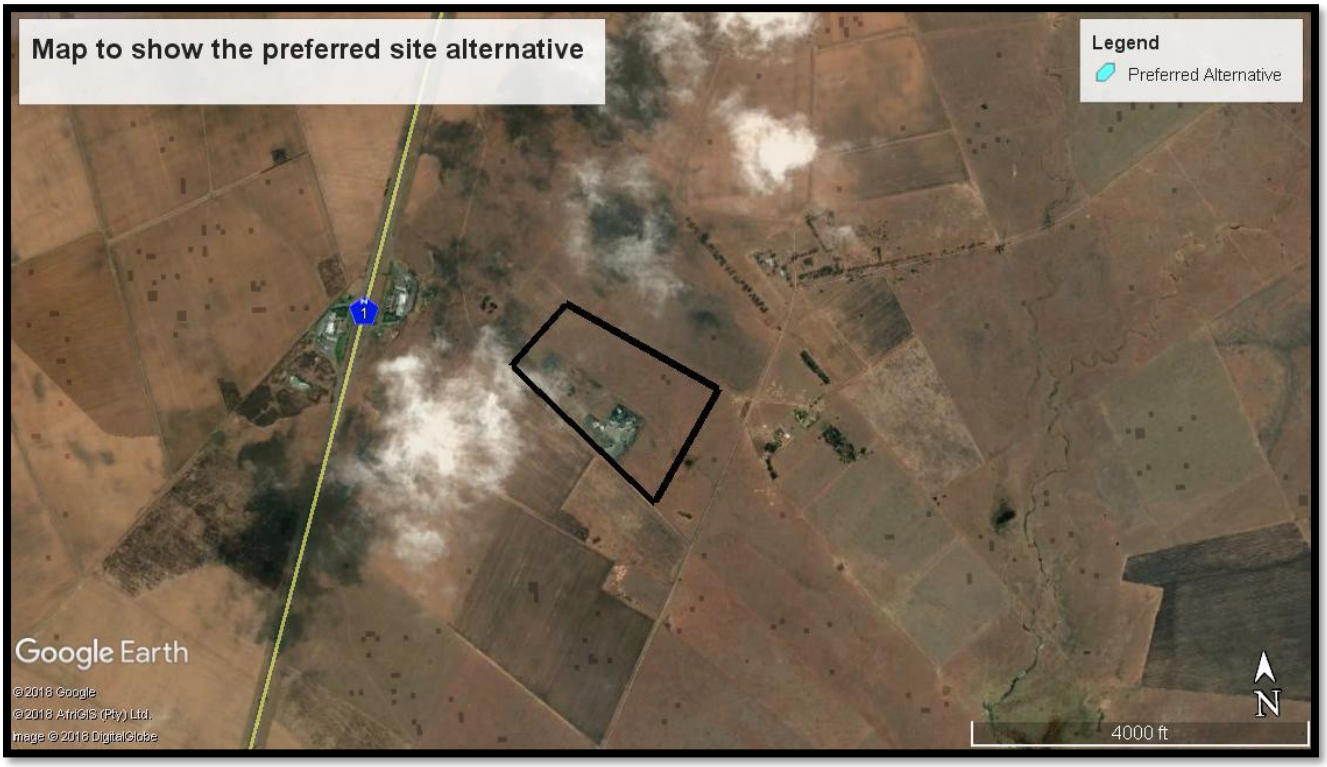

Figure 2: Satellite view showing the position of Site Alternative 1 indicated in blue.

Site Alternative 1 was identified during the assessment phase of the environmental impact assessment, by the applicant and project team, and was therefore selected as the **preferred alternative** due to the following:

- The mining site offers the mineral sought after;
- The proposed footprint area was previously used for mining therefore very little indigenous vegetation needs to be disturbed in order to establish the mining area;
- The site is located approximately 500m from the closest farm house with mitigation measures in place impacts such as dust and noise will be minimal.
- The mining site is more than 25 km away for the town of closest town Koppies, and will not affect the community with regards to dust and noise;
- The mineral to be mined is already in aggregate form and will not need to be blasted in order to loosen the material;

- The mining area can be reached by an existing farm access road that connects to R723. No new road infrastructure need to be constructed;
- Due to the small size of the activity and the remote location of the mining area the potential impacts on the surrounding environment, associated with mining is deemed to be of low significance; and
- No residual waste as a result of the mining activity will be produced that needs to be treated on site. Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site. The amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental leakage. Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site.

2. **Site Alternative 2 (S2):** Site Alternative 2 entails the mining of a 25.4 ha area within the boundaries of the following GPS Coordinates:

Site Alternative	
Decimal Degrees	**Degrees; Minutes; Seconds**
A27.05248°S; 27.5601234°E	A27°3'8.928"S; 27°33'36.4442"E
B27.0497502°S; 27.5622447°E	B27°2'59.1007"S; 27°33'44.0809"E
C27.0518223°S; 27.5660146°E	C27°3'6.5603"S; 27°33'57.6526"E
D27.0560016°S; 27.5637109°E	D27°3'21.6058"S; 27°33'49.3592"E
A27.05248°S; 27.5601234°E	A27°3'8.928"S; 27°33'36.4442"E

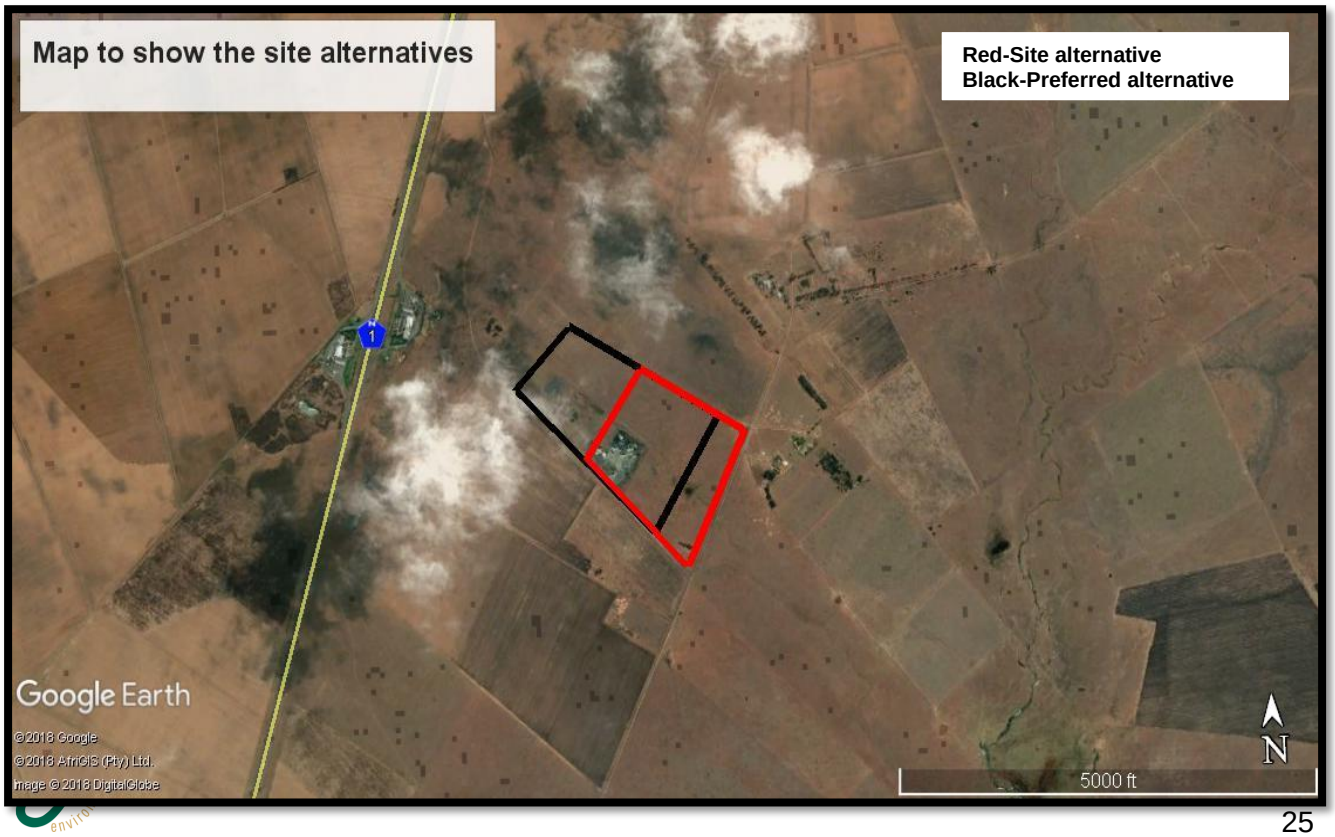

Figure 3: Satellite view showing the position of Site Alternatives

The applicant investigates the possibility of establishing the proposed mining area next to the old mining area, to be located closer to the haul road to cut down on transport cost. This alternative was however found **not** to be the **preferred** alternative due to the following reasons:

- The site alternative will counteract the visual aesthetic value of the area by being closer to the road;
- The site has not been previously disturbed before; thus the natural area needs to be cleared and is not preferred with regards to sustainable development; and
- In the light of the above the impacts associated with establishing another quarry pit in a greenfield site on the property is believed to have a higher significance without the need or motivation to justify it.

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 aggregate to be stockpiled at the site will be used for road and construction industries, if however, the no-go alternative is implemented the applicant will not be able to utilize the mineral present in the area.

This could have major impacts on aspects such as transporting of material to construction sites from far off mining areas, cost effectiveness of material, impact on roads and road users due to long distance hauling of gravel and loss of income to the Koppies / Parys business area due to the multiplier effect.

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

- The applicant will not be able to supply in the demand of road or construction contractors,
- The application, if approved, would allow the applicant to utilize the available aggregates as well as provide employment opportunities to local employees. Should the no-go alternative be followed these opportunities will be lost to the applicant, potential employees and clients,
- The applicant will not be able to diversify the income of the property.

ii. Details of the Public Participation Process Followed

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

The applicant will submit a mining right application for environmental authorisation in terms of NEMA, 1998 and the EIA Regulations, 2014 (amended 2017) to the DMR on the a date to be decided. Initial public participation was done in terms of this application and the below mentioned stakeholders, the landowner and I&AP's were notified of the proposed project.

The 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. A 30 days commenting period were allowed which extended from the 13th of March 2018 to 13th of April 2018 during the initial Mining Right Application. A second commenting period (2nd public participation phase) was allowed which extended from the 13th of April 2018 to May 2018.

A register of interested and affected parties (I&AP's) will be opened and maintained containing the names, contact details and addresses of all persons who have submitted written comments, attended meetings or have in writing requested to be registered and all organs of state which have jurisdiction in respect of the activity. Please note that only registered I&AP's and stakeholders will be entitled to comment on reports and plans to be submitted to the Department provided that the party provides its name, contact details and address and discloses any direct business, financial, personal or other interest which he/she may have in the approval or refusal of the applications.

The Draft Scoping Report (DSR) will be submitted to the Department of Mineral Resources (DMR) – Welkom for review purposes. This report will also be made available to the public for a 30 days' review period. An electronic copy of the report will be published on the Greenmined Environmental website (www.greenmined.com). All registered I&AP's and stakeholders will be notified of the commenting period in advance as above.

The DSR will then be updated to reflect the comments received during the public commenting period. Thereafter, the Final Scoping Report (FSR) will be submitted to the DMR for its consideration as part of the authorization process in terms of the NEMA 2014 regulations (as amended by GNR 326 effective 7 April 2017). A copy of the final report will be made available on the Greenmined Environmental website. Once the Final Scoping Report has been accepted by the DMR, the Draft Environmental Impact Assessment Report (DEIAR) will be prepared and also made available to the public for a 30-day commenting period. An electronic copy of the DEIAR report will also be published on the Greenmined Environmental website. All registered I&AP's and stakeholders will be notified of the commenting period in advance.

Upon expiry of the commenting period the DEIAR will be updated to reflect the comments received during the public commenting period. Thereafter, the Final EIAR will be submitted to the DMR for its consideration as part of the authorization process in terms of the NEMA 2014 regulations (as amended by GNR 326 effective 7 April 2017). A copy of the final report will be made available on the Greenmined Environmental website. All registered I&AP's and stakeholders will be notified in writing within 14 days of the date of the decision of the outcome of the application, including the reasons for the decision and the right of appeal.

The following I&AP's and stakeholders were contacted to obtain their comments:

. The following I&AP's and stakeholders were contacted to obtain their comments:

TITLE, NAME AND SURNAME	AFFILIATION/KEY STAKEHOLDER STATUS	CONTACTED DATE	RESPONSE RECEIVED
Mnr. JP Coetzee	Land Owner	2 March 2018	No Comments Received
Boden Family Trust	Surrounding Land Owner	2 March 2018	No Comments Received
Ms Gasela P/A Mr Thamela	Department of Economic Small Business Development,Tourism and Environmental Affairs (DETEA)	2 March 2018	No Comments Received
Mr Mwseoke P/A Ms Kekeletso	Department of Public Works and Infrastructure	2 March 2018	No Comments Received
Mr Mbana Peter Thabethe P/A Ms Mamphona	Department of Agriculture and Rural Development	2 March 2018	No Comments Received
Mr Nomfundo Douwjack Janine Janse v Rensburg	Department of Labour	2 March 2018	No Comments Received
Mr S Msibi P/A Timbe	Department of Police, Roads and Transport	2 March 2018	No Comments Received
Mr TP Ntili	Department of Water Affairs & Sanitation	2 March 2018	No Comments Received

TITLE, NAME AND SURNAME	AFFILIATION/KEY STAKEHOLDER STATUS	CONTACTED DATE	RESPONSE RECEIVED
Mr Pule Tshekedi (Acting)	Ngwathe Local Municipality	2 March 2018	No Comments Received
Cllr Rosie Kgantsie.	Ngwathe Local Municipality Ward 8	2 March 2018	No Comments Received
MS LM Molibeli	Fezile Dabi District Municipality	2 March 2018	No Comments Received
Officer Environmental Management Earl Craig Daniels	Eskom	2 March 2018	No Comments Received
Me Judy Marx	SANRAL Regional Offices	2 March 2018	No Comments Received

On-site notices were placed at the site entrance on the unnamed public road and in town at the Engen Garage in Kroonvaal on the 13th of March 2018. The project was also advertised in the Parys Gazette on the Thursday the 15th of March 2018.

See attached Appendix E for proof of the public participation process conducted for the said mining right application.

iii. Summary of issues raised by I&APs

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

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Comments Received		Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
AFFECTED PARTIES					
Landowner/s	**X**				
Mr. JP Coetzee	X	No comments received	No objections	N/A	N/A
Lawful occupier/s of the land					
•					
Landowners or lawful occupiers on adjacent properties	**X**				
Boden Family Trust	X	No comments received	N/A	N/A	N/A
Municipal councillor					

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Comments Received		Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Cllr Rosie Kgantsie. Ngwathe Local Municipality Ward 8	X	No comments received	N/A	N/A	N/A
Municipality					
Ngwathe Local Municipality - Mr Pule Tshekedi (Acting)	X	No comments received	N/A	N/A	N/A
Fezile Dabi District Municipality -MS LM Molibeli	X	No comments received	N/A	N/A	N/A
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
Department of Public Works and Infrastructure – Head of Department Mr Mwseoke P/A Ms Kekeletso	X	No comments received	N/A	N/A	N/A
Communities					

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Comments Received		Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Dept. Land Affairs					
Department of Agriculture and Rural Development Mr Mbana Peter Thabethe P/A Ms Mamphona	X	No comments received	N/A	N/A	N/A
Traditional Leaders					
Dept. Environmental Affairs					
Department of Economic Small Business Development,Tourism and Environmental Affairs (DETEA) Ms Gasela P/A Mr Thamela	X	No comments received	N/A	N/A	N/A
Other Competent Authorities affected					

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Received	Comments	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Department of Labour Mr Nomfundo Douwjack Janine Janse v Rensburg	X	No comments received	• N/A	N/A	N/A
Department of Water and Sanitation Free State Mr TP Ntili	X	No comments received	N/A	N/A	N/A
Department of Police, Roads and Transport - Mr S Msibi P/A Timbe	X	No comments received	N/A	N/A	N/A
ESKOM Officer Environmental Management Earl Craig Daniels	X	No comments received	N/A	N/A	N/A
South African Heritage Resource Agency Me Judy Marx	X	No comments received	N/A	N/A	N/A
OTHER AFFECTED PARTIES					

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
INTERESTED PARTIES				

iv. The Environmental attributes associated with the alternatives.

(1) Baseline Environment

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

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

Geology:

Sedimentary mudstones and sandstone mainly of the Adelaide Subgroup (Beaufort Group, Karoo Supergroup) as well as those of the Ecca Group (Karoo Supergroup) found in the extreme northern section of this grassland, giving rise to vertic, melanic and red soils (typical forms are Arcadia, Bonheim, Kroonstad, Valsrivier and Rensburg)—typical of Dc land type (dominating the landscape). The less common intrusive dolerites of the Jurassic Karoo Dolerite Suite support dry clayey soils typical of the Ea land type.

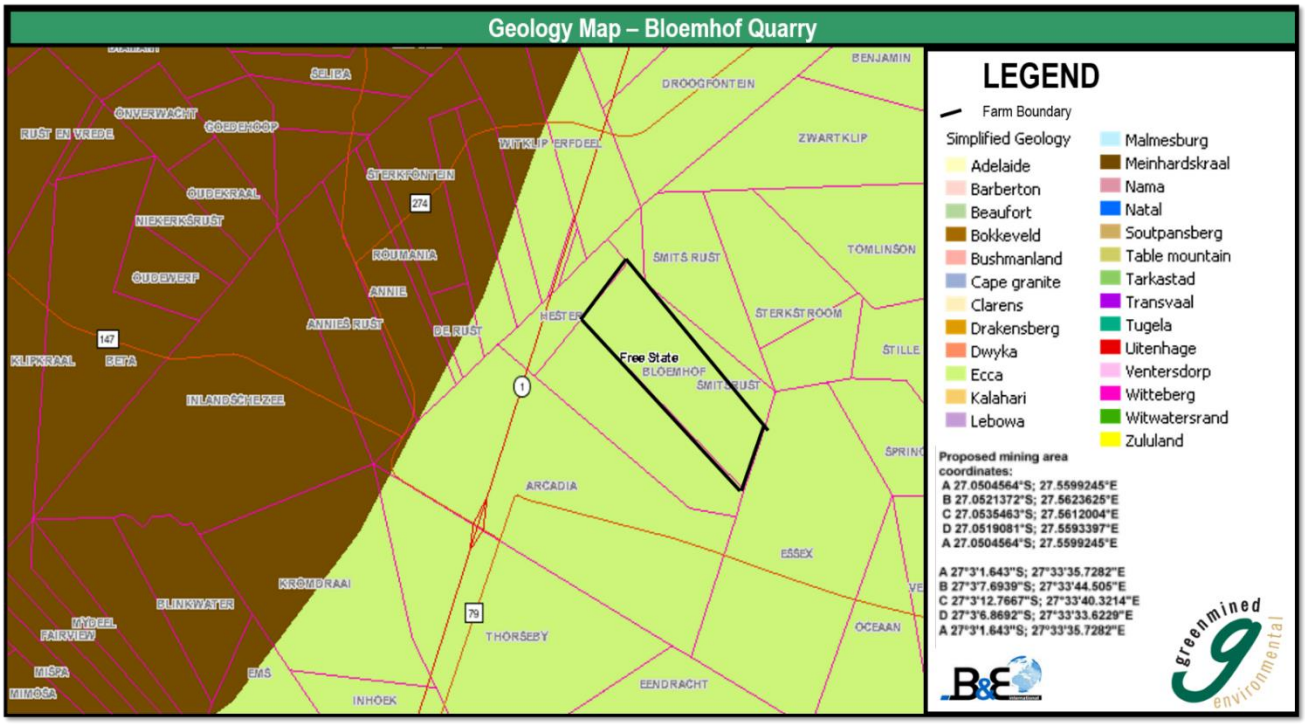

Figure 4:Geology of the Proposed Bloemhof Quarry.

Topography:

The topography of the area consists of level plains with some relief.

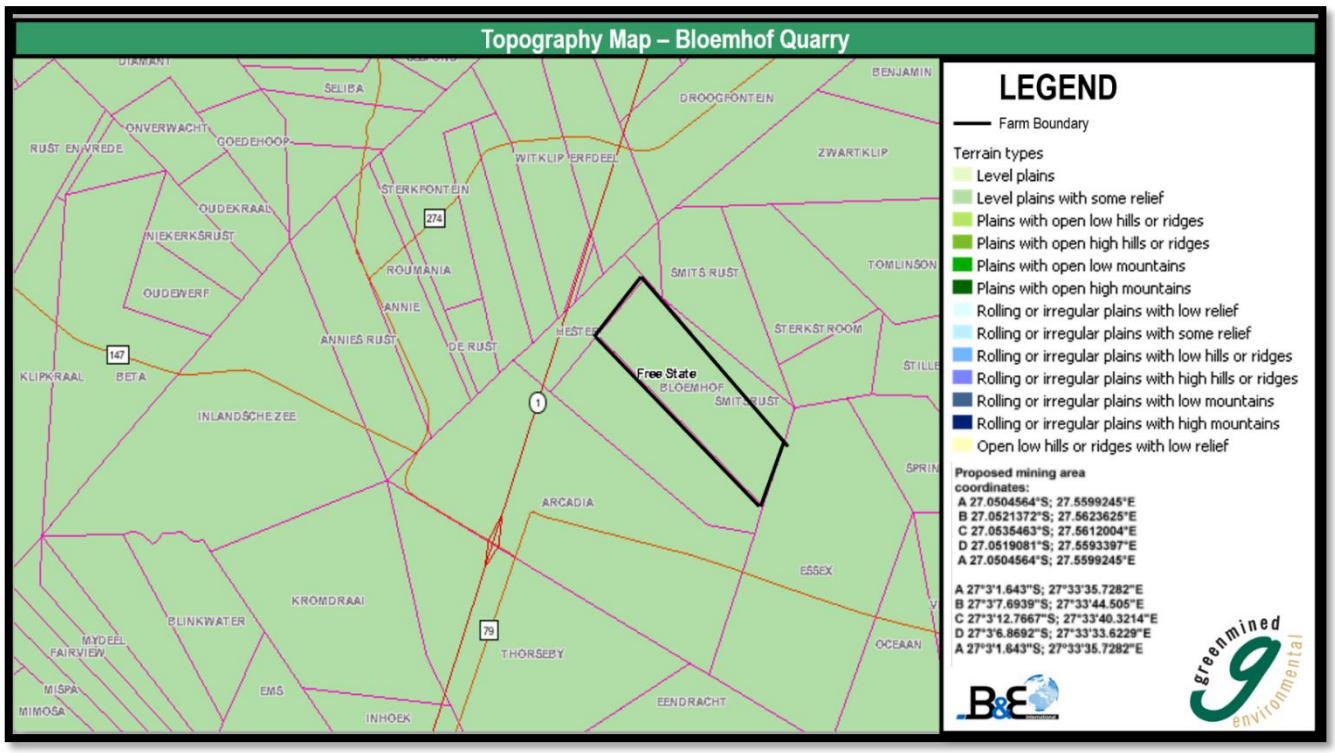

Figure 5: Topography of the Proposed Bloemhof Quarry.

Soil, Land Use and Land Capability:

Red to yellow sandy soils of the Ba and B.D land types. The topsoil is between 0 -300mm deep.

The surrounding land uses includes agricultural land and open veldt. Slightly to moderately undulating plains, including some low hills and pan depressions.

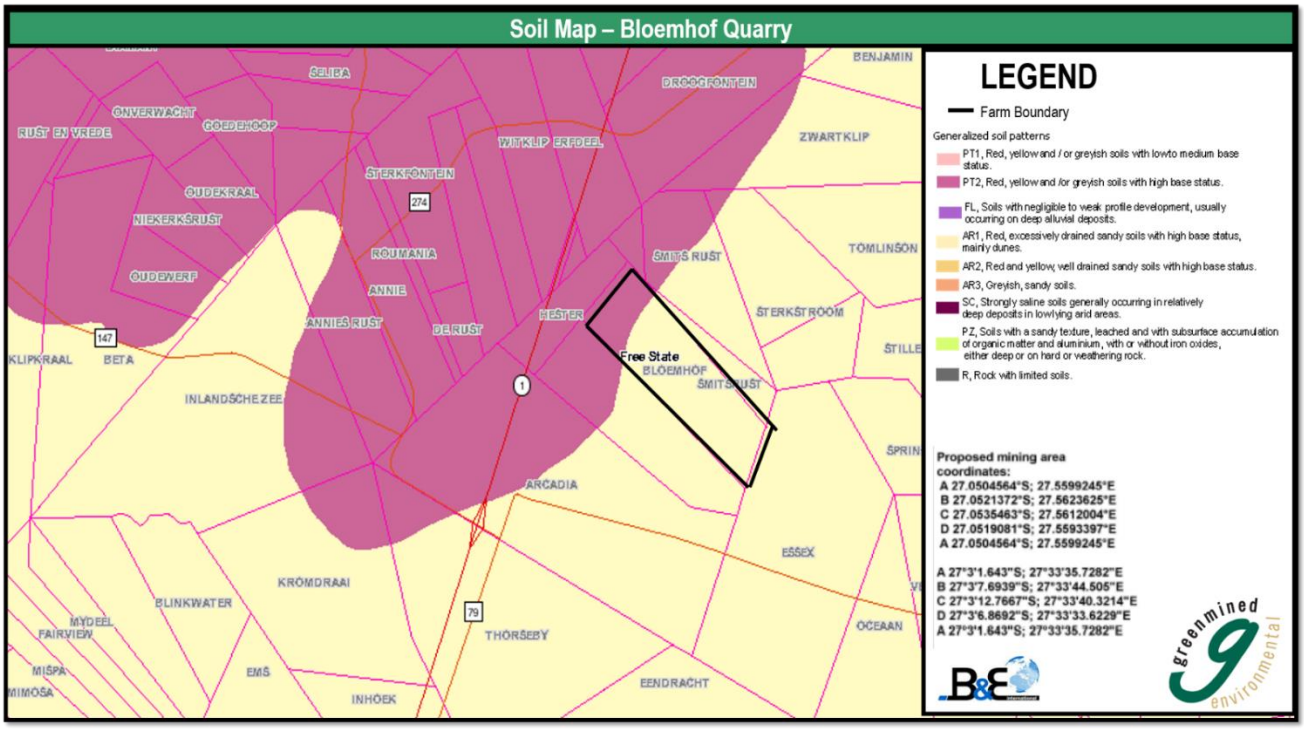

Figure 6: Soil Patterns of the Proposed Bloemhof Quarry.

The land capability of the farm consists out of high potential arable land to very high potential arable land. The northern side where the wetland is located is not arable.

Natural Vegetation:

Undulating plains supporting short grassland, in natural condition dominated by *Themeda triandra* while *Eragrostis curvula* and *E. chloromelas* become dominant in degraded habitats. Dwarf karoo bushes establish in severely degraded clayey bottomlands. Overgrazed and trampled low-lying areas with heavy clayey soils are prone to *Acacia karroo* encroachment.

The site earmarked for the proposed mining activity has previously been used for aggregate mining purposes. Although some indigenous vegetation did re-establish through succession the vegetation of the area can be described as disturbed with a high invasion of alien invader plants.

No red data or protected plants could be identified in the proposed footprint area of the mining area.

Land capability:

The land capability of the area consists of marginal potential arable land.

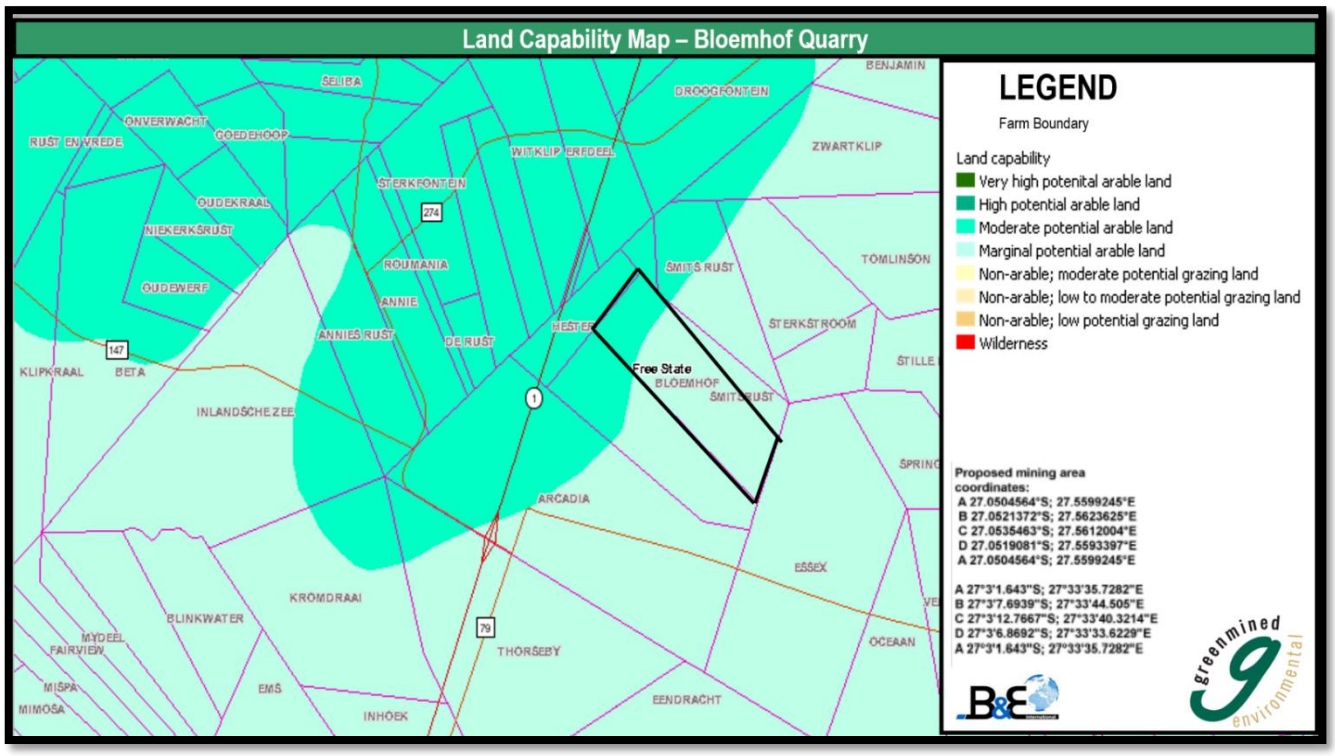

Figure 7: Land capability of the Proposed Bloemhof Quarry.

Land cover:

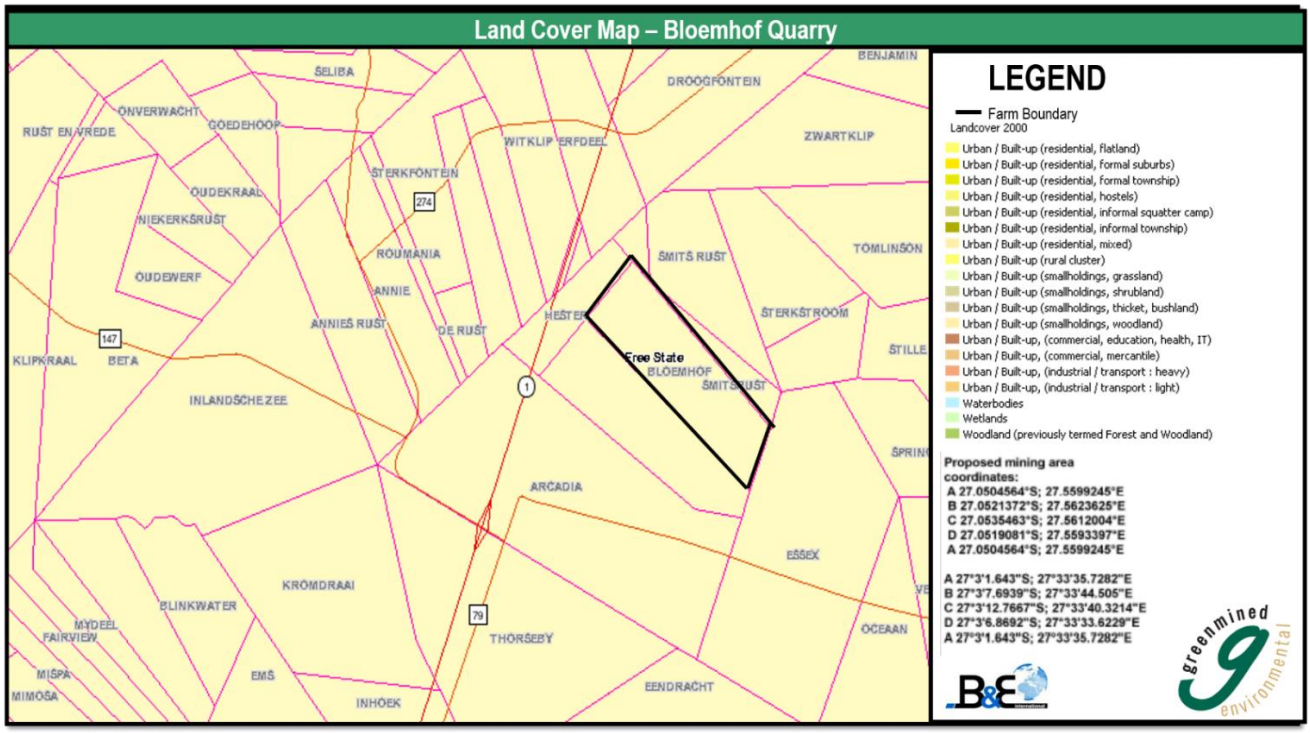

Figure 8: Land cover of the Proposed Bloemhof Quarry.

Fauna:

No animals where spotted during the site inspection. Animals that may occur in the area will be very similar to those found around Koppies. The area was previously disturbed for the recovery of gravel. Small mammals, reptiles and insects will occur in the area.

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 educated and managed to ensure that no fauna at the site is harmed.

Surface and Ground Water:

The proposed quarry falls within the Middle Vaal Water Management Area. The Middle Vaal WMA is located downstream of the confluence of the Vaal and the Rietspruit Rivers and upstream of Bloemhof Dam; It extends to the headwaters of the Schoonspruit River in the north and the Vet River in the south, covering a total catchment area of 52 563 km2. The Middle Vaal WMA includes parts of Free State and North-West

provinces. Major rivers in the Middle Vaal Water Management Area include the Schoonspruit, Rhenoster, Vals, Vet and Vaal rivers. The tertiary drainage areas in the Middle Vaal WMA comprises C24, C25, C41, C43, C60 and C70. The proposed quarry falls within the quaternary catchment area of C24C.

No river diversions will be needed. There is an artificial wetland located in the north eastern corner of the property.

Ground water will not be affected with this activity of mining. Although the depth of the groundwater is unknown, mining at the proposed site is expected to be up to a maximum depth of 10m and therefore the impact on the groundwater will need continuous monitoring should ground water be intersected.

Air Quality:

The background air quality of the surrounding area is highly impacted on by vehicles travelling along the N1. Given the surrounding extent of mostly covered vegetated areas, no extreme dust generation under windy conditions is experienced.

Emission into the atmosphere is controlled by the National Management: Air Quality Act, 2004. The proposed activity at the site will however not trigger an application in terms of the Air Quality Act as the emissions to be produced at the mining site will only entail dust generation due to the disturbance of soil. Dust will be generated by the movement of earthmoving equipment, the loading of material and transporting of material from site.

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

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

Ambient Noise:

The background noise level of the surrounding area is highly impacted on by traffic travelling along the N1 road passing the property.

Due to the nature of the proposed activity, noise will be generated as a result of mechanical excavation including activities such as drilling.

There are no influences on noise levels from industrial or other mining operation in the area. The noise generated from the mining machinery will be similar to noise generated along the N1 by public vehicles except after hours when the absence of surrounding activity and agricultural operations may exacerbate the presence of noise. Blasting noise will be instantaneous and of short duration. This will only occur once every two to three weeks. 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. The nuisance value of noise generated by heavy earthmoving equipment for residence in the near vicinity is deemed to be of low – medium significance, as the mine is expected to be operational 24 hours a day for 6 days a week. All mining vehicles will also be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93. of 1996).

Archaeological and Cultural Interest:

No sites of archaeological or cultural importance were identified at the proposed mining area during the site inspection. The area was previously used for mining and no areas of cultural importance could be identified within the footprint area of the site.

Visual Exposure:

Due to the current mining disturbance nearby the area the site has a low aesthetic value. The proposed mining area will visible from N1 passing the property and will therefore have a visual impact on the immediate surrounding area.

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

(b) Description of the current land uses.

The remaining extent of the farm Bloemhof 14, Parys, Free State Province is situated in an agricultural and mining setting to the east of the R723. The land use of the property comprises of the following:

- Agriculture – Mainly grazing
- Mining – Signs of previous mining activities for aggregate is evident on the farm.

The land use of the surrounding properties comprises of the following:

- Industrial – NONE
- Residents – Residents are situated 0.5 km east of the mining site
- Transport – Unnamed public road is located 450 m from the proposed quarry, that is connecting to the R723 (±1.7 km away)
- Transport N1 is located 850 m west from the proposed site
- Commercial Kroonvaal Engen One Stop 650m west of the site

- Agriculture – Grazing

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

The proposed mining area is approximately 25.4ha is extent and the applicant, Inzalo Crushing and Aggregates (Pty) Ltd, intents to win material from the area for at least 20 years. The aggregate / stone gravel to be removed from the quarry will be used for road construction in the vicinity. The proposed quarry will therefore contribute to the upgrading / maintenance of road infrastructure in and around the Koppies / Parys area.

The existing infrastructure within 500 m of the proposed mining area is the Gravel Access Road, N1, Kroonvaal Engen One Stop and an existing quarry pit. The provincial road (R723) is approximately 1.7 from the proposed mining area.

The impact of the proposed mining area on the infrastructural features of the surrounding area is deemed to be of low significance as the impact of the mining activity will be concentrated within the 25.4ha footprint area of the mine.

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

(d) Environmental and current land use map.

(Show all environmental and current land use features)

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

v. Impacts identified

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

STRIPPING AND STOCKPILING OF TOPSOIL:

Visual intrusion associated with the establishment of the mining area
Rating: Low - Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	2	2	2.00	4	4	4	**8.00**

Dust nuisance caused by the disturbance of the soil
Rating: Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.67	4	5	4.5	**12.00**

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	4	1	2.33	5	5	5	**11.67**

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	4	1	2.33	3	5	4	**9.33**

Loss of topsoil due to incorrect storm water management
Rating: Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	1	2.67	3	5	4	**10.67**

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	4	1	2.67	3	5	4	**10.67**

BLASTING:

Health and safety risk posed by blasting activities
Rating: Low - Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	1	2.6	1	3	2	**5.2**

Dust nuisance caused by blasting activities
Rating: Low - Medium **Degree of Mitigation: Not Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	1	2.6	1	3	2	**5.2**

Noise nuisance caused by blasting activities
Rating: Low - Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.6	1	3	2	**5.2**

EXCAVATION:

Visual intrusion associated with the excavation activities
Rating: Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.67	5	5	5	**13.35**

Dust nuisance due to excavation activities
Rating: Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.67	4	5	4.5	**12.00**

Noise nuisance generated by excavation equipment

Rating: Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.67	4	5	4.5	**12.00**

Contamination of surface or groundwater due to effluent runoff from excavation area

Rating: Low - Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extend		Probability	Frequency		
3	4	3	3.33	2	1	1.5	**5.00**

Unsafe working conditions for employees

Rating: Low - Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	1	2.33	3	3	3	**7.00**

Negative impact on the fauna and flora of the area

Rating: Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.67	3	5	4	**10.67**

Potential damage to cultural or heritage aspects

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	1	2.67	1	1	1	**2.67**

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	4	1	2.67	3	4	3.5	**9.33**

Weed and invader plant infestation of the area

Rating: Medium **Degree of Mitigation: Fully Mitigated**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
3	4	1	2.67	3	5	4	**10.67**

Crushing And Screening:

Visual intrusion associated with the crushing/screening activities
Rating: Medium **Degree of Mitigation: Fully Mitigated**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
2	4	2	2.67	5	5	5	**13.33**

Dust nuisance due to crushing/screening activities
Rating: Medium **Degree of Mitigation: Fully Mitigated**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
2	4	2	2.67	4	5	4.5	**12.00**

Noise nuisance caused by vehicles
Rating: Medium **Degree of Mitigation: Partial**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
2	4	2	2.67	4	5	4.5	**12.00**

Contamination of area with hydrocarbons or hazardous waste materials
Rating: Medium **Degree of Mitigation: Fully Mitigated**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
3	4	1	2.67	3	5	4	**10.67**

Unsafe working conditions for employees
Rating: Low - Medium **Degree of Mitigation: Fully Mitigated**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
2	4	1	2.33	3	3	3	**7.00**

Negative impact on the fauna and flora of the area
Rating: Medium **Degree of Mitigation: Fully Mitigated**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**

2	4	2	2.67	3	5	4	**10.67**

LOADING AND TRANSPORTING:

Visual intrusion associated with the crushing/screening activities
Rating: Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	5	2	3.00	4	4	4	**12.00**

Loss of topsoil due to ineffective storm water handling
Rating: Low - Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	5	1	2.67	2	2	2	**5.33**

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		
2	5	1	2.67	4	2	3	**8.00**

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	2	2.67	4	5	4.5	**12.00**

Degradation of access roads
Rating: Low - Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.67	3	2	2.5	**6.67**

Noise nuisance caused by vehicles
Rating: Low - Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.67	3	2	2.5	**6.67**

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	4	1	2.67	3	5	4	**10.67**

SLOPING AND LANDSCAPING DURING REHABILITATION:

Soil erosion
Rating: Low - Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	1	2.67	3	4	3.5	**9.33**

Health and safety risk posed by un-sloped areas
Rating: Low - Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	1	2.67	3	3	3	**8.00**

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	2.00	4	3	3.5	**7.00**

Noise nuisance caused by machinery
Rating: Low - Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.67	4	3	3.5	**9.33**

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	4	1	2.67	3	3	3	**8.00**

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	4	1	2.67	3	3	3	**8.00**

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	4	1	2.67	3	3	3	**8.00**

Cumulative Impacts:

Additional traffic on the local roads during operational phases
Rating: Low - Medium

			Consequence			Likelihood	**Significance**
Severity	Duration	Extend		Probability	Frequency		
2	4	2	2.67	4	4	4	**10.67**

The influx of people into the area during the operational phases;
Rating: Low - Medium

			Consequence			Likelihood	**Significance**
Severity	Duration	Extend		Probability	Frequency		
2	4	2	2.67	4	5	4.5	**12.00**

Socio-economic and cultural impacts:

Dust nuisance due to the liberation of dust during the mining process
Rating: Low – Medium

			Consequence			Likelihood	**Significance**
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.33	3	4	3.5	**8.17**

Noise nuisance caused by mining activities
Rating: Low – Medium

			Consequence			Likelihood	**Significance**
Severity	Duration	Extend		Probability	Frequency		

2	4	1	2.33	3	4	3.5	**8.17**

vi. Methodology used in determining the significance of environmental impacts

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

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

DEFINITIONS AND CONCEPTS:

Environmental significance:

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

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

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

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

Impact

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

Consequence

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

Likelihood

A qualitative term covering both probability and frequency.

Frequency

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

Probability

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

Environment

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

Methodology that will be used

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

Environmental Significance = Overall Consequence X Overall Likelihood

Determination of Overall Consequence

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

Determination of Severity / Intensity

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

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

Table 1: Rating of Severity

Type of criteria	Rating				
	1	**2**	**3**	**4**	**5**
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignifiant / 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

Rating	Description
2	Very seldom / highly unlikely
3	Infrequent / unlikely / seldom
4	Often / regularly / likely / possible
5	Daily / highly likely / definitely

Overall Likelihood

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

Example of calculating Overall Likelihood

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

Determination of Overall Environmental Significance:

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

Determination of Overall Environmental Significance

Significance or Risk	Low	Low-Medium	Medium	Medium-High	High
Overall Consequence X Overall Likelihood	1 - 25.4	5 - 9.9	10 - 125.4	15 – 19.9	20 - 25

Qualitative description or magnitude of Environmental Significance

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

Description of Environmental Significance and related action required

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

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

High	Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.
Medium-High	Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.
Medium	Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, In case of positive impacts; other means of achieving these benefits would be about equal in time, cost and effort.
Low-Medium	Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved 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)

Site Alternative 1 (S1) (Preferred Alternative):

Positive Impacts:

- The mining site offers the mineral sought after;
- The proposed sites were previously used for mining activities, thus minimal environmental damage will occur;
- The mining area can be reached by an existing farm access road that connects to the R723. No new road infrastructure need to be constructed;
- Due to the small size of the activity and the remote location of the mining area the potential impacts on the surrounding environment, associated with mining is deemed to be of low significance; and
- No residual waste as a result of the mining activity will be produced that needs to be treated on site. Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site. As maintenance and servicing of the equipment will be done at an off-site workshop the amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental leakage. Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site.

Negative Impacts:

- Due to the remote location of the mining area very little negative impacts on the community could be identified that were deemed to be of significant importance. The dust and noise impacts that may emanate from the mining area during the operational phase could have a negative impact on the surrounding community if the mitigation measures proposed in this document is not implemented and managed on-site; and
- Negative impacts with regard to the environment include potential contamination of the area due to spillage of hydrocarbon products.

Site Alternative 2 (S2)

Positive Impacts:

- The site is near the mineral sought after;
- The alternative area will not have to compete with other land uses as all the activities can be contained within the boundaries of the site. Upon closure of the mining area, the land will revert back to agriculture; and
- The aggregate to be mined will be used for the upgrading of the roads in the vicinity of the activity. The alternative mining area will therefore contribute to the upgrading/maintenance of infrastructure in and around Koppies / Parys area and indirectly contribute to the economy of the area.

Negative Impacts:

- The site has not been previously disturbed before; thus the natural area needs to be cleared and is not preferred with regards to sustainable development;
- In the light of the above the impacts associated with establishing another quarry pit in a greenfield site on the property is believed to have a higher significance without the need or motivation to justify it;
- The dust and noise impacts that may emanate from the mining area during the operational phase could have a negative impact on the surrounding land users if the mitigation measures proposed in this document is not implemented and managed on-site; and
- Negative impacts with regard to the environment include potential contamination of the area due to spillage of hydrocarbon products.

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 mitigation or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered)

Visual Mitigation:

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

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

Dust Handling:

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

- The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents.
- The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust.
- 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 risk of noise, generated from the proposed mining activity, having a negative impact on the surrounding environment can be reduced to being low-medium through the implementation of the mitigation measures listed below:

- The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.
- No loud music may be permitted at the mining area.
- All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.

Management of weed or invader plants:

The risk of weeds or invader plants invading the disturbed area can be reduced to being low through the implementation of the mitigation measures listed below:

- 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 the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure.
- Management must take responsibility to control declared invader or exotic species on the rehabilitated 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 need to be kept free of weeds.

Storm water Handling:

The risk of contamination through dirty storm water escaping from work areas, or erosion or loss of stockpiled topsoil caused due to uncontrolled storm water flowing through the mining area can be reduced to being low through the implementation of the mitigation measures listed below:

- Storm water must be diverted around the topsoil heaps, 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:
  - Runoff water should be diverted around the site areas with trenches and contour structures to prevent erosion of the work areas.
  - 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 mining activity 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.

Handling of Hazardous Materials and Substances:

- All hazardous materials or substances should be stored in a closed storage facility with an impermeable floor.
- The storage area should meet the following conditions:
  - The storage area should be constructed on a level area to prevent offsite migration of any spilled product.
  - The floor of the storage area should be impermeable to prevent seepage of spilled products into the ground or ground water.
  - The storage area should be out of any 1:100-year flood line or further than 100m from an edge of a watercourse, whichever is greatest.

- The facility should be such that access to the materials/substances can only take place with the prior notification of an appropriate staff member.

- All fuel storage tanks should have secondary containment in the form of an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. This bund capacity should be sufficient to contain 110% of the tank's maximum capacity.
- The distance and height of the bund wall relative to that of the tank should also be taken into consideration to ensure that any spillage does not result in oil spouting beyond the confines of the bund.
- The site manager should establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. The bund area should be inspected at least weekly and any accumulated rainwater removed. All valves and outlets should be checked to ensure that they are intact and closed securely.
- The bund base must slope towards a rainwater sump of sufficient size.
- Contaminated water may not be allowed to mix with clean water, and contained until it can be collected by a registered hazardous waste handling contractor or be disposed of at a registered hazardous waste handling facility.
- Drip trays should be available to be place underneath all stationary equipment or vehicles.
- The layer of material at the vehicle service area should be removed and if contaminated with hazardous substances such as hydrocarbons should be disposed of as hazardous waste by an appropriately qualified waste handling contractor. The compacted areas should be ripped and the topsoil returned over the area.
- The site should be cleared of all hazardous substances once decommissioning has been completed and should be disposed of by an appropriately qualified waste handling contractor.

Waste Management:

The risk of waste generation having a negative impact on the surrounding environment can be reduced to being low through the implementation of the mitigation measures listed below:

- No waste stockpile area may be established outside the boundaries of the mining area.
- Vehicle maintenance may only take place within the service bay area.
- The diesel bowser needs to be equipped with a drip tray at all times. Drip trays have to be used during each and every refuelling event.
- The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site.

- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility.
- Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing it at a recognised facility. Proof should be filed.
- Suitable covered receptacles should be available at all times and conveniently placed for the disposal of waste.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc, should be stored in a container with a closable lid at a collecting point and collected on a regular basis and disposed of at a recognised landfill site. Specific precautions should be taken to prevent refuse from being dumped on or in the vicinity of the mine area.
- Biodegradable refuse generated should be handled as indicated above.
- Water from the wash bay should drain into the oil sump from where it should be removed by an approved contractor.
- Drip trays should be available to be place underneath all stationary equipment or vehicles.
- Waste material of any description, including receptacles, scrap, rubble and tyres, should be removed entirely from the mining area and disposed of at a recognized landfill facility once decommissioning has been completed. It will not be permitted to be buried or burned on the site.

Management of Health and Safety Risks:

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

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

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 activity, 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.
- Clearing of vegetation has to be restricted to the smallest possible area.

Management of Access Roads:

The risk on the condition of the roads, as a result of the proposed mining activities, can be reduced to being low-medium through the implementation of the mitigation measures listed below:

- Storm water should be diverted around the access roads to prevent erosion.
- Erosion of access road: 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 activity should be repaired by the applicant.
- On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, should be scarified to a depth of at least 300mm and graded to an even surface condition and the previously stored topsoil should be returned to its original depth over the area.

Topsoil Handling:

The risk of loss of topsoil can be reduced to being low through the implementation of the mitigation measures listed below:

- Where applicable 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 overburden or other material. The topsoil must be used to cover the rehabilitated area and improve the establishment of natural vegetation.
- The temporary topsoil stockpiles 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 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- Should natural vegetation not establish on the heaps within 6 months of stockpiling it should be planted with an indigenous grass species.
- Storm- and runoff water should be diverted around the topsoil stockpiles and access roads to prevent erosion.

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

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

See the map indicating site activities attached as Appendix B.

ix. Motivation where no alternative sites were considered.

Not applicable.

x. Statement motivating the preferred site.

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

Inzalo Crushing and Aggregates, identified the need for gravel/aggregate in the area due to an increase in building, construction and road maintenance projects. As mentioned earlier the quarry pit on the property of the applicant has previously been used for mining purposes. In this light the applicant identified the proposed (site alternative 1) area as preferred and only viable site alternative. The facts that the existing quarry have not yet been mined out and will be extended were found to be the best option contrary to sustainable development in terms of site alternative 2.

i) Plan of study for the Environmental Impact Assessment process

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

The applicant identified two alternative sites for the proposed mining activity namely:

1. **Site Alternative 1 (S1) (Preferred Alternative):** The Applicant, B&E International intends to apply for a mining permit, 4.9ha, on the remaining extent of farm Bloemhof 14, within the boundaries of the following GPS Coordinates:

Preferred Alternative	
Decimal Degrees	**Degrees; Minutes: Seconds**
A 27.0504564°S; 27.5599245°E	A 27°3'1.643"S; 27°33'35.7282"E
B 27.0521372°S; 27.5623625°E	B 27°3'7.6939"S; 27°33'44.505"E
C 27.0535463°S; 27.5612004°E	C 27°3'12.7667"S; 27°33'40.3214"E
D 27.0519081°S; 27.5593397°E	D 27°3'6.8692"S; 27°33'33.6229"E
A 27.0504564°S; 27.5599245°E	A 27°3'1.643"S; 27°33'35.7282"E

Figure 7*: *Satellite view showing the position of Site Alternative 1 indicated in red.

Site Alternative 1 was identified during the assessment phase of the environmental impact assessment, by the applicant and project team, and was therefore selected as the **preferred alternative** due to the following:

- The mining site offers the mineral sought after;
- The proposed footprint area was previously used for mining therefore very little indigenous vegetation needs to be disturbed in order to establish the mining area;
- The site is located approximately 500m from the closest farm house with mitigation measures in place impacts such as dust and noise will be minimal.
- The mining site is more than 25 km away for the town of closest town Koppies, and will not affect the community with regards to dust and noise;
- The mineral to be mined is already in aggregate form and will not need to be blasted in order to loosen the material;
- The mining area can be reached by an existing farm access road that connects to R723. No new road infrastructure need to be constructed;

- Due to the small size of the activity and the remote location of the mining area the potential impacts on the surrounding environment, associated with mining is deemed to be of low significance; and
- No residual waste as a result of the mining activity will be produced that needs to be treated on site. Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site. The amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental leakage. Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site.

2. **Site Alternative 2 (S2):** Site Alternative 2 entails the mining of a 4.9 ha area within the boundaries of the following GPS Coordinates:

Site Alternative	
Decimal Degrees	**Degrees; Minutes; Seconds**
A 27.0521733°S; 27.5623584°E	A 27°3'7.8239"S; 27°33'44.4902"E
B 27.0534908°S; 27.5642482°E	B 27°3'12.5669"S; 27°33'51.2935"E
C 27.0550596°S; 27.5629492°E	C 27°3'18.2146"S; 27°33'46.6171"E
D 27.0535463°S; 27.5612004°E	D 27°3'12.7667"S; 27°33'40.3214"E
A 27.0521733°S; 27.5623584°E	A 27°3'7.8239"S; 27°33'44.4902"E

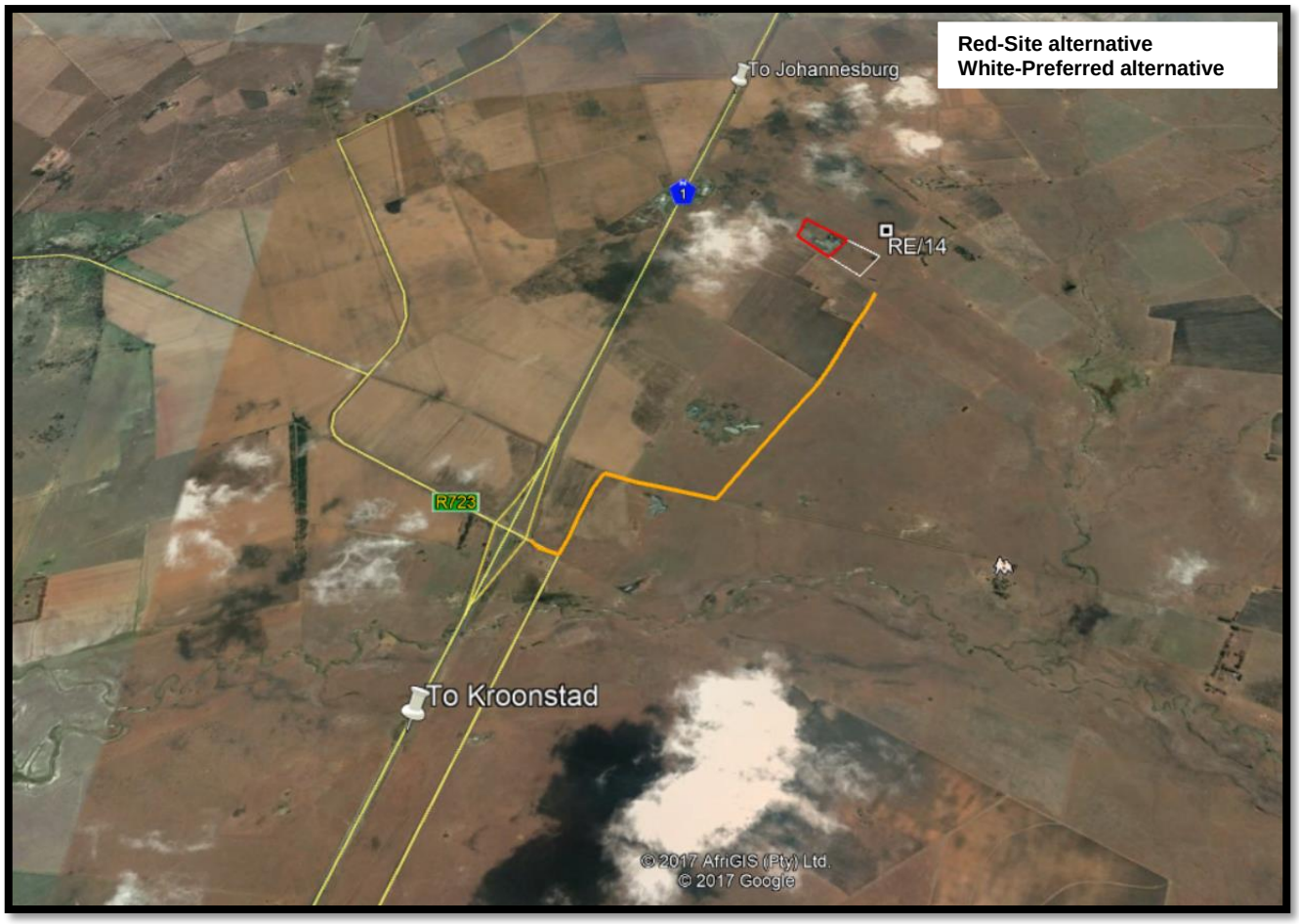

Figure 8: Satellite view showing the position of Site Alternative 2 in white

The applicant investigates the possibility of establishing the proposed mining area next to the old mining area, to be located closer to the haul road to cut down on transport cost. This alternative was however found **not** to be the **preferred** alternative due to the following reasons:

- The site alternative will counteract the visual aesthetic value of the area by being closer to the road;
- The site has not been previously disturbed before; thus the natural area needs to be cleared and is not preferred with regards to sustainable development; and
- In the light of the above the impacts associated with establishing another quarry pit in a greenfield site on the property is believed to have a higher significance without the need or motivation to justify it.

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 aggregate to be stockpiled at the site will be used for road and

construction industries, if however, the no-go alternative is implemented the applicant will not be able to utilize the mineral present in the area.

This could have major impacts on aspects such as transporting of material to construction sites from far off mining areas, cost effectiveness of material, impact on roads and road users due to long distance hauling of gravel and loss of income to the Koppies / Parys business area due to the multiplier effect.

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

- The applicant will not be able to supply in the demand of road or construction contractors,
- The application, if approved, would allow the applicant to utilize the available aggregates as well as provide employment opportunities to local employees. Should the no-go alternative be followed these opportunities will be lost to the applicant, potential employees and clients,
- The applicant will not be able to diversify the income of the property.

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

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

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

1. Visual exposure:
   - The mining area was identified to constitute the lowest possible visual impact on the surrounding environment. The surrounding area has previously been disturbed by mining activities, and this application entails the extension of the existing mining area.
   - The applicant should however ensure that housekeeping is managed to standard, as this will mitigate the visual impacts during the operational phase of the mine.
   - Upon closure the site will be rehabilitated and sloped to insure that the visual impact on the aesthetic value of the area is kept to a minimum.
   - The site will have a neat appearance and be kept in good condition at all times.

2. 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.
   - The alternative site (site alternative 2) is in a new area, vegetation clearance and topsoil removal need to be done in the riparian zone of an artificial wetland if pursued.
   - Although the site alternative (Site alternative 2) offers, the mineral sought after the mining area will be within 100 m from an artificial wetland. This will necessitate a water use license application to be approved by DWS prior to commencement of the mining activities.

3. Land Use:
   - The proposed quarry will be established in an area that was previously used for mining purposes as well as agriculture. The quarry 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 quarry very little to no negative impacts on the community could be identified that were deemed to be of significant importance. The dust and noise impacts that may emanate from the mining area during the operational phase could have a negative impact on the surrounding community if the mitigation measures proposed in this document is not implemented and managed on-site.

4. Surface and Groundwater
   - The proposed (Site alternative 1) processing area will be more than 100m from any natural water source.
   - The alternative site (Site Alternative 2) will be within an artificial wetland Riparian and channel.
   - Storm water management and erosion prevention measures must be implemented on-site.

5. 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. Inzalo Crushing and Aggregates (Pty) Ltd will make use of temporary infrastructure during the mining operations. Workers will be transported to and from the site daily.

6. Air Quality and Dust:
   - 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 blasting and 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.
- Speed on the access road will be limited to 40km/h to prevent the generation of excess dust.
- Roads will be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.

7. Noise:

- The surrounding areas are characterised by an agricultural setting in which vehicles and farm equipment operate.
- The traffic on the N1 and other public roads surrounding the property contributes to the ambient noise of the area.
- The noise to be generated at the proposed quarry operation is expected to temporarily increase the noise levels of the area.
- It will be ensured that employees and staff conduct themselves in an acceptable manner while on site.
- All mining vehicles will be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.
- Surrounding land owners will be notified in writing prior to blasting occasions.
- Blasting noise will be instantaneous and of short duration occurring only twice a month. The type, duration and timing of the blasting procedures will be planned with due cognisance of other land users and structures in the vicinity.
- 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.

8. Ablution, Waste Water & Waste Disposal:

- Ablution facilities will consist of chemical toilets or temporary ablution facilities with septic tank hired from a contractor and serviced regularly.

- Any effluents containing oil, grease or other industrial substances will be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility.
- Spills would be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., will be stored in a container at a collecting point and collected on a regular basis and disposed of at a recognised landfill site.
- Biodegradable refuse generated will be handled as indicated above.
- No waste will be burned or buried on site.

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

iii. Description of aspects to be assessed by specialists

No specialist studies were deemed necessary for this project as the project entails the establishment of the mining area over an area previously used for agriculture and mining.

iv. Proposed method of assessing the environmental aspect including the proposed method of assessing alternative

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

DEFINITIONS AND CONCEPTS:

Environmental significance:

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

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

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

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

Impact

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

Consequence

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

Likelihood

A qualitative term covering both probability and frequency.

Frequency

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

Probability

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

Environment

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

Methodology that will be used

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

Environmental Significance = Overall Consequence X Overall Likelihood

Determination of Overall Consequence

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

Determination of Severity / Intensity

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

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

Table 2: Rating of Severity

Type of criteria	Rating				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignifiant / 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	Low cost to mitigate	Substantial cost to mitigate/	High cost to mitigate	Prohibitive cost to mitigate/ Little or no mechanism to

	of insignificance/ Easily reversible		Potential to mitigate impacts/ Potential to reverse impact		mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration

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

Rating of Duration:

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

Determination of Extent/Spatial Scale

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

Rating of Extent / Spatial Scale:

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

Determination of Overall Consequence

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

Example of calculating Overall Consequence

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

Determination of Likelihood:

The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5, as described below and in tables 6 and 7.

Determination of Frequency

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

Rating of Frequency:

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

Determination of Probability

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

Rating of Probability:

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

Overall Likelihood

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

Example of calculating Overall Likelihood

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

Determination of Overall Environmental Significance:

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

Determination of Overall Environmental Significance

Significance or Risk	Low	Low-Medium	Medium	Medium-High	High
Overall Consequence X Overall Likelihood	1 - 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 prioritisations and decision making process associated with this event, aspect or impact.

Description of Environmental Significance and related action required

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

Significance	Low	Low-Medium	Medium	Medium-High	High
		Where possible improve			

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

High	Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.
Medium-High	Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.
Medium	Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, In case of positive impacts; other means of achieving these benefits would be about equal in time, cost and effort.
Low-Medium	Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved 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.

v. The proposed method of assessing duration significance

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

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

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

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

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

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

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

The EAP has been in continuous consultation with the competent authority (DMR) throughout the application process. DMR was contacted during the application phase, requested to comment on the Draft Scoping Report during the Scoping Phase and no response has been received.

Should DMR accept the Final Scoping Report the draft EIA report, including all investigations, assessments and specialist studies, will be submitted to DMR for comments.
Any additional requirements will be added to the Final EIA report to be submitted to DMR for approval. Upon receipt of the Environmental Authorisation the EAP will be in consultation with DMR until granting of Mining Right.

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

1. Application for Mining Right and Environmental Authorisation to DMR
2. DMR responds with reference number
3. Draft Scoping Report for perusal by I&AP's and stakeholders (including DMR)
4. Final Scoping Report (FSR) submitted to DMR
5. DMR decision on FSR

6. Draft EIA report for perusal by I&AP's and stakeholders (including DMR)
7. Final EIA report submitted to DMR
8. DMR decision on Final EIA report
9. Issuing of Mining Right

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

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

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

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

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

The Land owner:

- Mnr. JP Coetzee

The following adjacent neighbours:

- Boden Family Trust

The following Municipal stakeholders:

- Ngwathe Local Municipality- Mr Pule Tshekedi (Acting)
- Ngwathe Local Municipality Ward 8-Cllr Rosie Kgantsie.
- Fezile Dabi District Municipality- MS LM Molibeli

The following Government Departments and organs of state:

- Department of Economic Small Business
- Development of Tourism and Environmental Affairs (DETEA)
- Department of Public Works and Infrastructure
- Department of Agriculture and Rural Development
- Department of Labour

- Department of Police, Roads and Transport
- Department of Water Affairs & Sanitation
- Eskom
- SANRAL Regional Offices

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

2. Details of the engagement process to be followed

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

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

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

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

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

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

The Draft EIA report will be the subsequent document circulated to the registered I&AP's and stakeholders for their perusal. The Environmental Impact Assessment Report and Environmental Managment Programme Report template prescribed by DMR in terms of the National Environmental Management Act, 1998 in respect of listed actvities that have been trigger by applications in terms of the MPRDA, 2002 will be used to describe information with regard to the proposed Felsic rock /aggregate mining project.

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

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

The EIA process for the proposed aggregate mining project on the remaining extent of the farm Bloemhof 14, magisterial district Parys, Free State province. Is depicted below:

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

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

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	POTENTIAL FOR RESIDUAL RISK
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.)	(E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc...etc...etc.)	(modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc) E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	
Demarcation of site with visible beacons.	No impact could be identified other than the beacons being outside the boundaries of the approved processing area.	N/A	N/A
STRIPPING AND STOCKPILING OF TOPSOIL	Visual impact due to removal of topsoil.	<u>Control:</u> Implementation of proper housekeeping	Low – Medium

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	POTENTIAL FOR RESIDUAL RISK
	Dust nuisance caused by the disturbance of soil.	Control: Dust suppression	Medium
	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Control: Noise control measures	Medium
	Infestation of the topsoil heaps by weeds and invader plants.	Control & Remedy: Implementation of weed control	Low – Medium
	Loss of topsoil due to incorrect storm water management	Control: Storm water management	Medium
	Contamination of area with hazardous waste materials	Control: Waste management	Medium
BLASTING	Health and safety risk posed by blasting activities	Control: Implementation of safety control measures	Low - Medium
	Dust nuisance caused by blasting activities	Control: Dust suppression	Low - Medium
	Noise nuisance caused by blasting activities	Control: Noise control measures	Low - Medium

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	POTENTIAL FOR RESIDUAL RISK
EXCAVATION	Visual intrusion associated with the excavation activities	Control: Implementation of proper housekeeping	Low – Medium
	Dust nuisance due to excavation activities	Control: Dust suppression	Medium
	Noise nuisance generated by excavation equipment	Control: Noise control measures	Medium
	Contamination of surface or groundwater due to effluent runoff from excavation area	Control: Measures will be implemented as subscribed by DWS	Low - Medium
	Unsafe working conditions for employees	Control: Implementation of safety control measures	Low – Medium
	Negative impact on the fauna and flora of the area	Control: Implementation of fauna protection measures	Low - Medium
	Contamination of area with hydrocarbons or hazardous waste materials	Control: Waste management	Low - medium

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	POTENTIAL FOR RESIDUAL RISK
	Weed and invader plant infestation of the area	Control & Remedy: Implementation of weed control	Low - medium
CRUSHING AND SCREENING	Visual intrusion associated with the crushing and screening activities	Control: Implementation of proper housekeeping	Medium
	Dust nuisance due to excavation activities	Control: Dust suppression	Medium
	Noise nuisance generated by crushing and screening equipment	Control: Noise control measures	Medium
	Contamination of surface or groundwater due to effluent runoff from crushing and screening area	Control: Measures will be implemented as subscribed by DWS	Medium
	Unsafe working conditions for employees	Control: Implementation of safety control measures	Low – Medium
	Negative impact on the fauna and flora of the area	Control: Implementation of fauna protection measures	Low

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	POTENTIAL FOR RESIDUAL RISK
LOADING AND TRANSPORTING	Visual intrusion associated with the loading and transporting activities	Control: Implementation of proper housekeeping	Medium
	Loss of reinstated topsoil due to the absence of vegetation	Control: Storm water management	Low – Medium
	Weed and invader plant infestation of the area	Control & Remedy: Implementation of weed control	Low - medium
	Dust nuisance due to loading and transporting activities	Control: Dust suppression	Medium
	Degradation of access roads due to loading and transporting activities	Control: Implementation of measures to work in designated areas and road maintenance	Low – Medium
	Noise nuisance generated by loading and transporting vehicles	Control: Noise control measures	Low – Medium

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	POTENTIAL FOR RESIDUAL RISK
	Contamination of surface or groundwater due to effluent runoff from excavation area	Control: Measures will be implemented as subscribed by DWS	Medium
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Soil erosion due to the absence of vegetation	Control: Storm water management	Low – Medium
	Health and safety risk posed by un-sloped areas	Control: Implementation of safety control measures	Low – Medium
	Dust nuisance due final rehabilitation activities	Control: Dust suppression	Low – Medium
	Noise nuisance generated by final rehabilitation	Control: Noise control measures	Low – Medium
	Contamination of area with hydrocarbons or hazardous waste materials	Control: Waste management	Low - medium
	Weed and invader plant infestation of the area	Control & Remedy: Implementation of weed control	Low - medium

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	POTENTIAL FOR RESIDUAL RISK
	Noise nuisance caused by machinery	Control: Noise management	Low
	Loss of reinstated topsoil due to the absence of vegetation	Control: Storm water management	Low

The supporting impact assessment conducted by the EAP will be attached as part of the EIA/EMP phase.

i) Other Information required by the competent Authority

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

(1) Impact on the socio-economic conditions of any directly affected person.

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as **Appendix 2.19.1** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12. herein).

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

Visual exposure:

The mining area was identified to constitute the lowest possible visual impact on the surrounding environment. The surrounding areas have previously been disturbed by mining activities, and this application entails the extension of the existing mining areas. 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.

This impact could be managed through the implementation of mitigation measures and needs to be fully investigated during the environmental impact assessment process. The findings of the investigation will be included in the Draft EIA report.

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 blasting (limited to one blast) and 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 N1 and other public roads surrounding the property contributes to the ambient noise of the area. The noise to be generated at the proposed site (site alternative 1) operation is expected to temporarily increase the noise levels of the area. Blasting noise will be instantaneous and of short duration. 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.

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

No sites of archaeological or cultural importance were identified at the proposed mining area during the site inspection. The area was previously used for grazing agriculture and mining and no areas of cultural importance could be identified within the footprint area of the site.

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

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

The site and project 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 – The proposed mining area over a 25.4 ha footprint area (Preferred Alternative).
2. Site Alternative 2 – The proposed mining area over a 25.4 ha footprint area.
3. No-go Alternative

j) Undertaking Regarding Correctness of Information

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

Signature of the EAP
DATE: 09/04/2018

k) Undertaking Regarding Level of Agreement

I, Yolandie Coetzee, herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with interested and Affected Parties and stakeholders has been correctly recorded and reported herein.

Signature of the EAP
DATE: 09/04/2018

-END-