

**PROPOSED AGGREGATE / GRAVEL MINE ON A  
PORTION OF PORTION 15 ON THE FARM RIETSPRUIT  
NR 437, IS MSUKALIGWA LOCAL MUNICIPALITY,  
MPUMALANGA PROVINCE**

**FINAL BASIC ASSESSMENT REPORT**



**MAY 2022**

***REFERENCE NUMBER: MP 30/5/1/3/2/13080 MP***

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## EXECUTIVE SUMMARY

Inzalo Crushing and Aggregates (Pty) Ltd (hereinafter referred to as “the Applicant”) intends applying for a mining permit to mine stone aggregate/ gravel on a portion of Portion 15 on Farm Rietspruit nr 437, IS, Msukaligwa Local Municipality, Mpumalanga Province.

The proposed mining footprint will be 4.9 ha and will be developed over an undisturbed area of the farm. The mining method will make use of blasting in order to loosen the hard rock; the material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. The aggregate will be stockpiled until it is transported from site using tipper trucks. All mining related activities will be contained within the approved mining permit boundaries.

The proposed project triggers listed activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations 2014 (as amended) and therefore requires a Basic assessment process that assess project specific environmental impacts and alternatives, consider public input, and propose mitigation measures, to ultimately culminate in an environmental management programme that informs the competent authority (Department of Mineral Resources and Energy) when considering the environmental authorisation. This report, the Final Basic Assessment Report, forms part of the departmental requirements, and presents the first report of the EIA process.

Should the MP be issued and the mining of stone aggregate/ gravel be allowed, the proposed project will comprise of activities that can be divided into three key phases namely the:

- (1) *Site establishment/construction phase* which will involve the demarcation of the permitted mining area. Site establishment will also necessitate the clearing of vegetation, the stripping and stockpiling of topsoil, and the introduction of mining machinery and equipment
- (2) *Operational phase* that will entail the mining of dolerite from the approved footprint area via conventional open cast mining methods. The mining method will make use of blasting in order to loosen the hard rock; upon which the loosened material will be transported to the crushing and screening processing plant where it will be screened to various sized stockpiles, before it is sold and transported from site to clients
- (3) *Decommissioning phase* which entails the rehabilitation of the affected environment prior to the submission of a closure application to the Department of Mineral Resources and Energy (DMRE). The permit holder will further be responsible for the seeding of all rehabilitated areas. Once the full mining area is rehabilitated, the mining permit holder will be required to submit a closure application to the DMRE in accordance with section 43(4) of the MPRDA, 2002. The Closure

Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

**Site Alternative 1 (Preferred and Only Viable Site Alternative):**

Site Alternative 1 (S1) (Preferred Alternative and only site viable alternative): The Applicant, applied for a mining permit for the mining of aggregate / gravel, 4.9 ha on a portion of Portion 15 on the Farm Rietspruit nr 437, IS Msukaligwa Local Municipality, Mpumalanga Province. The proposed mining footprint will be 4.9 ha and will be developed over an undisturbed area of the farm.

The proposed area is over an undisturbed area of the farm occasionally used for grazing positioned next to an existing mining area. The position of the proposed site is ideal due to it being superimposed over the dolerite ridge present on the face of the hill. This was deemed the only viable site alternative as this is the only area that will be viable for the applicant due to the presence of the dolerite ridge.

An alternative layout for the quarry, located between the existing quarries, has been proposed in the Final BAR – Site Alternative 2 but not found viable as explained below.

**Site Alternative 2:**

Site Alternative 2 (S2) was assessed for the proposed mining but found not environmentally and practically suitable. The earmarked area is situated between the two existing quarries however this will result in the complete destruction of the unchanneled valley-bottom wetland that is within the earmarked area. Site alternative 1, was deemed the only viable site alternative as this is the only area that will be viable for the applicant due to the presence of the dolerite ridge. Although the position of Site Alternative 2 will still allow the development of the quarry on the property, it is believed that the impact associated with this site alternative is of higher significance without the need or motivation justifying it.

**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 / gravel to be mined will be sold to the building, road rehabilitation/maintenance and associated construction industry, if however, the no-go alternative is implemented the Applicant could not fully utilise the mineral resource on this property and the construction industry of Ermelo will not benefit from diversification of gravel sources which will escalating product costs. Although, the presence of the other mineral resources in the area, this will contribute to healthy competition as well as benefitting the community with regards to better production costs.

### **Public Participation Process:**

During the initial public participation process the stakeholders and I&AP's were informed of the project by means of background information documents that were sent directly to the contact persons. An advertisement that was placed in the Highveld Tribune on 14 December 2021, and two on-site notices were placed, one at the entrance of the site and the other at Ermelo's public library. Interested and Affected Parties (I&AP's). A 30-days commenting period was allowed which expired on 31<sup>th</sup> of January 2022. In accordance with the timeframes stipulated in the EIA Regulations, 2014 (as amended by GNR 326 effective 7 April 2017) the Draft Basic Assessment Report was distributed for comment and perusal to the I&AP's and stakeholders. A 30-day commenting period, ended 9th May 2022, was allowed for perusal of the documentation and submission of comments. The comments received on the DBAR was incorporated into the Final Basic Assessment Report (FBAR) that will be submitted for decision making to DMRE, which will be allowed for perusal of the documentation and submission of comments.

### **Basic Assessment Report:**

The basic assessment report identifies the potential positive and negative impacts that the proposed activity will have on the environment and the community as well as the aspects that may impact on the socio-economic conditions of directly affected persons, and proposes possible mitigation measure that could be applied to modify / remedy / control / stop the identified impacts.

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

#### **Topography:**

- The natural topography of the proposed excavated comprised of undulating grassland plains, with small scattered patches of dolerite outcrops in areas. The vegetation is comprised of a short closed grassland cover, largely dominated by a dense *Themeda triandra* sward, often severely grazed to form a short lawn. The elevation loss from the proposed mining footprint to the town of Ermelo to be 1759m over 6.59km.

#### **Visual Characteristics:**

- The viewshed analysis showed that the visual impact of the proposed gravel mining operation will be of medium significance. The small scale of the proposed operation, and the mining area will be located on the face of the hill in order to minimize the visual impact. Should the Applicant successfully

rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mine

### **Air and Noise Quality:**

- The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. The Air Quality Impact Statement (Appendix M1) conducted by Airshed Planning Professionals (Pty) Ltd states it is unlikely that the proposed operations will result in significant detrimental impact on air quality in the area, with very low impacts expected at nearby sensitive receptor locations. Should the permit holder implement the mitigation measures proposed in this document, EMPR and the Air Quality Impact Statement (Appendix M1) the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.
- As per Noise Impact Statement (Appendix M2) conducted by Airshed Planning Professionals (Pty) Ltd - it is unlikely that the proposed operations will result in significant detrimental impact on environmental noise for most of the study area. However, mining and processing activities are currently planned to be 24 hours per day, and noise generated by night-time operations are likely to be much more noticeable, given the typical low baseline noise levels in rural areas. Should the permit holder implement the mitigation measures proposed in this document, EMPR and the Noise Impact Statement (Appendix M2) the impact on the noise of the surrounding environment is deemed to be of low significance.

### **Geology and Soil:**

- The geology of the study area is restricted to vertic clay soils derived from dolerite that is intrusive in the Karoo sediments of the Madzaringwe Formation in the north and the Volksrust Formation and the Adelaide Subgroup in the south. Dominant land type Ca, while Ea land type is of subordinate importance.

### **Hydrology:**

- The proposed mining area falls within the C11F quaternary catchment which falls within the upper reaches of the Vaal River primary catchment that is situated in the Upper Vaal Water Management Area which is managed by the Department of Water and Sanitation (DWS). A small wetland system is located 130m from the southern border of the site. According to the Risk Assessment conducted by DPR Ecologist, - mining within close proximity of the valley-bottom wetland is anticipated to have a low risk as long as a 100-meter buffer between the edge of the wetland as delineated and the quarry excavations, stockpile areas, chemical toilets, wastes and any hazardous materials (diesel, etc.) are

maintained. A small artificial dam and wetland area forming in previous excavations occur approximately 450 meters to the west of the site. These artificial wetland areas also fall within a separate catchment, upstream of the site and therefore the proposed mining area will not be able to have any affect on these artificial wetland areas. Therefore, proposed project does require a General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998) which will be submitted to DWS by the applicant prior to commencement of mining activities on this application.

### **Mining, Biodiversity and Groundcover:**

The Mpumalanga Biodiversity Sector Plan (2014) has been published and has identified areas which are essential to meeting conservation targets for specific vegetation types, i.e. Critical Biodiversity Areas. The terrestrial component of the site has been listed as a Critical Biodiversity Area (CBA), mostly as it contains portions of a threatened ecosystem, intact grassland containing a significant species diversity and is an optimal area for meeting the required conservation targets. A portion of the site is also listed as an Ecological Support Area (ESA) as it forms part of an ecological corridor for maintaining ecosystem function. The freshwater component of the site is regarded as an Other Natural Area (ONA) which indicates that it does not form part of a Strategic Water Source Area (SWSA).

The site itself still consists of natural vegetation which is dominated by scattered trees and a well-developed grass layer. Disturbances are present and include overgrazing by domestic livestock and low-level infestation by exotic weeds and shrubs, though overall the site is still largely natural. However, the surrounding areas, especially toward the south and west of the site, has been heavily modified by previous mining activities. The site contains several plants listed as protected in Mpumalanga such as *Eucomis montana*, *Haemanthus humilis* subsp. *Hirsutus*, *Gladiolus dalenii* subsp. *dalenii*, *Gladiolus ecklonii*, *Gladiolus crassidolius*, *Boophone distichia* and *Zantedeschia rehmannii*.

Presently it is proposed that the applicant will construct a road from the existing access point to the mining area. It is proposed that should the Applicant implement the mitigation measures proposed in the EMP the impact of the proposed activity on the vegetation and groundcover in general is deemed to be of low significance.

### **Fauna:**

- Various small mammals and reptiles occur are likely to on the property. Since there is an existing quarry nearby, the fauna at the site are familiar with mining activities and will not be impacted by the proposed mining activities as they will be able to move away or through the site, without being harmed. This was also confirmed by the land owner during the site visit. Workers should be educated and

managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data faunal species could be identified within the earmarked footprint. The study area falls over undisturbed area of the farm, should this mining permit be granted farm owner will be consulted prior to commencement of any activities to ensure that safety of animals and workers. Workers will be informed and managed to ensure that no fauna at the site is harmed. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.

### **Cultural and Heritage Environment:**

- The proposed mining footprint extends into an undisturbed area. As per the Heritage Impact Assessment (Appendix N), the study area is fallow and has not been developed or impacted on by adjacent mining activities. Examination of historical topographic maps and aerial images showed no structures or stone walled settlements in the study area and the impact footprint is considered to be of low heritage potential. This was confirmed during the site visit and no heritage finds of significance was recorded during the survey.

According to the SAHRA Paleontological sensitivity map the study area is of insignificant paleontological significance, but very close to an area of very high sensitivity and an independent study (Appendix N1) was conducted for this aspect. Bamford (2022) concluded that the proposed site lies on the non-fossiliferous Jurassic dolerite but is very close to the very highly sensitive Vryheid Formation that could preserve fossil plants of the Glossopteris flora. No fossils were found during the site visit. Nonetheless a Fossil Chance Find Protocol should be added to the EMPr.

No adverse impact on heritage resources is expected by the project and it is recommended that the project can commence on the condition that the following recommendations (Section 10) are implemented as part of the EMPr and based on approval from SAHRA

### **Site Specific Infrastructure:**

- The following is located within close proximity:
  - An existing quarry is located 150m south west of the site with unpreferred mineral resources.
  - Farm house 1.10km east of the site and another farm house north-west of the site
  - The R39 - 600m towards the western part of the site.

During the environmental impact assessment process the feasibility of the proposed site was assessed to identify fatal flaws that are deemed as severe as to prevent the activity continuing, or warrant a site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing.

### **Environmental Management Programme (EMPR)**

The EMPR provides a description of the impact management outcomes and closure objectives. It presents the impacts to be mitigated in their respective phases as well as stipulates the mitigation measures to be applied on site.

The financial provision amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total of R 429 124.35.



## LIST OF ABBREVIATIONS

BID	Background Information Document
BGIS	Biodiversity GIS
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
DBAR	Draft Basic Assessment Report
FBAR	Final Basic Assessment Report
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DMRE	Department of Mineral and Resources and Energy
DoT	Department of Transport
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIA Regulations	Environmental Impact Assessment Regulations, 2014 (as amended 2017)
EISC	Ecological Importance and Sensitivity Category
EMPR	Environmental Management Programme
FBAR	Final Basic Assessment Report
FEL	Front-end-loader
MBSP	Mpumalanga Biodiversity Sector Plan
GDP	Gross Domestic Product
GNR	Government Notice
I&AP's	Interested and Affected Parties
MHSA	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
MP	Mining Permit
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Control Act, 2004 (Act No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act, 1999 (Act No 25 of 1999)

NRTA	National Road Traffic Act, 1996 (Act No. 93 of 1996)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PCB's	Polychlorinated Biphenyl
PCO	Pest Control Officer
PPE	Personal Protective Equipment
PSM	Palaeontological Sensitivity Map
OHSA	Occupational Health and Safety Act (Act 85 of 1993)
OHSAS	Occupational Health and Safety Assessment Series
RA	Risk Assessment
REC	Recommended Ecological Category
S1	Site Alternative 1
S2	Site Alternative 2
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAMBF	South African Mining and Biodiversity Forum
USBM	US Bureau of Mines
WMA	Water Management Area
WULA	Water Use Licence Application
USBM	United States Bureau of Mines

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**mineral resources**

Department:  
Mineral Resources  
REPUBLIC OF SOUTH AFRICA

**BASIC ASSESSMENT REPORT**  
**And**  
**ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

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

<b>NAME OF APPLICANT:</b>	Inzalo Crushing and Aggregates (Pty) Ltd
<b>TEL NO:</b>	Tel: 011 966 4300
<b>FAX NO:</b>	N/A
<b>POSTAL ADDRESS:</b>	P.O. Box 26730, East Rand, Kempton Park, 1462
<b>PHYSICAL ADDRESS:</b>	N/A
<b>FILE REFERENCE NUMBER SAMRAD:</b>	MP 30/5/1/3/2/13080 MP

## 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.

## OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

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

## PART A

### SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

#### 1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

##### a) Details of: Greenmined Environmental

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) the proponent must appoint an independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) of any activities regulated in terms of the aforementioned Act. Inzalo Crushing and Aggregates (Pty) Ltd appointed Greenmined Environmental to undertake the study needed. Greenmined Environmental has no vested interest in Inzalo Crushing and Aggregates (Pty) Ltd or the proposed project and declares its independence as required by the Environmental Impact Assessment Regulations, 2014 (as amended April 2017) (EIA Regulations).

##### i) Details of the EAP

Name of the Practitioner:	Mrs Sonette Smit (Senior Environmental Specialist)
Tel No.:	021 851 2673
Fax No.:	086 546 0579
E-mail address:	<a href="mailto:sonette.s@greenmined.co.za">sonette.s@greenmined.co.za</a>

##### ii) Expertise of the EAP.

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

(with evidence).

Mrs. S Smit has sixteen years of experience in environmental legal compliance audits, (GIS) geographic information system, mining right and permit applications and applications for environmental authorisations & Water use applications. Please find full CV attached in Appendix K.

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

(In carrying out the Environmental Impact Assessment Procedure)

Sonette Smit is an Environmental Consultant with 16 years' experience in the environmental sector. She specialized the last 11 years in the mining sector where she conducted the mining related report and programs. She has also been involved in a number of other environmental and water use application projects

where she compiled environmental management plans, environmental impact assessments, environmental audits, IWULA's/IWWMP's.

**b) Location of the overall Activity.**

*Table 1: Location of the proposed project.*

<b>Farm Name:</b>	A portion of Portion 15 on the Farm Rietspruit nr 437, IS Msukaligwa Local Municipality, Mpumalanga Province
<b>Application area (Ha)</b>	4.9 ha
<b>Magisterial district:</b>	Ermelo
<b>Distance and direction from the nearest town</b>	±7.6 km south-west of Ermelo of the R39  Travelling south-west from Ermelo along the R39, the site is located on the left off the R39.
<b>21 digit Surveyor General Code for each farm portion</b>	T0IS00000000043700015

**c) Locality map**

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

The requested map is attached as Appendix B.



Figure 1: Satellite view of the proposed mining permit area site alternative 1 (blue polygon) and site alternative 2 (pink polygon) of Inzalo Crushing and Aggregates (Pty) Ltd (image obtained from Google Earth).

**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

Inzalo Crushing and Aggregates (Pty) Ltd (hereinafter referred to as “the Applicant”), applied for environmental authorisation (EA) and a mining permit to mine aggregate/gravel on a portion of Portion 15 on the Farm Rietspruit nr 437, IS Msukaligwa Local Municipality, Mpumalanga Province.

The proposed mining footprint will be 4.9 ha and will be developed over an undisturbed area of the farm. The mining method will make use of blasting in order to loosen the hard rock; the material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. The aggregate will be stockpiled until it is transported from site using tipper trucks. All mining related activities will be contained within the approved mining permit boundaries.

The proposed mining area is approximately 4.9 ha in extent and the applicant, intends to win material from the area for at least 2 years with a possible extension of another 3 years. The gravel to be removed from the quarry will be used for construction industry in the

vicinity. The depth of the quarry will be approximately 35m with a possibility of going deeper. The proposed quarry will therefore contribute to the upgrading / maintenance of road infrastructure and building contracts in and around the Ermelo area

The mining activities will consist out of the following:

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

The mining site will contain the following:

- Drilling equipment;
- Excavating equipment;
- Earth moving equipment;
- Static crushing and screening plants
- Access Roads;
- Site Office (Containers);
- Site vehicles;
- Parking area for visitors and site vehicles;
- Vehicle service area;
- Wash bay;
- Workshop (Containers);

- Salvage Yard;
- Bunded diesel and oil storage facilities;
- Generator on bunded area;
- Ablution Facilities (Chemical Toilets);
- Weigh Bridge; and
- Demarcated general and hazardous waste area.

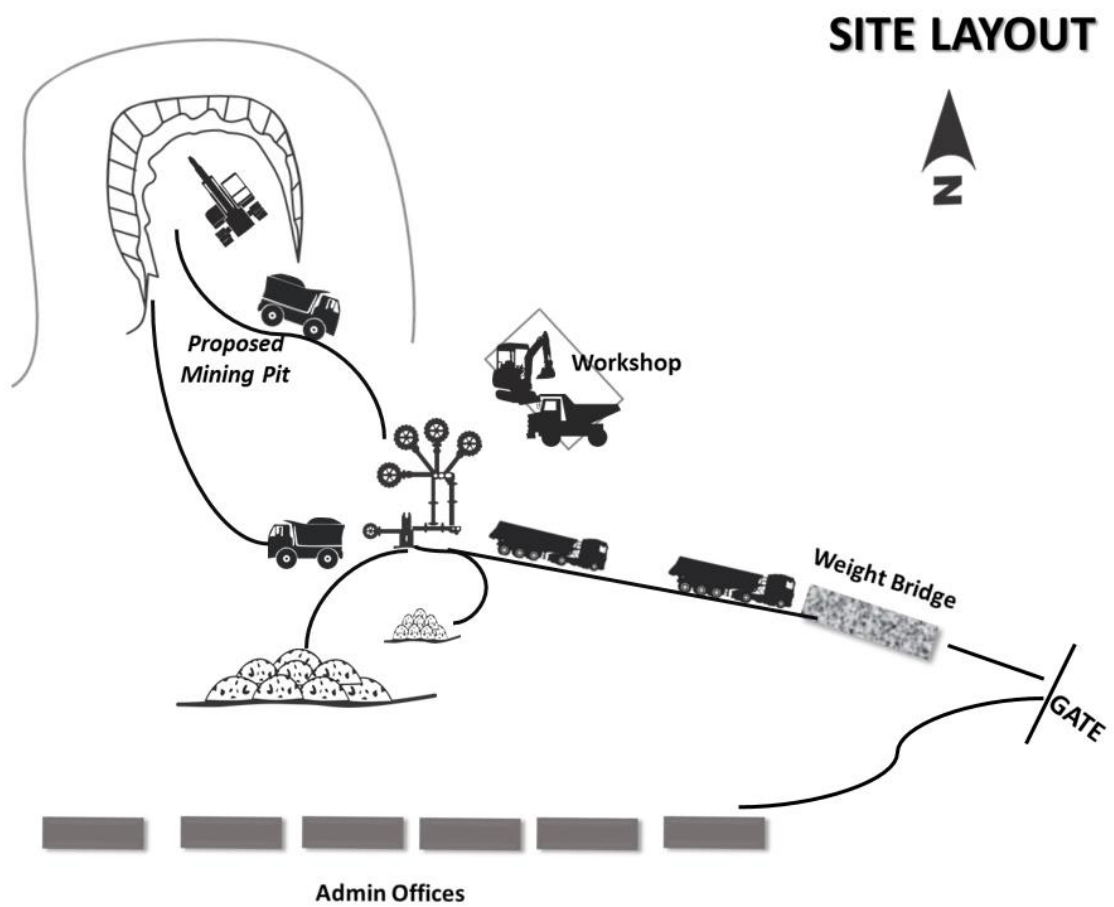


Figure 2: Site Layout Plan of the proposed Quarry.



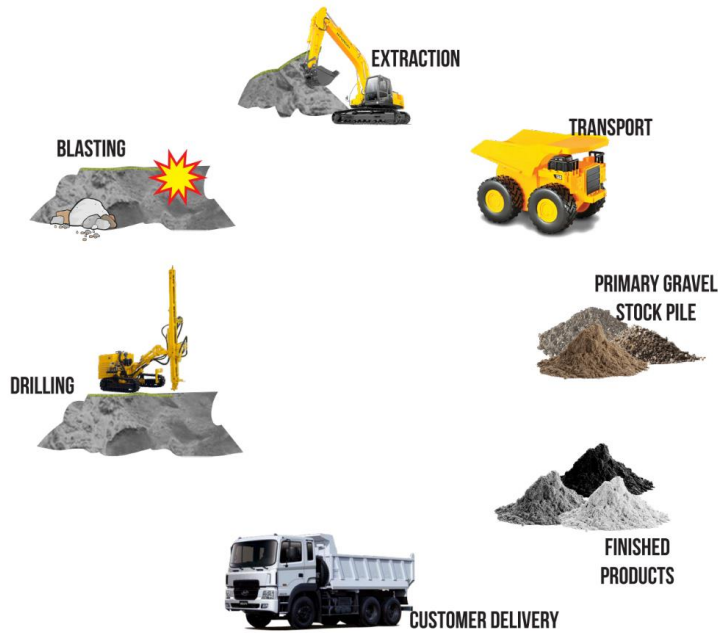


Figure 3: Operation Plan of the proposed Quarry.

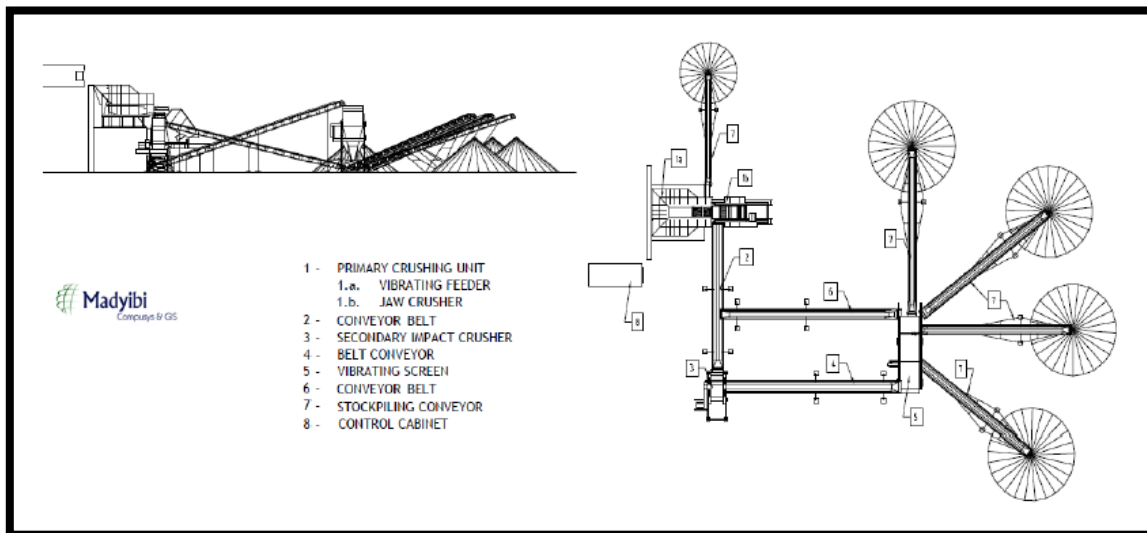





Figure 4: Typical Operation Plan of a Crushing and Screening Plant that may be used at the proposed Quarry, this might differ product and market related demands.

See attached as Appendix C a copy of the site activities map for the proposed project.

**i) Listed and specified activities**

Table 2: Listed and specified activities triggered by the associated mining activities

<b>NAME OF ACTIVITY</b> (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.)	<b>Aerial extent of the activity</b> Ha or m <sup>2</sup>	<b>LISTED ACTIVITY</b> Mark with an X where applicable or affected	<b>APPLICABLE LISTING NOTICE</b> (GNR 324, GNR 325, GNR 326 OR GNR 327)
Demarcation of site with visible beacons.	4.9 ha	N/A	Not listed
Site establishment  Construction of site access road	±4.9 ha	X	GNR 327 LN 1 Activity 24, 27
<p> <u>GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 24:</u></p> <p><i>The development of a road—</i></p> <p>(i) [a road] for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or</p> <p>(ii) [a road] with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road—</p> <p>(a) [roads] which [are] is identified and included in activity 27 in Listing Notice 2 of 2014;</p> <p>(b) [roads] where the entire road falls within an urban area; or</p> <p>c) which is 1 kilometre or shorter.</p> <p> <u>GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 27:</u></p> <p><i>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is</i></p> <p><i>required for—</i></p> <p>(i) <i>the undertaking of a linear activity; or</i></p> <p>(ii) <i>maintenance purposes undertaken in accordance with a maintenance management plan.</i></p>			
Mining of gravel / aggregate	±4.9 ha	X	GNR 327 LN 1 Activity 21, 28.
<p> <u>GNR Environmental Impact Assessment Regulations 327 Listing Notice 1 of 2017 Activity 21:</u></p> <p><i>Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including —</i></p>			

<b>NAME OF ACTIVITY</b> (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.)	<b>Aerial extent of the activity</b> Ha or m <sup>2</sup>	<b>LISTED ACTIVITY</b> Mark with an X where applicable or affected	<b>APPLICABLE LISTING NOTICE</b> (GNR 324, GNR 325, GNR 326 OR GNR 327)
<p>(a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource [,]; or [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)]</p> <p>(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;</p> <p style="padding-left: 40px;"><i>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 Listing Notice 2 applies</i></p> <p>■ <u>GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 28:</u></p> <p><i>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</i></p> <p>(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or</p> <p>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</p> <p><i>excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</i></p>			
Crushing, screening, stockpiling and transporting material from site.	±1 ha	X	GNR 327 LN 1 Activity 21, 28, 35
<p>■ <u>GNR Environmental Impact Assessment Regulations 327 Listing Notice 1 of 2017 Activity 21:</u></p> <p><i>Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including —</i></p> <p>(a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource [,]; or [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)]</p> <p>(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;</p> <p style="padding-left: 40px;"><i>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 Listing Notice 2 applies</i></p> <p>■ <u>GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 28:</u></p> <p><i>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</i></p>			

<b>NAME OF ACTIVITY</b> (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.)	<b>Aerial extent of the activity</b> Ha or m <sup>2</sup>	<b>LISTED ACTIVITY</b> Mark with an X where applicable or affected	<b>APPLICABLE LISTING NOTICE</b> (GNR 324, GNR 325, GNR 326 OR GNR 327)
<p><i>(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or</i></p> <p><i>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</i></p> <p><i>excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes</i></p>			
Sloping and landscaping upon closure of the mining area.	4.9 ha	X	N/A

**ii) Description of the activities to be undertaken**

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

A portion of Portion 15 on the Farm Rietspruit nr 437, IS Msukaligwa Local Municipality, Mpumalanga Province is situated approximately ±7.6 km south-west from Ermelo along the R39. The GPS coordinates of the proposed mining area are as follows:

Table 3: GPS Coordinates of the proposed mining footprint – Site Alternative 1.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	26°34'0.365"	29°55'58.858"	-26.566768°	29.933016°
B	26°33'55.008"	29°56'5.244"	-26.56528°	29.93479°
C	26°33'59.501"	29°56'9.92"	-26.566528°	29.936089°
D	26°34'5.632"	29°56'4.06"	-26.568231°	29.934461°

Table 4: GPS Coordinates of the proposed mining footprint – Site Alternative 2.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	26°34'6.006"	29°55'48.245"	26.568335°S	29.930068°E
B	26°34'2.464"	29°55'54.638"	26.567351°S	29.931844°E
C	26°34'7.788"	29°56'0.038"	26.56883°S	29.933344°E
D	26°34'12.274"	29°55'53.893"	26.570076°S	29.931637°E

**Project Proposal:**

Inzalo Crushing and Aggregates (Pty) Ltd (hereinafter referred to as “the Applicant”), applied for environmental authorisation (EA) and a mining permit to mine aggregate/ gravel on a portion of Portion 15 on the Farm Rietspruit nr 437, IS Msukaligwa Local Municipality, Mpumalanga Province.

The proposed mining footprint will be 4.9 ha and will be developed over an undisturbed area of the farm. The mining method will make use of blasting in order to loosen the hard rock; the material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. The aggregate will be stockpiled until it is transported from site using tipper trucks. All mining related activities will be contained within the approved mining permit boundaries.

The proposed mining area is approximately 4.9 ha in extent and the applicant, intends to win material from the area for at least 2 years with a possible extension of another 3 years. The gravel to be removed from the quarry will be used for construction industry in the vicinity. The depth of the quarry will be approximately 35m with a possibility of going deeper. The proposed quarry will therefore contribute to the upgrading / maintenance of road infrastructure and building contracts in and around the Ermelo area.

The mining activities will consist out of the following:

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

The mining site will contain the following:

- Drilling equipment;
- Excavating equipment;
- Earth moving equipment;
- Static crushing and screening plants
- Access Roads;
- Site Office (Containers);
- Site vehicles;
- Parking area for visitors and site vehicles;
- Vehicle service area;
- Wash bay;
- Workshop (Containers);
- Salvage Yard;
- Bunded diesel and oil storage facilities;
- Generator on bunded area;
- Ablution Facilities (Chemical Toilets);
- Weigh Bridge; and
- Demarcated general and hazardous waste area

Should the MP be issued and the mining of gravel be allowed, the proposed project will comprise of activities that can be divided into three key phases (discussed in more detail below) namely the:

- (1) *Site establishment/construction phase which will involve the demarcation of the permitted mining area. Site establishment will also necessitate the clearing of vegetation, the stripping and stockpiling of topsoil, and the introduction of mining machinery and equipment.*

- (2) *Operational phase that will entail the mining of aggregate (dolerite) / gravel from the approved footprint area via conventional open cast mining methods. The mining method will make use of blasting in order to loosen the hard rock; upon which the loosened material will be transported to the crushing and screening processing plant where it will be screened to various sized stockpiles, before it is sold and transported from site to clients.*
- (3) *Decommissioning phase which entails the rehabilitation of the affected environment prior to the submission of a closure application to the Department of Mineral Resources and Energy (DMRE). The permit holder will further be responsible for the seeding of all rehabilitated areas. Once the full mining area is rehabilitated, the mining permit holder will be required to submit a closure application to the DMRE in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).*
- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required), and weed / alien clearing.
  - All infrastructures, equipment, and other items used during the mining period will be removed from the site (section 44 of the MPRDA).
  - Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognised landfill facility. It will not be permitted to be buried or burned on the site.
  - Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species categorised as weeds according to the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) [NEMBA] Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure.
  - Final rehabilitation shall be completed within a period specified by the Regional Manager. Once the mining area was rehabilitated, the mining permit holder will submit a closure application to the DMRE in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

## **PHASES OF THE PROJECT**

### **1. Site Establishment Phase:**

Site establishment entails the demarcation of the mining boundaries, clearance of vegetation and stripping and stockpiling of topsoil (if needed) from the mining area, and the introduction of the mining equipment as detailed below:

#### **Demarcation of Mining Boundaries:**

Pursuant to receipt of an Environmental Authorisation (EA) and Mining Permit (MP), and prior to site establishment, the boundaries of the mining area will be demarcated with visible beacons.

#### **Access Road:**

Access to the proposed mining area will be via the R39, making use of the new developed internal/haul roads to access the mining area. Haul roads will be developed prior to mining activities, and will be rehabilitated as part of the final reinstatement of the area. Trucks delivering the materials to the destinations will take the R39 provincial route.



*Figure 5: Satellite view showing the access road entrance (white arrow) to the proposed mining area site alternative 1 (blue polygon) as well as site alternative 2 (pink polygon).*





Figure 6: Satellite view showing the preferred access road (green line) and the alternative road (pink line) to the proposed mining area site alternative 1 as well as the site alternative 2 (pink polygon)



Figure 7: Aerial photo showing the existing entrance into the mining area.

**Clearing of Vegetation:**











According to Mucina and Rutherford (2012) the area comprises of undulating grassland plains, with small scattered patches of dolerite outcrops in areas. The vegetation is comprised of a short closed grassland cover, largely dominated by a dense *Themeda triandra* sward, often severely grazed to form a short lawn. The conservation status of the area is considered to be vulnerable. The conservation target is 27% but none is protected. Some 25% of unit is transformed, predominantly by cultivation (22%). The area is not suited to afforestation. Silver and black wattle (*Acacia* species), and *Salix babylonica* invade drainage areas. Erosion potential is very low (57%) and low (40%). To mitigate this, the clearing of vegetation must be contained to the approved mining footprint, and no vegetation/bush clearance, outside the approved area, may be allowed.

#### **Topsoil Stripping:**

It is proposed that topsoil removal will be restricted to the exact footprint of areas required during the operational phase of the activity. The topsoil will be stockpiled at a designated signposted area within the mining boundary to be replaced during the rehabilitation of the area. It will be part of the obligations of site management to prevent the mixing of topsoil heaps with overburden/other soil heaps. The complete A-horizon (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 will be stripped. The topsoil berm will measure a maximum of 1.5 m in height in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.

#### **Introduction of Mining Machinery:**

The mining site will contain the following:

-  Drilling equipment;
-  Excavating equipment;
-  Earth moving equipment;
-  Static crushing and screening plants
-  Access Roads;
-  Site Office (Containers);
-  Site vehicles;
-  Parking area for visitors and site vehicles;
-  Vehicle service area;
-  Wash bay;

- Workshop (Containers);
- Salvage Yard;
- Bunded diesel and oil storage facilities;
- Generator on bunded area;
- Ablution Facilities (Chemical Toilets);
- Weigh Bridge; and
- Demarcated general and hazardous waste area.

## 2. *Operational Phase:*

The operational phase will involve the loosening of the hard rock of the quarry by blasting, upon which it will be mechanically recovered with drilling-, excavating- and earthmoving equipment. The rock will then be delivered to the crushing and screening plant where it will be reduced to various sized aggregate. The screened material will be delivered to various size category stockpiles. Transportation of the final product will be from the stockpile area to the end point by means of trucks. The contractor will make use of permanent employees and any additional employees required will be sourced from the surrounding area and daily be transported to site. All activities will be contained within the boundaries of the site. The mining activities will consist out of the following:

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

### ■ Water Use:

As no gravel washing is proposed for this project, the Applicant will exclusively use water for dust suppression purposes on the access road and processing plant when needed. Approximately 30 000 litre water/day will be needed during the dry months.

Dust generated on the access road will, as far as possible, be managed through alternative dust suppression methods to restrict water use to the absolute minimum.

These measures will include a combination of the following:

- The speed of all mining equipment/vehicles will be restricted to 40 km/h on the internal farm road to minimize dust generation;
- When the truck leaves the mining area it will be covered (e.g. shade cloth material) to minimise windblown dust from the loads;
- The Applicant will attempt to lessen denuded areas (dust source) to the absolute minimum.

Under very windy/dusty conditions the permit holder might have to substitute the above mentioned dust suppression methods with the spraying of water, in which case water will be bought and transported to the mining area in a water truck that will moisten the problem area. The water truck driver will receive proper training to ensure effective use of the water on problem areas preventing water wastage.

📌 Electricity:

The proposed project will make use of generators for power supply until a connection to the national grid can be secured.

📌 Waste Handling:

Solid (general) waste, generated during the operational phase, will be contained in sealable refuse bins that will be placed at the office area until the waste is transported to a recognised general waste landfill site. A recognized contractor will service the chemical toilets that will serve as ablution facilities to the employees.

Due to the nature of the project, the small scale of the proposed operation, and the fact that no permanent infrastructure will be established, very little to no general waste will be generated as a direct result of the mining activities. Any waste generated during the operational phase, will be contained in a sealable refuse bin that will be removed from site and incorporated in an approved waste disposal system of the contractor.

Hazardous waste will mainly be the result of accidental spillages or breakdowns. Such contaminated areas will be cleaned up immediately (within two hours of the occurrence) and contaminated soil will be contained in designated hazardous waste containers to be removed daily to the hazardous

waste storage area at a designated off-site workshop where it will be disposed of as part of the hazardous waste by a registered hazardous waste handling contractor.

The chemical toilet, to be placed on site, will be serviced by a registered contractor.

 Servicing and Maintenance:

A temporary workshop and wash bay will be established on site where minor servicing and emergency repairs of mining related equipment/machinery will take place. The wash bay will have an impermeable floor and drain into an oil sump that will be serviced by a qualified contractor. No wash water will be allowed to drain into the surrounding environment. No bulk storing of fuel (>80 000 l) will take place on site, and any chemicals needed at the workshop will be stored in accordance with the product specific safety data sheet specifications in temporary containers/secured cages.

Regular vehicle maintenance, repairs and services may only take place in a demarcated service area. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200-litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal. It will be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary

***Decommissioning Phase:***

The decommissioning phase will entail the reinstatement of the proposed mining footprint (4.9 ha).

The end objective is for the mining area to return to dormant agricultural use. No buildings/infrastructure, need to be demolished and the access road will remain intact.

The applicant will comply with the minimum closure objectives as prescribed DMRE and detailed below:

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the quarry area to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be 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 (see Appendix L for the Closure Plan).

The decommissioning activities will therefore consist of the following:

- Sloping and landscaping the quarry pit;
- Removing all stockpiled material;
- Removing all mining machinery and equipment from site;
- Landscaping all disturbed areas and replacing the topsoil;
- Vegetating the reinstated area; and
- Controlling/monitoring the invasive plant species.

The future land use of the proposed area will be agriculture. Upon replacement of the topsoil, the area around the excavation will once again be available for grazing purposes, and the planting of the cover crop (to protect the topsoil) will tie in with the proposed land use.

The applicant will comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

■ Rehabilitation of the excavated area:


The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be dumped into the excavation.

No waste may be permitted to be deposited in the excavations.

Once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.

The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

 Rehabilitation of plant, office and service areas:

Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.

Stockpiles must be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.

On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager. \_

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

■ Final rehabilitation:

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing.

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

Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.

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

Once the mining area was rehabilitated the permit holder is required to submit a closure application to the Department of Mineral Resources and Energy in accordance with section 43(4) of the MPRDA, 2002 that states: *“An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report”*. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).



## e) Policy and Legislative Context

Table 5: Policy and Legislative Context.

<b>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</b>  (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)	<b>REFERENCE WHERE APPLIED</b>	<b>HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.</b>  (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity: <i>Physical Environment – Geology and Soil.</i>  Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Management of invader plant species.</i>	The mitigation measures proposed for the site includes specifications of the CARA, 1983.
Mine Health and Safety Act, 1996 (Act No 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations.	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Management of Health and Safety Risks.</i>	The mitigation measures proposed for the site includes specifications of the MHSA, 1996
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) read together with applicable amendments and regulations thereto.  ↻ Section 27	Part A(1)(d) Description of the scope of the proposed overall activity	Application for a mining permit submitted to DMRE-WC.  Ref No: MP 30/5/1/3/2/13080 MP
National Environmental Management Act, 1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended by GNR 326 effective 7 April 2017) ■ GNR 327 Listing Notice 1 Activity 21 ■ GNR 327 Listing Notice 1 Activity 24 ■ GNR 327 Listing Notice 1 Activity 27 ■ GNR 327 Listing Notice 1 Activity 28	Part A(1)(d)(i) Listed and specified activities.	Application for environmental authorisation submitted to DMRE-MP.  Ref No: MP 30/5/1/3/2/13080 MP
National Environmental Management: Air Quality Control Act, 2004 (Act No 39 of 2004) read together with applicable amendments and regulations thereto specifically the National Dust Control Regulations, GN No R827.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – <i>Air and Noise Quality.</i>  Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Dust Handling.</i>	The mitigation measures proposed for the site take into account the NEM:AQA, 2004 and the National Dust Control Regulations.

<b>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</b>  (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)	<b>REFERENCE WHERE APPLIED</b>	<b>HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.</b>  (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - <i>Biological Environment</i>  Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Management of invader plant species.</i>	The mitigation measures proposed for the site includes specifications of the NEM:BA, 2004.
National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) read together with applicable amendments and regulations thereto.  NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)	Part A(1)(d)(ii) Description of the activities to be undertaken	The mitigation measures proposed for the site take into account the NEM:WA.
National Heritage Resources Act. 1999 (Act No 25 of 1999).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – <i>Human Environment</i>	The mitigation measures proposed for the site includes specifications of the NHRA, 1999.
National Water Act, 1998 (Act No 36 of 1998) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – <i>Hydrology.</i>  Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk.	The proposed project does require a Water Use Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998). As mentioned earlier, mining activity will take place within +/- 450m of a water body. Therefore, proposed project does require a General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998) which will be submitted to DWS by the applicant prior to commencement of mining activities on this application. Any water required for the implementation of the project will be bought from a registered source and transported to on site.  The mitigation measures proposed for the site includes specifications of the NWA, 1998.

<b>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</b>  (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)	<b>REFERENCE WHERE APPLIED</b>	<b>HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.</b>  (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Public Participation Guideline in terms of the NEMA EIA Regulations	Part A(1)(h)(ii) Details of the Public Participation Process Followed	Public participation was conducted in accordance with the guidelines published in terms of the NEMA EIA Regulations

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

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

The increase in building, construction and road maintenance projects in the vicinity of the property triggered the need of the Applicant to trade with the available aggregate / gravel from a permitted area. The proposed aggregate / gravel mining operation will entail the removal of aggregate / gravel, from an undisturbed area of the farm. The mining of the mineral was identified as a feasible business opportunity that will also bring about the diversification of activities on the property, extending it from dormant agricultural land to include small scale mining.

The project will contribute to the local economy, both directly and through the multiplier effect that its presence will create, as equipment and supplies are purchased locally, and wages are spent at local businesses, generating both jobs and income in the area.

The dolerite mined from the earmarked area will be sold to the building, construction and road maintenance industry in the vicinity of the property. The mining of the aggregate from the proposed site will benefit the general society in that it will contribute to the upgrading of road infrastructure of the region, thereby enabling road users to safely travel through the district. The upgrading and maintenance of roads is of high priority and contributes to the improvement of the infrastructure network of South Africa. Although, this proposed quarry will not be the only quarry in the area, it will have a contribution to competitive pricing ultimately benefiting the community.

The need and desirability of the proposed project was assessed in terms of the National Department of Environmental Affairs' Guideline on Need and Desirability (first version published in terms of section 24J of the NEMA in 2014, and second version in 2017)). The following table shows the questions that were considered in this regard.

Table 6: Need and desirability determination.

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
<u>How will this development impact on the ecological integrity of the area?</u>		
Question	Response	Level of Desirability
How were ecological integrity considerations taken into account?	<p>As discussed under Part A(1)(g)(iv)(1)(a) Type of environment affected by the proposed activity, when the mining footprint is layered over the Mining and Biodiversity Map, it does not fall over and area of any specified for risk of mining therefore the risk is seen to be insignificant. As per the botanical assessment report conducted by DPR Ecologist dated February attached as appendix M – The site itself still consists of natural vegetation which is dominated by scattered trees and a well-developed grass layer. Disturbances are present and include overgrazing by domestic livestock and low-level infestation by exotic weeds and shrubs, though overall the site is still largely natural. However, the surrounding areas, especially toward the south and west of the site, has been heavily modified by previous mining activities. The site contains several plants listed as protected in Mpumalanga such as <i>Eucomis montana</i> <i>Haemanthus humilis subsp. Hirsutus Gladiolus dalenii subsp. dalenii</i>, <i>Gladiolus ecklonii</i>, <i>Gladiolus crassidolius</i>, <i>Boophone distichia</i> and <i>Zantedeschia rehmannii</i>.</p> <p>These plants are not listed as endangered but are protected and therefore listed as SCC. The necessary permits should be obtained and plants moved to adjacent areas. This is standard recommendation for these plants.</p> <p>The spatial guidelines for land use for these grasslands that are relevant to this project area include (SANBI,2013);</p> <ul style="list-style-type: none"> <li>➤ Avoid any further fragmentation of primary grassland;</li> <li>➤ Maintain connectivity between natural areas across the landscape;</li> <li>➤ Direct impacting activities away from grasslands on dolomitic substrates; and</li> <li>➤ Establish and respect buffers around protected areas, wetlands and rivers.</li> </ul>	Desirable
How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity?		

**1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES**

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
	<p>Subsequently the proposed development area is largely well located in terms of avoiding sensitive receptors and the development will not compromise the survival of any specific flora or terrestrial vertebrate species on the study area or beyond.</p> <p>Therefore, it is recommended that a walk-through be conducted before the commencement of the activity to relocate any sensitive plant species. If mitigation measures are fully implemented. and concluded that the earmarked footprint (S1) is not of high conservation priority.</p> <p>Also refer to:</p> <ul style="list-style-type: none"> <li>⌘ Part A(1)(d)(ii) Description of the activities to be undertaken – Clearing of Vegetation;</li> <li>⌘ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Mining and Biodiversity;</li> <li>⌘ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Biodiversity Conservation Areas;</li> <li>⌘ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Groundcover;</li> <li>⌘ Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity, Conservation Areas and Groundcover,</li> <li>⌘ Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk.</li> </ul> <p>As discussed under <i>Part A(1)(g)(iv)(1)(a)</i>. Should the Applicant implement the mitigation measures proposed in the EMP the impact of the proposed activity on the vegetation and groundcover in general is deemed to be of low significance.</p>	
<p>How will this development pollute and/or degrade the biophysical environment?</p>	<p>Due of the nature of the proposed activity, it is inevitable that the present vegetation cover of the earmarked footprint will eventually be removed to allow access to the aggregate (dolerite) / gravel resource, only to be replaced (to some extend) during the rehabilitation phase. Taking the above mentioned into consideration, the botanical assessment concluded that the quarry will have relatively little impact on the vegetation and fauna around it provided that the mitigation measures are adhered to.</p>	<p>Desirable</p>

## 1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
	Therefore, should the permit holder adhere to the mitigation measures proposed in this report it is believed that the impact on the biophysical environment is of acceptable significance.	
What waste will be generated by this development?	<p>The general waste to be generated at the mine will mainly consist of paper, plastic, tin, and/or glass from the office, workshop and processing area. All general waste will be contained in sealable refuse bins that will be placed at the office area until it is transported to a recognised general waste landfill site. A recognized contractor will service the chemical toilets and be responsible for the removal of the sewerage to a registered sewerage handling facility.</p> <p>As mentioned earlier, hazardous waste may result from accidental spillages/breakdowns. Such contaminated areas will immediately (within two hours of occurrence) be cleaned and the contaminated soil will be contained in a designated hazardous waste container that will be kept in a bunded area with impermeable surface until it is removed from site by a registered hazardous waste handling contractor to an approved facility. No waste will be disposed of, buried, burned or treated on the site.</p>	Highly Desirable
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	<p>The natural topography of the proposed excavated comprised of undulating grassland plains, with small scattered patches of dolerite outcrops in areas. The vegetation is comprised of a short closed grassland cover, largely dominated by a dense <i>Themeda triandra</i> sward, often severely grazed to form a short lawn. The elevation loss from the proposed mining footprint to the town of Ermelo to be 1759m over 6.59km</p> <p>As per the Heritage Impact Assessment (Appendix N), the study area is fallow and has not been developed or impacted on by adjacent mining activities. Examination of historical topographic maps and aerial images showed no structures or stone walled settlements in the study area and the impact footprint is considered to be of low heritage potential. This was confirmed during the site visit and no heritage finds of significance was recorded during the survey.</p>	Desirable

## 1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
	<p>According to the SAHRA Paleontological sensitivity map the study area is of insignificant paleontological significance, but very close to an area of very high sensitivity and an independent study (Appendix N1) was conducted for this aspect. Bamford (2022) concluded that the proposed site lies on the non-fossiliferous Jurassic dolerite but is very close to the very highly sensitive Vryheid Formation that could preserve fossil plants of the Glossopteris flora. No fossils were found during the site visit. Nonetheless a Fossil Chance Find Protocol should be added to the EMPr.</p> <p>No adverse impact on heritage resources is expected by the project and it is recommended that the project can commence on the condition that the following recommendations (Section 10) are implemented as part of the EMPr and based on approval from SAHRA.</p>	
How will this development use and/or impact on non-renewable natural resources?	Ermelo Quarry is a dolerite/gravel resource of at least 3 800 000 ton that shows a potential life of mine of would still be available for many years. In light of this, it is believed that the mining permit holder could responsibly consume the dolerite resource on the property over a period of 5 years.	Desirable
How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part?	It is proposed that approximately 30 000 litres of water will be needed per day during the dry months to manage dust emissions from the proposed operation. As mentioned earlier, the contractor will strive to manage dust generation through alternative suppression methods to restrict water use to the absolute minimum. Presently, it is proposed that water will be bought and transported to site. The contractor will be encouraged to consider the use of non-potable water for mining related activities. The use of solar power should also be considered as an alternative power source to the offices and/or workshops.	Desirable
How were a risk-averse and cautious approach applied in terms of ecological impacts?	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that ecological impacts should be fully mitigated.	Desirable

**1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES**

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
<p>How will the ecological impacts resulting from this development impact on people's environmental right?</p>	<p>Should the mining activities be approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low-medium significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that no environmental rights of the surrounding residents/public will be affected by the ecological impacts associated with the proposed activity.</p>	<p>Highly Desirable</p>
<p>Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts.</p>	<p>If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not affect the physical, psychological, cultural or social needs of the community in a negative manner nor will the it impact negatively on the socio-economic status of the area.</p>	<p>Desirable</p>
<p>Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?</p>		
<p>Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified, resulted in the selection of the "best practicable environmental option" in terms of ecological considerations</p>		



**1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES**

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
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**2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT**

What is the socio-economic context of the area?

Question	Response	Level of Desirability
What is the socio-economic context of the area?	Please refer to Heading 2(h)(iv)(1)(a) Socio-economic Environment.	Highly Desirable
Considering the socio-economic context, what will the socio-economic impacts be of the development, and specifically also on the socio-economic objectives of the area?	As mentioned earlier, should this mining permit be approved the applicant will be able to, <ul style="list-style-type: none"> <li>■ Provide employment opportunities;</li> <li>■ The community/businesses of Ermelo will benefit from diversification of gravel sources which will result in competitive product costs.</li> <li>■ It will also diversify the income of the property as well as potential employees and clients.</li> </ul>	
How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not affect the physical, psychological, cultural or social needs of the community in a negative manner nor will the it impact negatively on the socio-economic status of the area.	Highly Desirable

**1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES**

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
Will the development result in equitable impact distribution, in the short- and long-term?	The mining activities proposes to operate in a socially and economically sustainable manner during both the short- and long term.	Highly Desirable
In terms of location, describe how the placement of the proposed development will contribute to the area.	As mentioned above the proposed area is over an undisturbed area of the farm occasionally used for grazing. The position of the proposed site is ideal due to it being superimposed over the dolerite ridge present on the face of the hill. This was deemed the only viable site alternative as this is the only area that will be viable for the applicant due to the presence of the dolerite ridge.	Highly Desirable
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	No negative socio-economic impacts could, at this stage, be identified that cannot be managed through the implementation of mitigation measures.	Highly Desirable
How will the socio-economic impacts resulting from this development impact on people's environmental right?	As mentioned in Heading 3(j)(1) <i>Impact on the socio-economic condition of any directly affected person</i> , the activity may have an impact on the visual characteristics of the surrounding environment, and may potentially affect air quality and possibly the noise ambiance of the study area. However, should the mining activities be approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that no environmental rights of the surrounding residents/public will be affected by the socio-economic impacts associated with the proposed activity	Highly Desirable
Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question	As mentioned above should the mining activities be approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low – medium significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that no environmental rights of the surrounding residents/public will be affected by the socio-economic impacts associated with the proposed activity.	Highly Desirable

**1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES**

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
and how the development's socio-economic impacts will result in ecological impacts?		
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	Please refer to: <ul style="list-style-type: none"> <li>■ Part A(1)(g)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.</li> </ul>	Highly Desirable
What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons?		
What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	The mining site will (if approved) operate in accordance with, amongst others, the following: <ul style="list-style-type: none"> <li>■ CARA, 1983 – to ensure agriculture related compliance;</li> <li>■ Financial Provision Regulations, 2015 – to ensure compliance in terms of rehabilitation;</li> <li>■ Mine Health and Safety Act, 1996 (as amended) – to ensure employee safety;</li> <li>■ MPRDA, 2002 (as amended) – to ensure mining related compliance;</li> <li>■ NEM:AQA, 2004 – to ensure air quality related compliance;</li> <li>■ NEM:BA, 2004 – to ensure biodiversity related compliance;</li> </ul>	Highly Desirable

## 1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	<ul style="list-style-type: none"> <li>■ NEM:WA, 2008 – to ensure waste related compliance;</li> <li>■ NEMA, 1998 (as amended) – to ensure environmental related compliance;</li> </ul>	
Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community that is consistent with the priority needs of the local area.	<p>As mentioned earlier, should this mining permit be approved the applicant will be able to,</p> <ul style="list-style-type: none"> <li>■ Provide employment opportunities;</li> <li>■ The Community/businesses of Ermelo will benefit from diversification of aggregate (dolerite) / gravel sources which will result in competitive product costs.</li> <li>■ It will also diversify the income of the property as well as potential employees and clients.</li> </ul>	Highly Desirable
What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected.	<p>The mining activities will be in accordance with the specifications of the Mine Health and Safety Act, 1996. Site management will have daily discussions with the drill rig operators regarding the work to be performed and the environment in which the work will take place. Grievances/concerns can be lodged during the daily site meetings.</p>	Highly Desirable

## 1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
Describe how the development will impact on job creation in terms of, amongst other aspects?	<p>As mentioned earlier, should this mining permit be approved the applicant will be able to,</p> <ul style="list-style-type: none"> <li>➤ Provide employment opportunities;</li> <li>➤ the people/businesses of Ermelo will benefit from diversification of aggregate (dolerite) / gravel sources which will result in competitive product costs.</li> <li>➤ It will also diversify the income of the property as well as potential employees and clients.</li> </ul>	Highly Desirable
What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage.	Should the mining permit be approved the activities will operate under a valid mining permit issued by the DMRE, compliance of the mine with the approval conditions can be reported on as per the departmental specifications and also be managed in accordance with all the mining and environmental related legislations.	Highly Desirable
Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left.	It is believed that the mitigation measures proposed in this document is realistic and can be implemented (when needed) by the proposed activities. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, the residual impact on the environment is of low significance.	Highly Desirable
What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health	In terms of Section 41 of the MPRDA, 2002 a mining permit holder must submit a financial provision to the DMRE that is sufficient to rehabilitate or manage the negative environmental impacts related to the mining activity.	Highly Desirable

**1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES**

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
<p>effects and of preventing, controlling or minimising further pollution environmental damage or adverse health effects will be paid for by those responsible for harming the environment.</p>		
<p>Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified, resulted in the selection of the best practicable environmental option in terms of socio-economic considerations</p>	<p>Please refer to:</p> <ul style="list-style-type: none"> <li>∞ Part A(1)(g)(i) Details of the development footprint alternatives considered;</li> <li>∞ Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Socio-Economic Environment;</li> <li>∞ Part A(1)(g)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.</li> </ul>	<p>Highly Desirable</p>
<p>Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area.</p>	<p>If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not cause a cumulative socio-economic impact should the mining permit application be approved, seeing that there is no other rated activities in the vicinity.</p>	<p>Highly Desirable</p>

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

The proposed site (Site Alternative 1) was identified as the preferred and only viable site alternative based on the following:

- The proposed area is over an undisturbed area of the farm occasionally used for grazing. The position of the proposed site is ideal due to it being superimposed over the dolerite ridge present on the face of the hill. This was deemed the only viable site alternative as this is the only area that will be viable for the applicant due to the presence of the dolerite ridge.
- Haul roads will be constructed to gain access to the proposed mining area with a formal (existing) entrance onto the R39.
- An alternative layout for the quarry, located between the existing quarries, has been proposed in the Final BAR – Site Alternative 2 but not found viable as explained earlier.

The environmental impact assessment process assessed the feasibility of the proposed site alternative to identify fatal flaws that are deemed as severe as to prevent the activity continuing, or warrant another site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. In light of the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently finalized and is depicted on the attached site activities plan (Appendix C).

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

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

**i) Details of the development footprint alternatives considered.**

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

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

Due to the application being over an undisturbed area of the farm, as indicated on the Regulation 2.2 Mine Plan (Appendix A), was identified as the preferred and only viable site alternative as it entails the mining of an area that is present on a dolerite ridge.

**Site Alternative 1 (S1) (Preferred Alternative):** Site Alternative 1 entails the mining of an area over an undisturbed area of the farm within the GPS coordinates as listed in the table below.

*Table 7: GPS Coordinates of Site Alternative 1 (preferred and only viable site alternative)*

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	32°10'50.045"	22°49'47.593"	-32.180568°	22.829887°
B	32°10'52.46"	22°49'43.997"	-32.181239°	22.828888°
C	32°10'59.696"	22°49'49.3"	-32.183249°	22.830361°
D	32°10'59.75"	22°49'57.436"	-32.183264°	22.832621°
E	32°10'56.204"	22°49'57.576"	-32.182279°	22.83266°
F	32°10'55.722"	22°49'51.769"	-32.182145°	22.831047°
A	32°10'50.045"	22°49'47.593"	-32.180568°	22.829887°



*Figure 8: Satellite view of the proposed mining permit area site alternative 1 (blue polygon) and site alternative 2 (pink polygon) within the surrounding landscape.*



Site Alternative 1 was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team, as the **preferred and only viable site alternative** due to the following:

- The proposed area is over an undisturbed area of the farm occasionally used for grazing. The position of the proposed site is ideal due to it being superimposed over the dolerite ridge present on the face of the hill. This was deemed the only viable site alternative as this is the only area that will be viable for the applicant due to the presence of the dolerite ridge.
- Haul roads will be constructed to gain access to the proposed mining area with a formal (existing) entrance onto the R39.

**Site Alternative 2 (S2):** Site Alternative 2 entails the mining of an area over an undisturbed area of the farm within the GPS coordinates as listed in the table below within the GPS coordinates as listed in the table below.

*Table 8: GPS Coordinates of Site Alternative 2 (preferred and only site alternative)*

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
a	26°34'6.006"	29°55'48.245"	26.568335°S	29.930068°E
b	26°34'2.464"	29°55'54.638"	26.567351°S	29.931844°E
c	26°34'7.788"	29°56'0.038"	26.56883°S	29.933344°E
d	26°34'12.274"	29°55'53.893"	26.570076°S	29.931637°E

Site Alternative 2 was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team, but found **not environmentally and practically suitable** due to the following:

Site Alternative 2 (S2) was assessed for the proposed mining but found not environmentally and practically suitable. The earmarked area is situated between the two existing quarries however two water resources is located within 500m of the site which will lead to the destruction of the water resource. Site alternative 1, was deemed the only viable site alternative as this is the only area that will be viable for the applicant due to the presence of the dolerite ridge.

- This alternative site was not deemed to be the preferred option as it results in the complete destruction of the unchanneled valley-bottom wetland that is within the earmarked area.

- Although the position of Site Alternative 2 will still allow the development of the quarry on the property, it is believed that the impact associated with this site alternative is of higher significance without the need or motivation justifying it.

**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 / gravel to be mined from the existing quarry will be sold to the building, road rehabilitation/maintenance and associated construction industry, if however, the no-go alternative is implemented:

- the Applicant cannot utilise the mineral resource on this property;
- the proposed employment opportunities will be lost;
- the people/businesses of Ermelo will not benefit from diversification of aggregate (dolerite) / gravel sources which will escalating product costs.

In light of this, the no-go alternative was no deemed to be the preferred alternative.

## 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.

During the initial public participation process the stakeholders and I&AP's were informed of the project by means of background information documents that were sent or hand delivered directly to the contact persons. A 30-days commenting period was allowed which expired on 31 January 2022. The following I&AP's and stakeholders were informed of the project:

Table 9: List of the I&AP's and stakeholders that were notified of the proposed aggregate / gravel mine project.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
<p><b><u>Surrounding landowners &amp; lawful occupiers:</u></b></p> <ul style="list-style-type: none"> <li>Gerhard Scheepers trust</li> <li>De Era trust</li> <li>Gerhard Scheepers trust</li> <li>Oubaas De Jager Familie Trust</li> <li>Gerhard Scheepers Trust</li> </ul>	<ul style="list-style-type: none"> <li>Department of Agriculture, Rural Development, Land &amp; Environmental Affairs</li> <li>Department of Economic Development, Environment and Tourism</li> <li>Department of Economic Development, Environment and Tourism – Environmental Impact Management</li> <li>Department of Public Works,Roads and Transport</li> <li>Department of Water &amp; Sanitation</li> </ul>

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
<ul style="list-style-type: none"> <li>■ Ngungude Petrus Khanyi - Deceased</li> <li>■ Rachel Monica Phumzile Khanyi - Wife</li> <li>■ Karel Stefanus Erasmus</li> <li>■ Siphso Samuel Mhlanga</li> <li>■ Dulobase (Pty) Ltd</li> <li>■ Johannes Petrus Strauss</li> <li>■ Magagula Family Communal Prop Assoc</li> <li>■ Sanet Magagula</li> <li>■ Maria Magagula</li> <li>■ Wouter Kuhn Trust</li> <li>■ Inus De Wit</li> <li>■ Mr George Ronquest</li> <li>■ Mr Christo Clark</li> <li>■ Mr Jannie Myburgh</li> <li>■ Mr Kerneels van Rensburg</li> <li>■ Mr Riaan van Rensburg</li> <li>■ Me Rika Hamman</li> <li>■ Mr Werner Labuschagne</li> <li>■ Mr Johan van Greunen (Rietspruit Crushers PTY LTD)</li> </ul>	<ul style="list-style-type: none"> <li>■ Department of Agriculture, Rural Development, Land and Environment</li> <li>■ Department of Labour</li> <li>■ South African Heritage Resource Agency</li> <li>■ Eskom</li> <li>■ GERT SIBANDE DISTRICT OFFICE</li> <li>■ Gert Sibande District Municipality</li> <li>■ Gert Sibande District Municipality - Planning</li> <li>■ Msukaligwa Local Municipality</li> <li>■ Msukaligwa Local Municipality Ward Councillor 8</li> </ul>
<b>I&amp;AP'S AND STAKEHOLDERS THAT REGISTERED/COMMENTED DURING THE INITIAL NOTIFICATION PERIOD</b>	
<ul style="list-style-type: none"> <li>■ Inus de Wit</li> <li>■ Rietspruit Crushers</li> <li>■ Eksom</li> <li>■ GSDM</li> <li>■ Karel Stephanus</li> </ul>	

An advertisement was placed in the Highveld Tribune on 14 December 2021, and two on-site notices were placed, one at the entrance of the site and the other at Ermelo's public library. A 30-days commenting period was allowed which expired on 31 January

2021. In accordance with the timeframes stipulated in the EIA Regulations, 2014 (as amended by GNR 326 effective 7 April 2017) the Draft Basic Assessment Report was distributed for comment and perusal to the I&AP's and stakeholders. A 30-day commenting period, ended 9<sup>th</sup> May 2022, was allowed for perusal of the documentation and submission of comments. The comments received on the DBAR was incorporated into the Final Basic Assessment Report (FBAR) that will be submitted for decision making to DMRE, which will be allowed for perusal of the documentation and submission of comments.



### iii) Summary of issues raised by I&APs








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

Table 10: Summary of issues raised by IAPs during initial PPP phase

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
List the name of persons consulted in this column, and					
Mark with an X where those who must be consulted were in fact consulted					
<b>AFFECTED PARTIES</b>	<b>X</b>				
<b>Landowner/s</b>					
Gerhard Scheepers Trust	X	No comments received			N/A.
<b>Lawful occupier/s of the land</b>					
N/A		N/A	N/A	N/A	
<b>Landowners or lawful occupiers on adjacent properties</b>		<b>X</b>	-	-	-
De Era Trust	X	No comments received	N/A	N/A	N/A
Oubaas De Jager Familie Trust	X	No comments received	N/A	N/A	N/A
Me Rachel Monica Phumzile Khanyi	X	No comments received	N/A	N/A	N/A
Mr Karel Stefanus Erasmus	X	Comments received	<p>What specialized studies have been completed? Need to see those specialized studies in order to understand the impact on my farm and to comment on it.</p> <p>My concerns is that you are not conducting full EIA which requires specialized studies to be completed. My concerns is also that no proper consultation will conducted with me and that I would not be able to comment on all the</p>	<p>Response from Greenmined:</p> <p>The above matter as well as the letter received from you dated Monday 26 January 2021 refers. We thank you for your valuable participation and for submitting comments. Please see the responses to your comments below.</p> <p>It is important to note that the Background Information Document dated 9 December 2021 is a document providing background for the first</p>	Appendix F2: Proof of public participation process

<p><b>Interested and Affected Parties</b></p> <p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>	<p><b>Date Comments Received</b></p>	<p><b>Issues raised</b></p>	<p><b>EAPs response to issues as mandated by the applicant</b></p>	<p><b>Section and paragraph reference in this report where the issues and or response were incorporated.</b></p>
		<p>specialized studies that you are required to complete. Please see the attached sheet.</p> <p>I, Karel Stefanus Erasmus, a farmer adjacent to Portion 15 on Farm Rietspruit objects to the application for mining permit by Inzalo Crushing and Aggregates (Pty) Ltd based on the following ground:</p> <p>It is not evident from your Background Information Document what specialized studies will or have been conducted. It is important for me to understand what detrimental affects your project will have on my farming, I would therefore like to see what specialist studies have been conducted and I would like the opportunity to comment on those specialized studies.</p> <p>What impact will your project have on the adjacent water course? Have you completed any specialized studies assessing what impact your activity will have on the downstream water course?</p> <p>Also, the area which you are proposed to mine is within 600 meters from my farm building and I do fear that the blasting will cause damage to the infrastructure. Are you going to apply for the 500m blasting permit and also? I would like to see the blasting risk assessment that you have compiled in this regard?</p> <p>I would appreciate if you can provide me with the information requested in order for me to review the full set of identified impacts and mitigation measures proposed.</p>	<p>phase of this proposed project. More information relating to the project will be provided in the Draft Basic Assessment Report. The purpose of the Background Information Document is to invite parties to register as interested and affected parties. The effects and the impacts of the proposed activity will only be assessed when the Draft Basic Assessment Report is compiled. All interested and affected parties, including yourself, will be afforded ample opportunity to comment on the proposed activity and its possible impacts.</p> <p>We note your concern that we are not conducting a full Environmental Impact Assessment. Please note that the proposed project triggers five listed activities in terms of the National Environmental Management Act (Act 107 of 1998) and the Environmental Impact Assessment Regulations 2014 (as amended 2017). These activities that are triggered, all fall under Listing Notice 1 and 3 of the EIA Regulations, which means that a Basic Assessment and not an EIA must be conducted.</p> <p>The effects and impacts of the proposed activity will be assessed when the Draft Basic Assessment Report is compiled. Any further studies as proposed by you will then be conducted during this phase should it be</p> <p>found applicable by the specialist in the particular field of expertise.</p> <p>The Background Information Document is compiled according to the screening report that shows which environmental theme will have a high sensitivity. Since the application is still in its early phases, we have appointed a wetland specialist to</p>	

<b>Interested and Affected Parties</b> List the name of persons consulted in this column, and  Mark with an X where those who must be consulted were in fact consulted	<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
			<p>conduct a study that will include a comprehensive assessment of each</p> <p>watercourse and wetland as required by the relevant legislation and guidelines. This will be provided to all I&amp;AP's who will be allowed the opportunity to comment in the next 30-day commenting period. In terms of blasting, the legislation states that we require a permit when infrastructure is within 500 meters of the blasting site. However, a blasting specialist will be appointed before the commencement of any mining activities and the following will be implemented:</p> <p>Planning the type, duration, and timing of blasting with due cognizance of other land users and structures in the vicinity; and</p> <p>Informing the surrounding landowners and communities in writing ahead of any blasting event.</p> <p>If you are concerned about your infrastructure, the specialist will place a vibro-recorder near your farm building to test the vibration of the blast.</p> <p>We trust you will find this in order. Please do not hesitate to contact us in the event of any uncertainties</p> <p>Mrs Sonette Smit</p>	
 Mr Sipho Samuel Mhlanga	No comments received	N/A	N/A	N/A
 Dulobase Pty Ltd	No comments received	N/A	N/A	N/A

<b>Interested and Affected Parties</b>		<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
<b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>					
 Magagula Family Communal Prop Assoc	X	No comments received	N/A	N/A	N/A
 Wouter Kuhn Trust	X	No comments received	N/A	N/A	N/A
<b>Municipal councillor</b>					
 Cllr Bongani Gladwell Motha	X	No comments received	N/A	N/A	N/A
<b>Municipality</b>					
 Gert Sibande District Office	X	No comments received	N/A	N/A	N/A
 Gert Sibande District Municipality	X	Comments received	<p>Response received from Lindokuhle Magagula - Gert Sibande District</p> <p>Gert Sibande District Municipality as a stakeholder and commenting party would like to enquire on whether a public participation meeting has been conducted for the proposed project and if not will one be held and when?</p>	<p>Thank you for your email. There is no public participation meeting scheduled at this stage. We will send you a link with the DBAR as soon as it is available, please send us your comments thereafter. Should you require a meeting with the EAP, kindly send us three possible dates for a zoom meeting after the commenting period ends on 31 January 2022.</p>	Appendix F2: Proof of public participation process
 Gert Sibande District Municipality - Planning	X	No comments received	N/A	N/A	N/A
 Msukaligwa Local Municipality	X	No comments received	N/A	N/A	N/A



Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
List the name of persons consulted in this column, and  Mark with an X where those who must be consulted were in fact consulted					
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					N/A
Department of Public Works, Roads and Transport	X	No comments received.	N/A	N/A	N/A
Eskom	X	Comments received.	<p>Response received from Herry Ludere - Eskom:</p> <p>Please receive attached Eskom Distribution Consent Letter, Annex D &amp; E and map layout. If you accept Eskom's condition please complete Annex D and E and send back to me before commencement of the project.</p> <p>Note : Eskom's Distribution consent doesn't relieve the applicant from obtaining the necessary statutory, land owner or municipal approvals.</p> <p>We thank you and hope that you find the above in order, and please don't hesitate to contact us should you've any queries or seek clarity</p>	<p>Good day,</p> <p>Your email dated 17 January 2022 refers.</p> <p>Your comments and conditions will be send to the applicant for further handling.</p> <p>We thank you for taking part in the public participation process.</p>	Appendix F2: Proof of public participation process
<b>Communities</b>	N/A	No community were identified within the study area.			

<b>Interested and Affected Parties</b>		<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
List the name of persons consulted in this column, and					
Mark with an X where those who must be consulted were in fact consulted					
<b>Dept. Land Affairs &amp; Environmental Affairs</b>					
Department of Agriculture, Rural Development, Land & Environmental Affairs	X	No comments received	N/A	NA	N/A
<b>Traditional Leaders</b>	N/A				
<b>Other Competent Authorities affected</b>					
Department of Labour - Mpumalanga Provincial Office;	X	No comments received	N/A	NA	N/A
Department of Water and Sanitation	X	No comments received	N/A	N/A	N/A
South African Heritage Resources Agency	X	No comments received	N/A	N/A	N/A
Department of Economic Development, Environment and Tourism	X	No comments received	N/A	N/A	N/A
Department of Economic Development, Environment and Tourism - Environmental Impact Management	X	No comments received	N/A	N/A	N/A
<b><u>OTHER AFFECTED PARTIES</u></b>					
N/A					
<b><u>INTERESTED PARTIES</u></b>					

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
Mr Inus De Wit	Comments received	<p>Hi Sonette,</p> <p>Trust you are well? Please register me as an IAP for the mining permit application on portion 15 of Retspruit in Ermelo.</p>	<p>Good day Mr de Wit,</p> <p>Thank you for your emails dates 3 and 24 January 2022. You are registered as interested and affected party on this application and will receive future correspondence in this regard</p>	Appendix F2: Proof of public participation process
Mr Johan van Greunen (Rietspruit Crushers PTY LTD)	Comments received	<p>Dear Sonette</p> <p>Your notice of application in terms of section 27 of the Minerals and Petroleum Resources Development Act for Inzalo Crushing and Aggregates (Pty) Ltd – MP 30/5/1/3/2/13080 MP bears reference.</p> <p>Rietapruit Crushers, is a miner and supplier of sand and aggregate products based in Ermelo and has been in operation for more than 40 years. We have a long and proud record of creating jobs and empowering the community and intent on doing so for another 40 years.</p> <p>Rietspruit Crushers would like to officially register as an interested and affected party and lodge our objection to the mining permit applications made by Inzalo Crusing and Aggregates (Pty) Ltd for “Dolerite, Gravel and Sand” on Portion 15 if the farm Rietspruit 437 IS, in the magisterial district of Ermelo, Mpumalanga. The proposed mining permit area is situated on the farm portion adjacent to Rietspruit Crusher mining licence area.</p> <p>We are not in favour of your application and will oppose it. The basis of our objection is as follows:</p>	<p>Dear Sir,</p> <p><b>RE NOTICE OF APPLICATION IN TERMS OF SECTION 27 OF THE MINERALS AND PETROLEUM RESOURCES DEVELOPMENT ACT 28 OF 2002 (“MPRDA”) AND THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT 107 OF 1998 (“NEMA”) AS WELL AS THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 (AS AMENDED 2017)</b></p> <p>We refer to the above matter and your letter dated 20 January 2022. We take note of the contents of your abovementioned letter and wish to reply to your objections on a point-by-point basis.</p> <p>From the outset it is important to note that the Background Information Document dated 9 December 2021 is a document providing background for the first phase of this proposed project. More information relating to the project will be provided in the Draft Basic Assessment Report. The purpose of the Background Information Document is to invite parties to register as interested and affected parties. The effects and impacts of the proposed activity will only be assessed when the Draft Basic Assessment Report is compiled. All interested and affected parties will be afforded ample opportunity to</p>	Appendix F2: Proof of public participation process

<p><b>Interested and Affected Parties</b></p> <p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>	<p><b>Date Comments Received</b></p>	<p><b>Issues raised</b></p>	<p><b>EAPs response to issues as mandated by the applicant</b></p>	<p><b>Section and paragraph reference in this report where the issues and or response were incorporated.</b></p>
		<p><b>1. <u>Environmental Studies:</u></b></p> <p>In your notification you stated that the proposed project trigger listed activities and therefore requires full Environmental Impact Assessment (EIA) to be conducted. We agree with this point however, further in the document you kept referring to a draft Basic Assessment that will compiled for this project. Due to the listed activities that will be triggered a Basic Assessment will not be sufficient and a full EIA will need to be completed. In your Background Information Document, you do not mention what critical specialist studies will be conducted. In these studies, we are supposed to see what the impacts of your mine will have on the following categories:</p> <ul style="list-style-type: none"> <li>• Air quality</li> <li>• Archaeology</li> <li>• Surface Water</li> <li>• Groundwater</li> <li>• Ecology</li> <li>• Land use &amp; planning</li> <li>• Waste management</li> <li>• Economy</li> <li>• Noise</li> <li>• Soil</li> <li>• Visual</li> <li>• Quality of life</li> <li>• Nuisance</li> </ul> <p>In your notification you do not state that you will apply for a water use license in terms of section 40 of the National water Act, 36 of 1998. We find this to be of concern due to the</p>	<p>comment on the proposed activity and its possible impacts.</p> <p><b>Environmental Studies:</b></p> <p>In your letter, you state the following:</p> <p>In your notification you stated that the proposed project triggers listed activities and therefore requires [a] full Environmental Impact Assessment to be conducted. We agree with this point however, further in the document you kept referring to a draft Basic Assessment that will [be] compiled for this project. Due to the listed activities that will be triggered a Basic Assessment will not be sufficient and a full EIA will need to be compiled. The full EIA which is required will be based on specialist studies that will have to be completed. In your Background Information Document, you do not mention what critical studies will be conducted. In these studies, we are supposed to see what the impacts of your mine will have on the following categories: air quality, archaeology, surface water, groundwater, ecology, land use &amp; planning, waste management, economy, noise, soil, visual, quality of life and nuisance.</p> <p>As stated in the Background Information Document, the proposed project triggers five listed activities in terms of the National Environmental Management Act (Act 107 of 1998) (hereinafter referred to as “NEMA”) and the Environmental Impact Assessment Regulations 2014 (as amended 2017) (hereinafter referred to as the “EIA Regulations”). These listed activities are: GNR 327 Listing Notice 1 of 2017 Activity 21, GNR 327 Listing Notice 1 of 2017 Activity 27, GNR 327 Listing Notice 1 of 2017 Activity 28, GNR Listing</p>	

<p><b>Interested and Affected Parties</b></p> <p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>	<p><b>Date Comments Received</b></p>	<p><b>Issues raised</b></p>	<p><b>EAPs response to issues as mandated by the applicant</b></p>	<p><b>Section and paragraph reference in this report where the issues and or response were incorporated.</b></p>
		<p>fact that your proposed pit will be within 500m from the delineated riparian and/or wetland zone pertaining to a water body (be it a wetland, pan perennial or non-perennial water course or the like). Note, that under the latest DWS requirement the 500m is not from the centre of the relevant water body, but from the edge of the delineated riparian and/or wetland zone as defined by the relevant regulation. However, your notification omits the following critical studies which forms part of the application for a water use license. These studies include:</p> <ul style="list-style-type: none"> <li>• Wetland delineation study</li> <li>• Biodiversity and Ecology study</li> <li>• Soil Study</li> <li>• Geohydrological study</li> </ul> <p>As interested and affected parties Rietspruit Crushers require to see what impacts have been identified by all the necessary specialist studies which you should have conducted and how will these impact be addressed. In the absence of any specialist studies, Rietspruit Crushers will be lead to the conclusion that the impact of the mining and operational activities will be detrimental to the environmental and also that the guidelines for applying for a water use license was not following which cause Rietspruit Crushers to further object to this application for a mining a permit. In your notification you failed to indicate any maps or diagrams indicating the relevant buffer zones around the relevant water bodies. Therefore, Rietspruit Crushers can only deduce that the required mandatory specialist studies have not been conducted therefore Rietspruit Crushers</p>	<p>Notice 1 of 2017 Activity 35 and GNR Listing Notice 1 of 2017 Activity 4(f)(i)(ee).</p> <p>It is common cause that activities which fall under Listing Notice 1 of the EIA Regulations do not require the full EIA process, but rather the Basic Assessment process. Accordingly, an EIA need not be conducted for the proposed project, as none of the proposed activities trigger an activity under Listing Notice 2 of the EIA Regulations.</p> <p>It is evident from the Background Information Document that, in line with the relevant legislation and regulations, provision will be made for the basic assessment process that assess project specific environmental impacts and alternatives, consider public input and propose mitigation measures to ultimately culminate in an environmental management programme that informs the competent authority (the Department of Mineral Resources and Energy) when considering the environmental authorisation.</p> <p>Again, we reiterate that the Background Information Document merely serves as a means to provide background information for the purpose of the first phase of this proposed project. The effects of the impacts of the proposed activity will be assessed when the Draft Basic Assessment Report is compiled. Any further studies as proposed by you will then be conducted during this phase should it be found applicable by the specialist in the particular field of expertise.</p> <p>Furthermore, you state that the proposed project will trigger Listing Notice 2 Activity 21. This is incorrect, seeing as this activity was repealed in 2021.</p>	

<p><b>Interested and Affected Parties</b></p> <p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>	<p><b>Date Comments Received</b></p>	<p><b>Issues raised</b></p>	<p><b>EAPs response to issues as mandated by the applicant</b></p>	<p><b>Section and paragraph reference in this report where the issues and or response were incorporated.</b></p>
		<p>is not awarded the opportunity to comment on the impacts of the mine and what mitigations measures have or are proposed to minimise and reduce the impacts.</p> <p>You have also omitted the fact that a full Environmental Impact Assessment will have to be conducted due to the fact that the activities on your mining premises will trigger GNR 984 Listing Notice 2 Activity 21 IN ADDITION TO GNR 983 Activities 21, 22 and 35 listing Notice 1. You do not state in the notification of Inzalo Crushing and Aggregates (Pty) Ltd intention to apply for a mining permit that this process will be followed and that all the mandatory specialist studies will be conducted. This point also emphasized the fact that you are failing to provide Rietspruit Crushers the opportunity to provide informed comments on your application.</p> <p><b><u>2.Socio-economic Impact</u></b></p> <p>It is clear to Rietspruit Crusher that the necessary socio-economic impact studies have been omitted from the mining permit application. These studies should include:</p> <ul style="list-style-type: none"> <li>• Social and labour impact study</li> <li>• Marketing survey and analysis</li> </ul> <p>Failure to conduct such studies indicates that you have not adequately considered the financial feasibility of a second quarry in the Msukwalikwa area, especially in close proximity to an already established quarry, and if such a quarry, and if such a quarry will be able to operate profitably in an already</p>	<p>You further state under this heading that an application for a water use license in terms of section 40 of the National Water Act 36 of 1998 (“NWA”) will have to be brought in relation to the proposed project, seeing that the “proposed pit will be within 500m from the delineated riparian and/or wetland zone pertaining to a water body”. We do not dispute the fact that a water use license will be necessary in the event of the occurrence of such an activity. However, the proposed project does not fall within 500 meters from the delineated riparian and/or wetland zone. A wetland study is currently being undertaken in order to corroborate this statement and more information in relation thereto will be available in the Draft Basic Assessment Report. Should an application in terms of section 40 of the NWA be necessary, this will be set out in the Draft Basic Assessment Report.</p> <p><b>Social-economic impact</b></p> <p>You state that the necessary socio-economic impact studies have been omitted from the mining permit application and that these studies should include a social and labour impact study and a marketing survey and analysis.</p> <p>As mentioned in the Background Information Document, the aggregate to be removed from the quarry will be used for local construction and building projects in the vicinity. Should any additional workers be required for this project, they will be sourced from the local community. Due to the small size of the proposed operation, we are of the opinion that these studies are not required.</p>	








<p><b>Interested and Affected Parties</b></p> <p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>	<p><b>Date Comments Received</b></p>	<p><b>Issues raised</b></p>	<p><b>EAPs response to issues as mandated by the applicant</b></p>	<p><b>Section and paragraph reference in this report where the issues and or response were incorporated.</b></p>
		<p>constrained market. It also indicates that you have not considered the effect that a second quarry will have on Rietspruit Crushers and the potential job losses which Rietspruit Crushers may then face as a consequence. Therefore, you have not considered the negative impact which your quarry will have on the local employment in the area.</p> <p>It should be noted that Rietspruit Crushers has been mining and producing aggregates for over 40 years and over that span Rietspruit Crushers has experienced the full swing of the volatility in the market. Despite the necessary socio-economic studies not being conducted or the failure to even consider conducting these studies, this amplifies the point that you have not taken due care in considering the market in which you want to operate and that you are ill-informed on the sustainability of a second quarry in Ermelo</p> <p><b><u>3. Abusing of the mining permit system</u></b></p> <p>Further to Rietspruit Crushers objection is the fact that you're the 5th application for a mining permit in the last ten years on this portion. This is a clear abuse and violation of the intent behind the mining permit application of the Department of Mineral Rights. A mining permit is valid for the period specified in the permit which may not exceed a period of two years and may be renewed for three periods each of which may not exceed one year. A mining right is granted for larger operations and longer periods (more than 2 years). For what you are planning it is clear that you do not want to apply for a full mining right and that you are</p>	<p>We will, however, consult with an expert specialist in this particular field and elaborate on the above in the Draft Basic Assessment Report.</p> <p><b>Abusing of the mining permit system</b></p> <p>The area lends itself to prospecting and mining. Inzalo Crushing and Aggregates (Pty) Ltd has no intention of mining in the area for a period longer than five years and in an area that is larger than 4.9 ha.</p> <p>We cannot comment on the intention of other companies in the past.</p> <p>We trust you find the above in order.</p>	

<b>Interested and Affected Parties</b> <b>List the name of persons consulted in this column, and</b> <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
		<p>attempting to by-pass the requirements by applying for a mining permit. This indicates that you do not want to compete on a level playing field with Rietspruit Crushers and comply with all the necessary regulations which you would need to comply with when you have a mining right. This improper.</p> <p>The points raised here are not exhaustive. Even so we feel it is sufficient reason for us to oppose your application in its current form. Should there be any change and/or amendment to your documentation arising from this process, please forward it to us. We would appreciate your formal acknowledgement of receipt of our comments as well as any feedback pertaining to it within 10 working days.</p> <p>Kind regards</p>		
Mr George Ronquest	No comments received	N/A	N/A	N/A
Mr Christo Clark	No comments received	N/A	N/A	N/A
Mr Jannie Myburgh	No comments received	N/A	N/A	N/A
Mr Kerneels van Rensburg	No comments received	N/A	N/A	N/A
Mr Riaan van Rensburg	No comments received	N/A	N/A	N/A
Me Rika Hamman	No comments received	N/A	N/A	N/A
Mr Werner Labuschagne	No comments received	N/A	N/A	N/A



Table 11: Summary of issues raised by IAPs during the DBAR phase

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.
<b>AFFECTED PARTIES</b>	X				
<b>Landowner/s</b>					
Gerhard Scheepers Trust	X	No comments received			N/A.
<b>Lawful occupier/s of the land</b>					
N/A		N/A	N/A	N/A	
<b>Landowners or lawful occupiers on adjacent properties</b>	X	-	-	-	-
De Era Trust	X	No comments received	N/A	N/A	N/A
Oubaas De Jager Familie Trust	X	No comments received	N/A	N/A	N/A
Me Rachel Monica Phumzile Khanyi	X	No comments received during BID phase no further correspondance sent	N/A	N/A	N/A
Mr Karel Stefanus Erasmus	X	No comments received	N/A	N/A	N/A
Mr Sipho Samuel Mhlanga		No comments received	N/A	N/A	N/A
Dulobase Pty Ltd		No comments received	N/A	N/A	N/A

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
<p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>					
 Magagula Family Communal Prop Assoc	X	No comments received	N/A	N/A	N/A
 Wouter Kuhn Trust	X	No comments received	N/A	N/A	N/A
<b>Municipal councillor</b>					
 Cllr Bongani Gladwell Motha	X	No comments received	N/A	N/A	N/A
<b>Municipality</b>					
 Gert Sibande District Office	X	<b>Late comments received 13 May 2022</b>	Please see attached comments and response report Appendix F for comments from Gert Sibande District Municipality.	Please note the commenting period for this report losed on <b>9th May 2022</b> . Your comments received will however be added as annexure F3 (Late Comments) to the Final Basic Assessment Report to be submitted to DMRE for their decision making.  All comments received from you are noted and will be adhered to.  We trust you will find this in order. Please do not hesitate to contact us in the event of any uncertainties.	Appendix F3: Late Comments
 Gert Sibande District Municipality	X				
 Gert Sibande District Municipality - Planning	X				
 Msukaligwa Local Municipality	X	No comments received	N/A	N/A	N/A
<b>Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e</b>					N/A

<b>Interested and Affected Parties</b>		<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
<b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>					
Department of Public Works, Roads and Transport	X	No comments received.	N/A	N/A	N/A
Eskom	X	No comments received.	N/A	N/A	N/A
<b>Communities</b>	N/A	No community were identified within the study area.			
<b>Dept. Land Affairs &amp; Environmental Affairs</b>					
Department of Agriculture, Rural Development, Land & Environmental Affairs	X	No comments received	N/A	NA	N/A
<b>Traditional Leaders</b>	N/A				
<b>Other Competent Authorities affected</b>					
Department of Labour - Mpumalanga Provincial Office;	X	No comments received	N/A	NA	N/A
Department of Water and Sanitation	X	No comments received	N/A	N/A	N/A
South African Heritage Resources Agency	X	No comments received	N/A	N/A	N/A

<b>Interested and Affected Parties</b>		<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
<b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>					
Department of Economic Development, Environment and Tourism	X	No comments received	N/A	N/A	N/A
Department of Economic Development, Environment and Tourism - Environmental Impact Management	X	No comments received	N/A	N/A	N/A
<b>OTHER AFFECTED PARTIES</b>					
N/A					
<b>INTERESTED PARTIES</b>					
Mr Inus De Wit		No comments received	N/A	N/A	N/A
Mr Grant Wishart (Rietspruit Crushers PTY LTD)		Comments received	<p>The purpose of this communication is to lodge our objection to mining permit applications currently being evaluated by the Department of Mineral Resources (DMR) in the Ermelo area.</p> <p>Rietspruit Crushers and Construction ('RC') is a miner and supplier of aggregate gravel and sand products based in Ermelo and has been in operation for more than 40 years. We have a long and proud record of creating jobs and empowering the community and intend on doing so for another 40 years.</p> <p>Rietspruit Crushers and Construction hereby register their objection to the mining permit applications made by Inzalo Crushing and Aggregates (Pty) Ltd for "Stone Aggregate and Gravel" on Portion 15 of the farm Rietspruit 437 IS, in the magisterial district of Ermelo, Mpumalanga. The proposed mining permit</p>	<ul style="list-style-type: none"> <li>Objection noted, please also note the Department is referred to as the Department of Mineral Resources and Energy (DMRE)</li> </ul>	Appendix F2: Proof of public participation process

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
		<p>area is situated on the farm portion adjacent to Rietspruit Crushers and Construction mining licence area.</p> <p>Rietspruit Crushers and Construction has registered as an interested and affected party with Greenmined (the environmental consultant used by Inzalo Crushing and Aggregates (Pty) Ltd) and has provided the applicant with our comments.</p> <p>RC is not in favour of the application and hereby oppose it. The basis of our objection is as follows:</p> <p>Detailed Description of Activities, and Required Environmental/Specialist Studies:</p> <p>In the notification the applicant stated that they will not apply for a water use license in terms of section 40 of the National water Act, 36 of 1998, but will use water under a General Authorisation (GA). We disagree that a GA will be sufficient. A WUL will be required, due to the fact that the applicant's proposed pit, as per the general map provided, will be within 500m from the delineated riparian and/or wetland zone pertaining to a water body (be it a wetland, pan, perennial or non- perennial water course or the like). Note, that under the latest DWS requirement the 500m is not from the centre of the relevant water body, but from the edge of the delineated riparian and/or wetland zone as defined by the relevant regulation. On their own version, the applicants' activities are 130m from a</p>		

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
		<p>delineated wetland. Furthermore, the applicant's notification failed to indicate any maps or diagrams with the relevant/applicable buffer zones around the relevant water bodies and/or delineated features.</p> <p>The above is a fatal flaw in their application.</p>	<p>We take note of your comments above, please keep in mind that the Department of Water and Sanitation is the competent authority in this regard and said department will confirm whether a water use license is required, during their review period.</p> <p>Please note that a background information document serves as an information document to invite parties to register as interested and affected parties. The effects and impacts of the proposed activity as well as conducted studies are only assessed during the Draft Basic Assessment phase. All interested and affected parties were afforded ample opportunity to comment on the proposed activity and its possible impacts during the DBAR phase.</p> <p>As per the DBAR the proposed mining area falls within the C11F quaternary catchment which falls within the upper reaches of the Vaal River primary catchment that is situated in the Upper Vaal Water Management Area which is managed by the Department of Water and Sanitation (DWS). A small wetland system is located 130m from the</p>	

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
			<p>southern border of the site. According to the Risk Assessment conducted by DPR Ecologist, - mining within close proximity of the valley-bottom wetland is anticipated to have a low risk as long as a 100-meter buffer between the edge of the wetland as delineated and the quarry excavations, stockpile areas, chemical toilets, wastes and any hazardous materials (diesel, etc.) are maintained. A small artificial dam and wetland area forming in previous excavations occur approximately 450 meters to the west of the site. These artificial wetland areas also fall within a separate catchment, upstream of the site and therefore the proposed mining area will not be able to have any effect on these artificial wetland areas. Therefore, proposed project does require a General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998) which will be submitted to DWS by the applicant prior to commencement of mining activities on this application.</p> <p>Please note that the specialist study containing buffer zones as indicated in the DBAR was attached as Appendix M Wetland Assessment Report.</p>	

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
		<p>The applicant has omitted the fact that a full Environmental Impact Assessment will have to be conducted due to the fact that the activities on the applicant's mining premises will trigger GNR 984 Listing Notice 2 Activity 21 IN ADDITON TO GNR 983 Activities 21, 22 and 35 listing Notice 1. The applicant did not state in the applicant's notification, that this process will be followed and that all the mandatory specialist studies will be conducted. This point emphasizes the fact that the applicant is failing to afford interested and affected parties the opportunity to provide informed comments to the application.</p>	<p>The Background Information Document clearly stipulates that provision will be made for the basic assessment process that assess project specific environmental impacts and alternatives, in line with the relevant legislation and regulations, consider public input and propose mitigation measures to ultimately culminate in an environmental management programme that provides the competent authority (the Department of Mineral Resources and Energy) with sufficient information when considering the environmental authorisation.</p> <p>Again, we reiterate that the Background Information Document merely serves as a means to provide background information for the purpose of the first phase of this proposed project. The effects of the impacts of the proposed activity were assessed during the Draft Basic Assessment phase. Any further studies proposed during the initial phase were then conducted should it be found applicable by the specialist in the particular field of expertise.</p>	



<p><b>Interested and Affected Parties</b></p> <p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>	<p><b>Date Comments Received</b></p>	<p><b>Issues raised</b></p>	<p><b>EAPs response to issues as mandated by the applicant</b></p>	<p><b>Section and paragraph reference in this report where the issues and or response were incorporated.</b></p>
		<p>Basic Assessment Report versus full EMP complete with EIA</p> <p>By virtue of the listed activities (i.e., mining as well as crushing and screening to be performed within 500m from the riparian zone/delineated wetland feature) and the proximity to the water bodies, the applicant failed to inform the authority that a full EIA with EMP needs to be performed and have in fact premised the application on a Basic</p>	<p>The proposed project triggers five listed activities in terms of the National Environmental Management Act (Act 107 of 1998) (hereinafter referred to as “NEMA”) and the Environmental Impact Assessment Regulations 2014 (as amended 2017) (hereinafter referred to as the “EIA Regulations”). These listed activities are: GNR 327 Listing Notice 1 of 2017 Activity 21, GNR 327 Listing Notice 1 of 2017 Activity 27, GNR 327 Listing Notice 1 of 2017 Activity 28, GNR Listing Notice 1 of 2017 Activity 35 and GNR Listing Notice 1 of 2017 Activity 4(f)(i)(ee).</p> <p>Furthermore, you state that the proposed project will trigger Listing Notice 2 Activity 21. <b><u>This is incorrect, considering that Listing Notice 2 Activity 21 has been repealed.</u></b></p> <p>The application was made in accordance with the identified listing notices, and therefore no need exists to burden the competent authority with the magnitude of a full EIA with EMP thereto.</p> <p>This application falls within the ambit of Listing Notice 1 Activity 21, as revised on 11 June 2021, which substituted activity reads as follows:</p>	

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
		<p>Assessment Report. This is a fatal flaw, as this is the incorrect process and procedure.</p> <p>We can only conclude that this is an attempt to bypass the more rigorous requirements under a full EIA with EMP, as well as the need for a WUL that also includes the required (i) and (j) water use aspects.</p> <p>Socio-economic Impact</p> <p>The necessary socio-economic impact studies have been omitted from the mining permit application. These studies should include:</p> <p>Social and labour impact study</p> <p>Marketing survey and analysis</p>	<p>“21. Any activity, including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the mining permit.”</p> <p>It should therefore be clear that the listing notices triggered as part of this application only requires a Basic Assessment to be conducted, which would have rendered a full EIA application superfluous in terms of expenditure and a waste of departmental resources, especially in light thereof that Listing Notice 2 Activity 21 has been repealed.</p> <p>Your allegations contained in your objections that this application is based on fatal flaws is therefore unfounded and should be disregarded as such.</p> <p>Your comments with regards to socio-economic impacts are noted, however, we disagree with your stance that this proposed project will have a detrimental impact on the</p>	

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
		<p>A basic screening on the social and labour impacts have been performed, but this is clearly insufficient by virtue of a full EIA with EMP as well as the triggering of the listed activities under NEMA.</p> <p>Failure to conduct such studies indicates that the applicant has not considered the financial feasibility of a second quarry in the Msukaligwa area, especially in close proximity to an already established quarry, and if such a quarry will be able to operate profitably in an already constrained market. The applicant also has not considered the effect that their quarry will have on Rietspruit Crushers and the potential job losses which Rietspruit Crushers will be facing. In all respects, the applicant has not considered the negative impact their operation will have on the local employment in the area.</p> <p>It should be noted that Rietspruit Crushers has been mining and producing aggregates for over 40 years and over that timespan Rietspruit Crushers has experienced the full swing of the volatility in the market. The failure of the applicant to conduct and make these studies available, amplifies the point that that the applicant is not affording interested and affected parties the opportunity to comment on all their impacts.</p> <p>It is lastly noted, and expanded upon below, that this is an abuse of the mining permit system, to by-pass the more rigorous</p>	<p>local economy. In the event that this application is granted, this operation will not only increase employment opportunities in the area, which area suffers from extreme unemployment but will also boost the local economy.</p> <p>It is very clear from the objections that Rietspruit Crushers may well wish to maintain the existing monopoly in terms of mining &amp; / or quarrying activities in the Ermelo area, with specific reference to the aggregate &amp; building material production and supply market, which is in direct contradiction to the objectives of the Mineral and Petroleum Resources Development Act, 2002 (as amended), as well as the provisions of the Competition Act, 1998 (as amended).</p> <p>It is also clear from your objections that Rietspruit Crushers has an existing mining right, which we assume is valid and compliant. RC should thus be aware that the legislative provisions only require a mining right application to be accompanied by a Social and</p>	

<p><b>Interested and Affected Parties</b></p> <p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>	<p><b>Date Comments Received</b></p>	<p><b>Issues raised</b></p>	<p><b>EAPs response to issues as mandated by the applicant</b></p>	<p><b>Section and paragraph reference in this report where the issues and or response were incorporated.</b></p>
		<p>requirements of a mining authorisation, and more specifically of the Social and Labour plan requirements. A full SLP study that included the aforementioned studies listed above, will clearly indicate that this project is not viable, and in fact will have a detrimental effect on the local economy. Instead of stimulating healthy competition, it allows the applicant an artificially reduced requirement (i.e., by abusing the mining permit system) to compete with an established mine and undermine the market and viability of an operation that has been operating for a few decades.</p> <p>Abusing of the mining permit system</p> <p>Further to the above, Rietspruit Crushers and Construction note the fact that this application is the 5th application for a mining permit in the specific area over the last eight years. This is and remains a clear abuse and violation of the intent behind the mining permit application of the Department of Mineral Resources and Energy.</p> <p>As per feedback from previous objections lodged to the DMRE, the DMRE has indicated that it seeks to promote mining permits to allow NEW ENTRANTS (i.e., specifically emerging BEE entrants) easy access to the mining industry. The applicant, being Inzalo Crushing and Aggregates (Pty) Ltd, clearly is NOT a new BEE entrant, thus does not qualify under this policy. The applicant is in fact</p>	<p>Labour Plan, therefore, in the premises, a Social and Labour Plan would have been superfluous as part of this mining permit application.</p> <p>It should be noted that the applicant is well aware of the requirements &amp; differences in requirements, for a mining permit and a mining right.</p> <p>Although we cannot comment on other mining permit applications applied for within the area, it should be noted, that the area lends itself to prospecting and mining, and the MPRDA is clear that mining should be promoted. Inzalo Crushing and Aggregates (Pty) Ltd has no intention of mining in the area for a period longer than five years and in an area above its approved area, if this application is approved.</p> <p>Inzalo Crushing and Aggregates (Pty) Ltd comply with all the relevant BEE provisions as prescribed in the MPRDA, the Mining Charter and all other relevant empowerment provisions.</p>	

<p><b>Interested and Affected Parties</b></p> <p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>	<p><b>Date Comments Received</b></p>	<p><b>Issues raised</b></p>	<p><b>EAPs response to issues as mandated by the applicant</b></p>	<p><b>Section and paragraph reference in this report where the issues and or response were incorporated.</b></p>
		<p>Attached please find correspondence from Inzalo which specifically cites them as c/o (care of B&amp;E International); furthermore, you will notice that Mr C Weideman is a director of B&amp;E as well as the consultants Greenmined Environmental. It is evident that B&amp;E wish to extract aggregates from a 'borrow pit' or permit for road building purposes, by way of permit. This at the expense of the local businesses. Furthermore, the property has had 3 permits previously thus fully exhausting the legally allowed number on the same property.</p> <p>As per the MRPDA, a mining permit is valid for the period specified in the permit which may not exceed a period of two years and may be</p>	<p>Once again it is evident from the objections that RC is against this application solely due to the monopoly that it wishes to maintain within the area.</p> <p>Kindly note that Inzalo and B&amp;E specialize in the mining of aggregate, crushing and the provision of material for road building &amp; construction purposes. The objections are contradictory as it states that this application, if approved, will have a detrimental impact on the employment and economy of the area, but, on the other hand, it is inferred that the purpose of the permit is for road building purposes, which will not only boost the local economy and maintain the local infrastructure, but also ensure an increase in local employment for the next 5-years.</p> <p>We take note of your further comments and would like to request you to kindly provide us with the documentation in which the <i>"legally allowed number of mining permits"</i> are prescribed, as well as the formal policy published by the DMRE in terms of new entrants.</p>	

<p><b>Interested and Affected Parties</b></p> <p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>	<p><b>Date Comments Received</b></p>	<p><b>Issues raised</b></p>	<p><b>EAPs response to issues as mandated by the applicant</b></p>	<p><b>Section and paragraph reference in this report where the issues and or response were incorporated.</b></p>
		<p>renewed for three periods each of which may not exceed one year. This means a mining permit is generally applicable for 2-5 years.</p> <p>A mining right/authorisation is granted for larger operations and longer periods (more than 5-25 years).</p> <p>As per previous feedback received from the DMRE in regards to the referred policy, these new entrants will be expected to apply for a Mining Right/Authorisation after the initial Mining Permit has lapsed. However, and as mentioned, the above mining permit application is the fifth in a series of Mining Permits applied in the area (3 have been previously granted). We also point out that, prior to these mining permits, illegal sand mining operations were conducted on this area by the surface owner. It follows that the only instrument that could be legally contemplated on this property is a fully-fledged mining right application.</p> <p>From the historic facts and the current application before us and as stated elsewhere, RC can only conclude that the applicant is using the Mining Permit process in an attempt to by-pass the requirements of a mining authorisation, most notably a full Social and Labour Plan. The DMRE should only allow further mining authorisation applications in the specific area, i.e., full-fledged mining right application that are based upon proper exploration and feasibility studies,</p>	<p>We take note of your comments, but please refrain from making assumptions or allegations. Inzalo cannot be held responsible for previous illegal mining activities which were conducted in the area, by surface owners, probably many years ago. This application indeed demonstrates Inzalo's commitment to conducting legal mining activities.</p> <p>Kindly be advised that Inzalo will be guided by the competent authority in this regard, as you do not have the authority to instruct the application of a <i>“fully-fledged mining right”</i>.</p> <p>This application falls within the ambit of Listing Notice 1 Activity 21, as revised on 11 June 2021, which substituted activity reads as follows:</p>	

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
		<p>Please note that the points raised here are not exhaustive.</p> <p>Should the applicant persist in their attempts to obtain a Mining Permit application in the area, at least they should follow the correct process that will be applicable under a Mining Permit, that triggers the stated listed activities (i.e., full EIA with EMP as well as WUL).</p> <p>Furthermore, we will continue to object and oppose any mining permit application made in an attempt to circumvent the requirements of a mining authorisation application.</p> <p>We have also engaged on this matter with other stakeholders, including the Rietspruit Crushers and Construction Employee Trust, and the relevant employees' trade unions.</p>	<p>“21. Any activity, including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the mining permit.”</p> <p>Not only is the view of the applicable legislative provisions incorrect, but you are basing the objections on a repealed listing notice.</p> <p>We take note of your further comments, all comments received as well as our response will be incorporated in the Final Basic Assessment Report to be submitted to DMRE for their consideration.</p> <p>. Kindly note that we will be guided by the competent authority in terms of any further matters.</p> <p>We thank you for your participation in this process and will keep you informed of the progress of this application.</p>	

<b>Interested and Affected Parties</b> List the name of persons consulted in this column, and  Mark with an X where those who must be consulted were in fact consulted	<b>Date Comments Received</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
Mr George Ronquest	No comments received during BID phase no further correspondance sent	N/A	N/A	N/A
Mr Christo Clark	No comments received	N/A	N/A	N/A
Mr Jannie Myburgh	No comments received	N/A	N/A	N/A
Mr Kerneels van Rensburg	No comments received	N/A	N/A	N/A
Mr Riaan van Rensburg	No comments received	N/A	N/A	N/A
Me Rika Hamman	No comments received	N/A	N/A	N/A
Mr Werner Labuschagne	No comments received	N/A	N/A	N/A



**iv) The Environmental attributes associated with the alternatives.**

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

**(1) Baseline Environment**

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

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

This section describes the biophysical, cultural and socio-economic environment that may be affected and the baseline conditions, which are likely to be affected by the proposed mining activity.

**PHYSICAL ENVIRONMENT**

**CLIMATE**

According to the weather online website, Ermelo lies on 1759m above sea level. Ermelo is influenced by the Köppen-Geiger climate. Annually, the rainfall is 883 mm. In Ermelo, the climate is warm and temperate. The summers here have a good deal of rainfall, while the winters have very little. In Ermelo, the average annual temperature is 14.7 °C | 58.4 °F. In a year, the rainfall is 883 mm | 34.8 inch. The driest month is June. There is 7 mm | 0.3 inch of precipitation in June. Most of the precipitation here falls in December, averaging 172 mm | 6.8 inch.

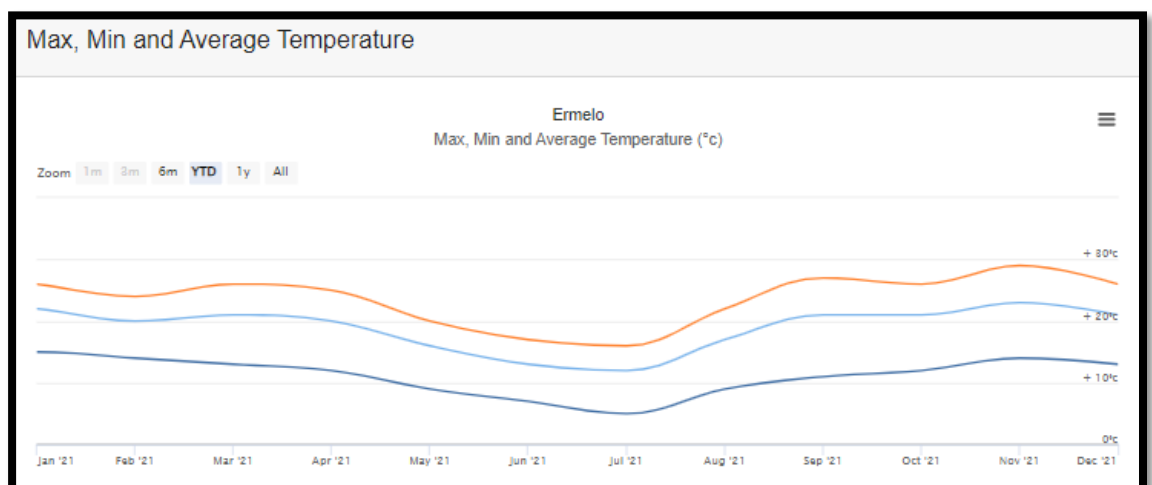


Figure 9: Statistical representation of the temperatures for the Ermelo region (Chart obtained from <http://www.worldweatheronline.com>).

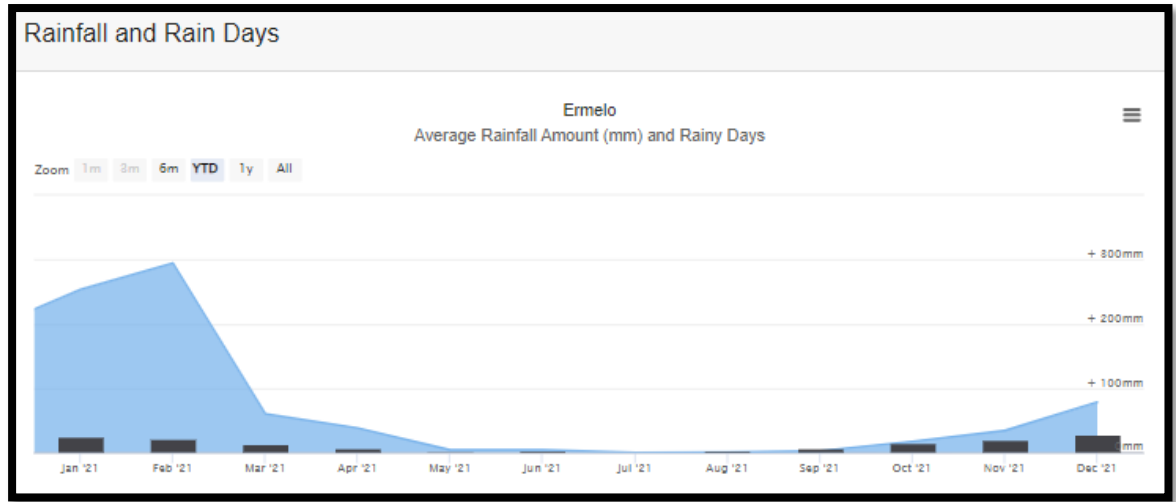


Figure 10: Statistical representation of the precipitation for the Ermelo region (Chart obtained from <http://www.worldweatheronline.com>).

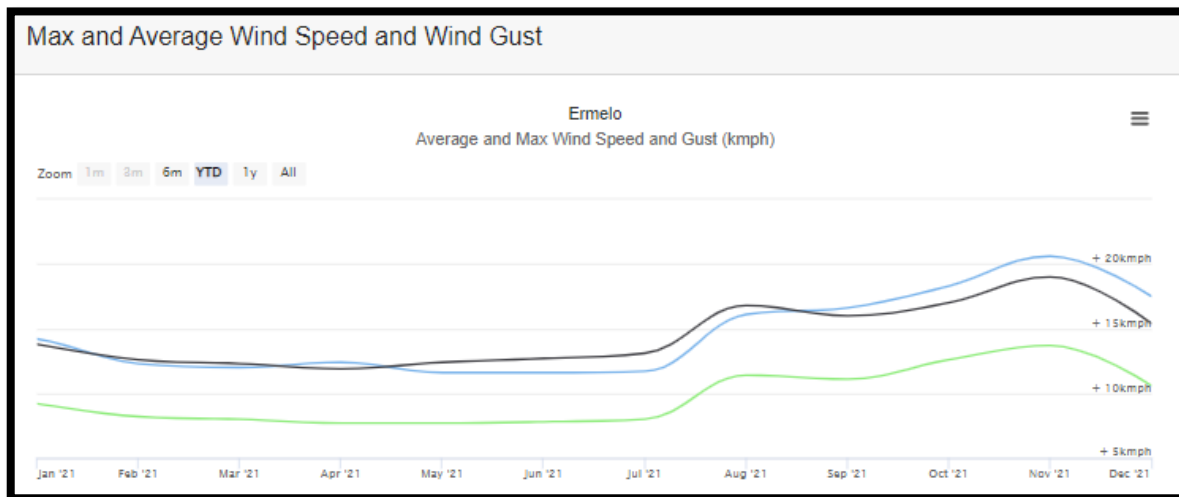


Figure 11: Statistical representation of the wind speed for the Ermelo region (Chart obtained from <http://www.worldweatheronline.com>).

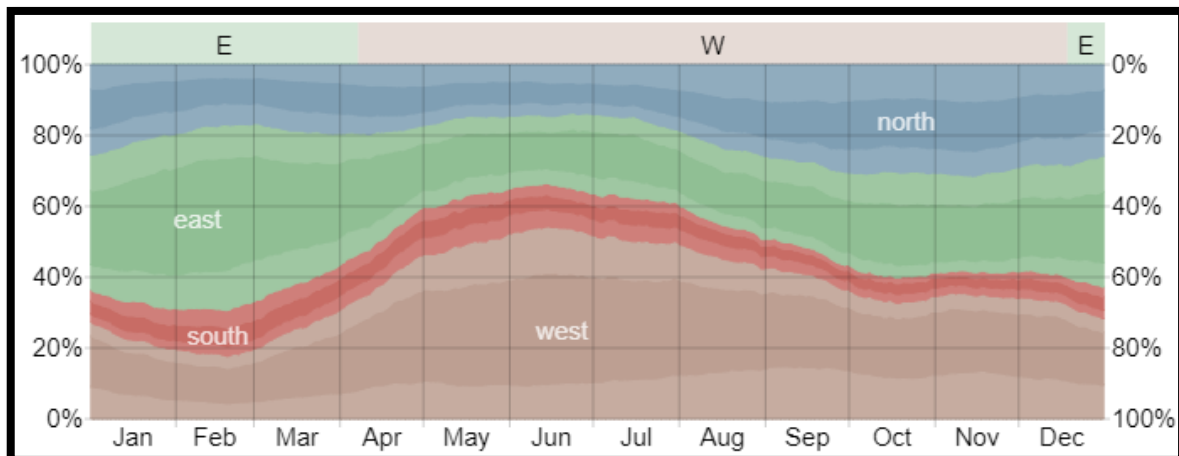


Figure 12: Prevalent wind direction for the Ermelo area (image obtained from <https://weatherspark.com/y/95838/Average-Weather-in-Ermelo-South-Africa-Year-Round>)

According to the wind statistics as presented on Weatherspark.com, the predominant average hourly wind direction in Ermelo varies throughout the year. The wind is most

often from the west for 8.4 months, from April 7 to December 18, with a peak percentage of 54% on June 14. The wind is most often from the east for 3.6 months, from December 18 to April 7, with a peak percentage of 38% on January 1.

## TOPOGRAPHY

The natural topography of the proposed excavated comprised of undulating grassland plains, with small scattered patches of dolerite outcrops in areas. The vegetation is comprised of a short closed grassland cover, largely dominated by a dense Themeda triandra sward, often severely grazed to form a short lawn. The elevation loss from the proposed mining footprint to the town of Ermelo to be 1759m over 6.59km.

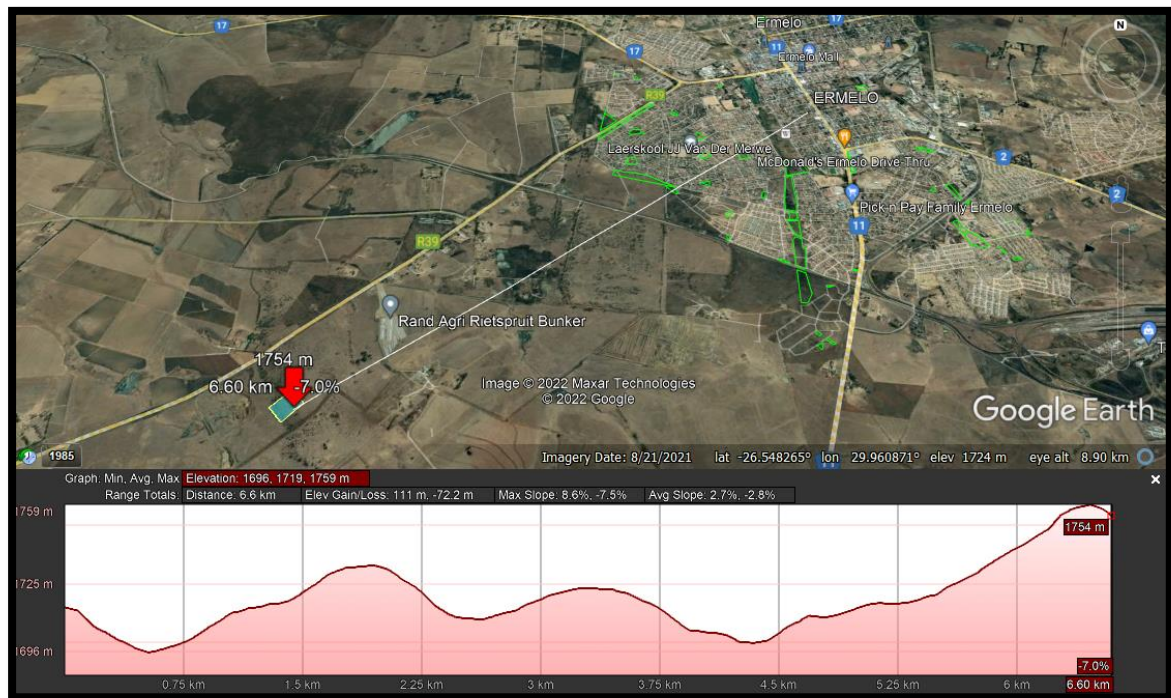


Figure 13: Elevation profile showing the topography between the proposed mining footprint (white line) and the town of Ermelo. (Image obtained from Google Earth).

## VISUAL CHARACTERISTICS

The visual character of the surrounding areas mainly comprises of a dormant agricultural setting, previously mined area adjacent to the site (aggregate / gravel). The aesthetic ambiance of the area is that of a rural area.

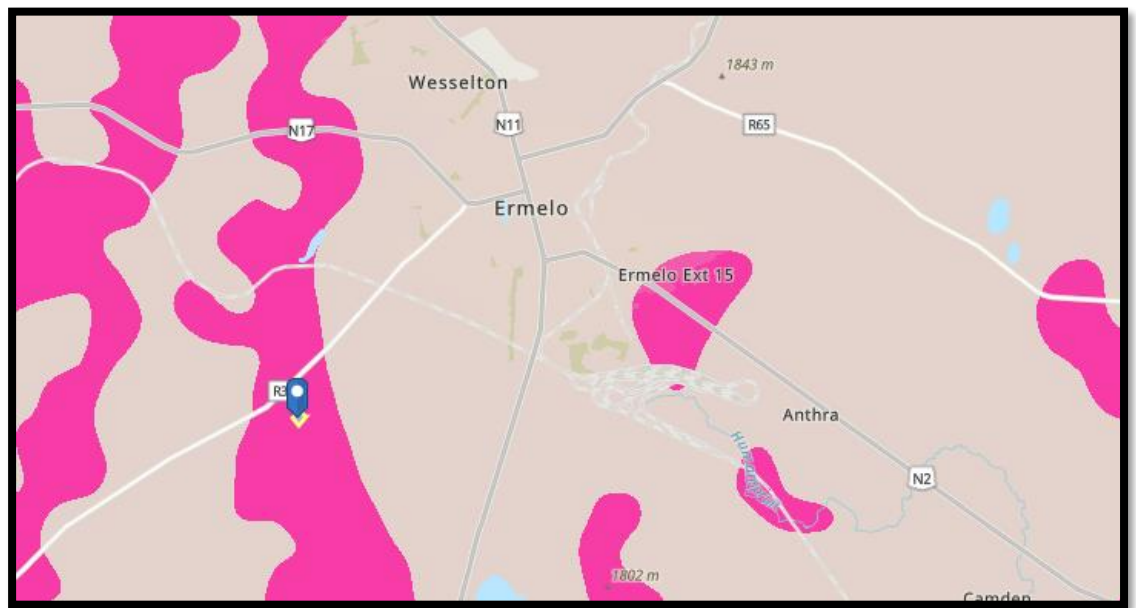
## AIR AND NOISE QUALITY

The average hourly wind speed in Ermelo experiences significant seasonal variation over the course of the year. According to the wind statistics as presented on Weatherspark.com, the windier part of the year lasts for 4.4 months, from July 15 to November 28, with average wind speeds of more than 8.3 miles per hour. The windiest month of the year in Ermelo is September, with an average hourly wind speed of 9.8

miles per hour. The ambient noise levels of the surrounding area are low with the noise levels of the greater surrounding area are low representing that of a rural area, with the noise levels of the study area (immediate surroundings) impacted by farming operations and the R39.

## **GEOLOGY AND SOIL**

The geology of the study area is restricted to vertic clay soils derived from dolerite that is intrusive in the Karoo sediments of the Madzaringwe Formation in the north and the Volksrust Formation and the Adelaide Subgroup in the south. Dominant land type Ca, while Ea land type is of subordinate importance



*Figure 14: Indication of the simplified geology of the study area, where purple represents the Karoo Dolerite Suit. The proposed mining area is indicated by the blue marker. (Image obtained from the Council for Geoscience)*

## **HYDROLOGY**

The proposed mining area falls within the C11F quaternary catchment which falls within the upper reaches of the Vaal River primary catchment that is situated in the Upper Vaal Water Management Area which is managed by the Department of Water and Sanitation (DWS). A small unchanneled valley-bottom wetland is located 130m from the earmarked area and there is a small artificial dam and wetland area forming in previous excavations occur approximately 450 meters to the west of the site. These artificial wetland areas also fall within a separate catchment, upstream of the site and therefore the proposed mining area will not be able to have any affect on these artificial wetland areas. Any water required for the implementation of the project will be bought from a registered source and transported to on site. The use of potable water for dust suppression should be avoided.

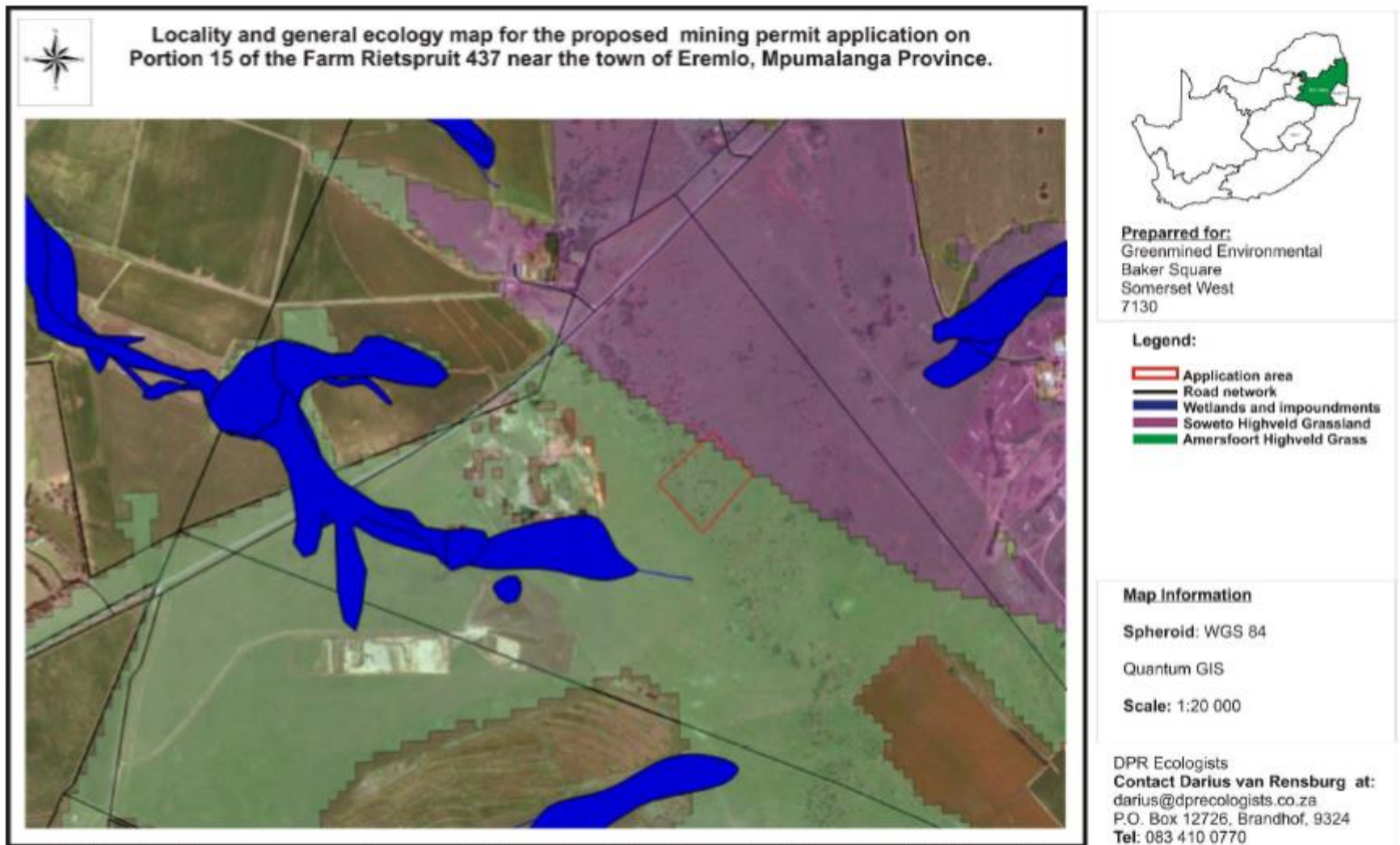


Figure 15: General ecology map of the proposed mining permit area. (Image obtained from Appendix A of the Ermelo Wetland Assessment)

## **BIOLOGICAL ENVIRONMENT**

### **MINING AND BIODIVERSITY CONSERVATION AREAS**

*(Information extracted from the Mining and Biodiversity Guideline: Mainstreaming Biodiversity into the Mining Sector, Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, 2013)*

The Mining and Biodiversity Guideline, compiled by the South African Mining and Biodiversity Forum (SAMBF) provides the mining sector with a practical, user-friendly manual for integrating biodiversity considerations into planning processes and managing biodiversity during the developmental and operational phases of a mine, from exploration through to closure.

When the mining footprint is layered over the Mining and Biodiversity Map, as shown in the figure below, it does not fall over an area of any specified for risk of mining therefore the risk is seen to be insignificant. The Mining and Biodiversity Guideline's describes areas of moderate risk biodiversity importance as: "*These areas are of moderate biodiversity value.*" The guideline notes that environmental screening, the EIA and specialists should focus on confirming the presence and significance of biodiversity features, and provide a site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision-making.



*Figure 16: The Mining and Biodiversity importance map with the proposed mining footprint site alternative 1 indicated by the blue polygon and site alternative 2 indicated by the pink polygon. Light brown – moderate biodiversity importance, moderate risk for mining, light brown – moderate biodiversity Importance, moderate risk for mining (image obtained from the BGIS Map Viewer – Mining Guidelines).*

The Mpumalanga Biodiversity Sector Plan (2014) has been published and has identified areas which are essential to meeting conservation targets for specific vegetation types, i.e. Critical Biodiversity Areas. The terrestrial component of the site has been listed as a Critical Biodiversity Area (CBA), mostly as it contains portions of a threatened ecosystem, intact grassland containing a significant species diversity and is an optimal area for meeting the required conservation targets. A portion of the site is also listed as an Ecological Support Area (ESA) as it forms part of an ecological corridor for maintaining ecosystem function. The freshwater component of the site is regarded as an Other Natural Area (ONA) which indicates that it does not form part of a Strategic Water Source Area (SWSA).



Figure 17: Mpumalanga Biodiversity Sector Plan (MBSP) showing the mining area (blue polygon) and site alternative 2 (pink polygon) in relation to the degraded areas (purple). (Image obtained from BGIS Map Viewer – Mpumalanga Biodiversity Sector Plan).

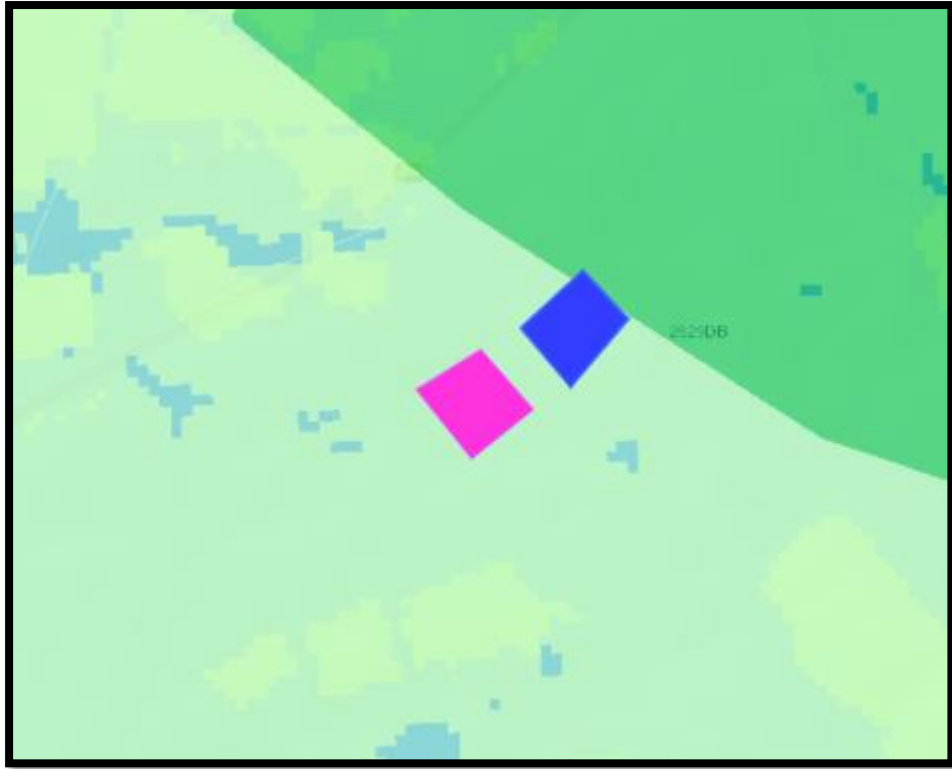
## GROUND COVER

According to Mucina & Rutherford (2006) the area consists of Amersfoort Highveld Clay Grassland (Gm 13) while the north eastern border of the site consists of a marginal portion of Soweto Highveld Grassland (Gm 8). Both of these vegetation types are heavily affected by transformation for agricultural crop production though Amersfoort Highveld Clay Grassland is still regarded as being Least Concern (LC) while Soweto Highveld Grassland is a listed Threatened Ecosystem under the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004). The Soweto Highveld Grassland

remaining in the area is currently listed as being Vulnerable (VU). The vegetation on the site itself is largely still natural while areas to the south and west have been transformed by previous mining activities.

Some of the important taxa found in this vegetation type include Graminoids: *Andropogon appendiculatus* (d), *Brachiaria serrata* (d), *Digitaria monodactyla* (d), *D. tricholaenoides* (d), *Elionurus muticus* (d), *Eragrostis capensis* (d), *E. chloromelas* (d), *E. plana* (d), *E. racemosa* (d), *Harpochloa falx* (d), *Heteropogon contortus* (d), *Microchloa caffra* (d), *Panicum natalense* (d), *Setaria nigrirostris* (d), *S. sphacelata* (d), *Themeda triandra* (d), *Trichoneura grandiglumis* (d), *Tristachya leucothrix* (d), *Abildgaardia ovata*, *Andropogon schirensis*, *Aristida bipartita*, *A. congesta*, *A. junciformis* subsp. *galpinii*, *A. stipitata* subsp. *graciliflora*, *Bulbostylis contexta*, *Chloris virgata*, *Cymbopogon caesius*, *C. pospischilii*, *Cynodon dactylon*, *Digitaria diagonalis*, *D. ternata*, *Diheteropogon amplectens*, *Eragrostis curvula*, *Koeleria capensis*, *Panicum coloratum*, *Setaria incrassata*. Herbs: *Berkheya setifera* (d), *Vernonia natalensis*, *V. oligocephala* (d), *Acalypha peduncularis*, *A. wilmsii*, *Berkheya insignis*, *B. pinnatifida*, *Crabbea acaulis*, *Cynoglossum hispidum*, *Dicoma anomala*, *Haplocarpha scaposa*, *Helichrysum caespitium*, *H. rugulosum*, *Hermannia coccocarpa*, *H. depressa*, *H. transvaalensis*, *Ipomoea crassipes*, *I. oblongata*, *Jamesbrittenia silenoides*, *Pelargonium luridum*, *Pentanisia prunelloides* subsp. *latifolia*, *Peucedanum magalismontanum*, *Pseudognaphalium luteo-album*, *Rhynchosia effusa*, *Salvia repens*, *Schistostephium crataegifolium*, *Sonchus nanus*, *Wahlenbergia undulata*. Herbaceous Climber: *Rhynchosia totta*. Geophytic Herbs: *Boophone disticha*, *Eucomis autumnalis* subsp. *clavata*, *Hypoxis villosa* var. *obliqua*, *Zantedeschia albomaculata* subsp. *macrocarpa*. Tall Shrubs: *Diospyros austro-africana*, *D. lycioides* subsp. *guerkei*. Low Shrubs: *Anthospermum rigidum* subsp. *pumilum* (d), *Helichrysum melanacme* (d), *Chaetacanthus costatus*, *Euphorbia striata* var. *cuspidata*, *Gnidia burchellii*, *G. capitata*, *Polygala uncinata*, *Rhus discolor*. Succulent Shrub: *Euphorbia clavarioides* var. *truncata*





*Figure 18: National vegetation cover map showing the mining area site alternative 1 indicated by the blue polygon and site alternative 2 (pink polygon) within the Amersfoort Highveld Clay Grassland (Gm 13) (light purple) Soweto Highveld Grassland (Gm 8) (Grey). (Image obtained from BGIS Map Viewer – National Vegetation Map).*

## **FAUNA**

Various small mammals and reptiles occur are likely to on the property. Since there is an existing quarry nearby, the fauna at the site are familiar with mining activities and will not be impacted by the proposed mining activities as they will be able to move away or through the site, without being harmed. This was also confirmed by the land owner during the site visit. Workers should be educated and managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data faunal species could be identified within the earmarked footprint. The study area falls over a property that is noted to be operational game farms, should this mining permit be granted farm owner will be consulted prior to commencement of any activities to ensure that safety of animals and workers. Workers will be informed and managed to ensure that no fauna at the site is harmed. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.

### **HUMAN ENVIRONMENT:**

#### **CULTURAL AND HERITAGE ENVIRONMENT**

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening paleontologically sensitive areas at the onset of a project. When the footprint of the earmarked mining area is placed on the PSM, the SAHRIS palaeo-sensitivity map (see <https://sahris.sahra.org.za/map/palaeo>) indicates that the overall area of the footprint of the proposed quarry is located in an area of low palaeontological sensitivity (as presented in the figure below).



Figure 19: Screenshot from the SAHRIS palaeo-sensitivity map showing the location of the proposed mining area (yellow star) straddling an area of insignificant/zero (grey) palaeontological sensitivity (Source: <https://sahris.sahra.org.za/map/palaeo>).

## **SOCIO-ECONOMIC ENVIRONMENT**

*(Information extracted from the Msukaligwa Municipality Integrated Development Plan – 2020/21)*

The proposed mining area is located within ward 8 of the Msukaligwa Municipality Local Municipality. Msukaligwa Municipality is one of the four (4) local municipalities that comprise Gert Sibande District Municipality. The Municipality is accessible through three National Roads and provincial main roads which are N2, N11, and N17, R33, R39, R65, R542 and other secondary roads. Msukaligwa municipality comprises of 19 Wards with wards 1-9 and 17 clustered within Ermelo town and Wesselton Township.

According to the Community Survey (2016), the municipality is home to an estimated population of **164 608** people with a population density of 27.3 persons per square kilometre. The population of Msukaligwa grew by 15 231 persons between 2011 and 2016 at an annual growth of 2.2% to 164 608 persons making it the 4th largest population in Gert Sibande District in 2016.

### Age and Sex Structure

The Census (2011) and Community Survey (2016) indicate that there was a decrease in population of those aged between 5 – 14, these are important stages in the

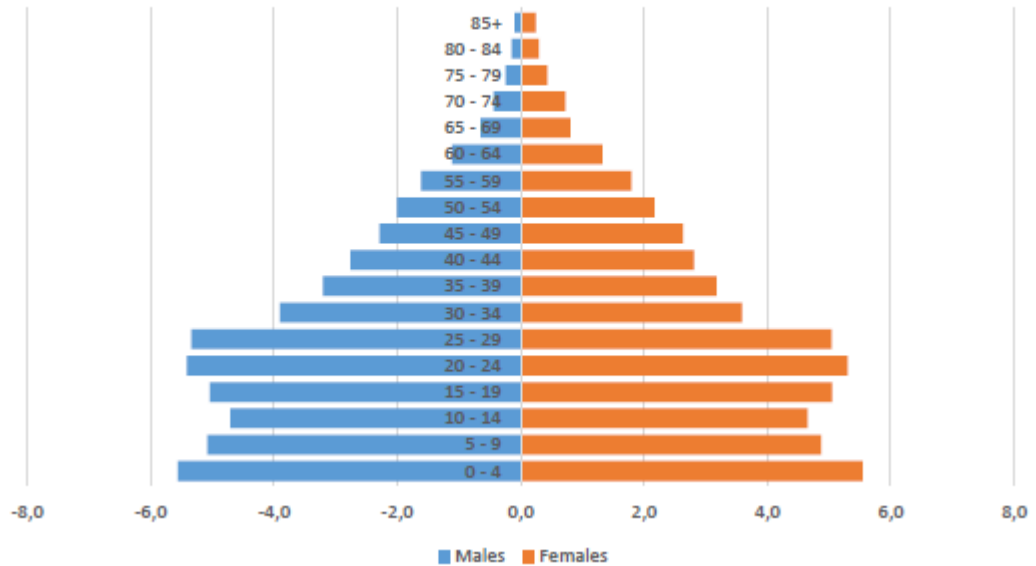
development of children and since table 2 illustrates a decrease in population of this age group, this may suggest that parents are taking their children elsewhere for better education opportunities. As depicted on table 13 below, there is a population growth in the age groups with age group 0 – 14 comprising 45761 persons or 28% of the total population and 15 – 34 comprising of 67783 persons. The youth population contributes 41.2% of the total population of Msukaligwa being the largest group in the population. With the youth population contributing a larger percentage of the population, this is a clear indication that most of the youth are joining the job market implying that the municipality together with sector departments and NGOs must proactively engage in a joint effort to address issues of unemployment, skills development, provision of basic services and housing.

*Table 12: Msukaligwa Population Breakdown by Age and Gender (Information extracted from the Msukaligwa Municipality Integrated Development Plan – 2020/21) - Source: Statistics South Africa: Census 2011 and Community Survey, 2016.*

Age Groups	2011			2016 (Community Survey)		
	Male	Female	Total	Male	Female	Total
0-4	8301	8273	16574	8818	8886	17 704
5-9	7590	7271	14861	7433	7109	14 542
10-14	7030	6944	13974	6774	6741	13 515
15-19	7532	7542	15074	7860	7904	15 764
20-24	8089	7908	15997	8853	8933	17 786
25-29	7969	7520	15489	9461	9600	19 061
30-34	5829	5359	11188	8155	7017	15172
35-39	4794	4741	9535	6117	5843	11 960
40-44	4125	4191	8316	4823	4551	9 374
45-49	3427	3921	7348	3775	3567	7 342
50-54	3001	3238	6239	2942	3151	6 093
55-59	2417	2673	5090	2847	2727	5 574
60-64	1656	1970	3626	1815	2102	3 917
65-69	969	1192	2161	1360	1496	2 856
70-74	649	1082	1731	788	1331	2 119
75-79	365	638	1003	301	589	890
80+	370	801	1171	319	620	939
<b>TOTAL</b>	<b>74113</b>	<b>75264</b>	<b>149377</b>	<b>82442</b>	<b>82166</b>	<b>164608</b>

Figure 23 below depict the population pyramids for the year 2011 and 2016 according to age groups. When comparing the 2011 and 2016 population pyramids, it is evident that there is a significant change on the population growth patterns between the age groups 5 to 29 years. The most significant changes appear in the age groups 25 – 29 with a significant increase while age group 5 – 19 shows a decrease. Though the age group 20 – 24 almost remained the same between 2011 and 2016, there is a great increase on both males and females on the age groups 25 - 34 who are the youth population which may suggest in migration for job opportunities as this group forms a larger part of the labour market.

### Age and Sex Structure 2011



### Age and Sex Structure 2016

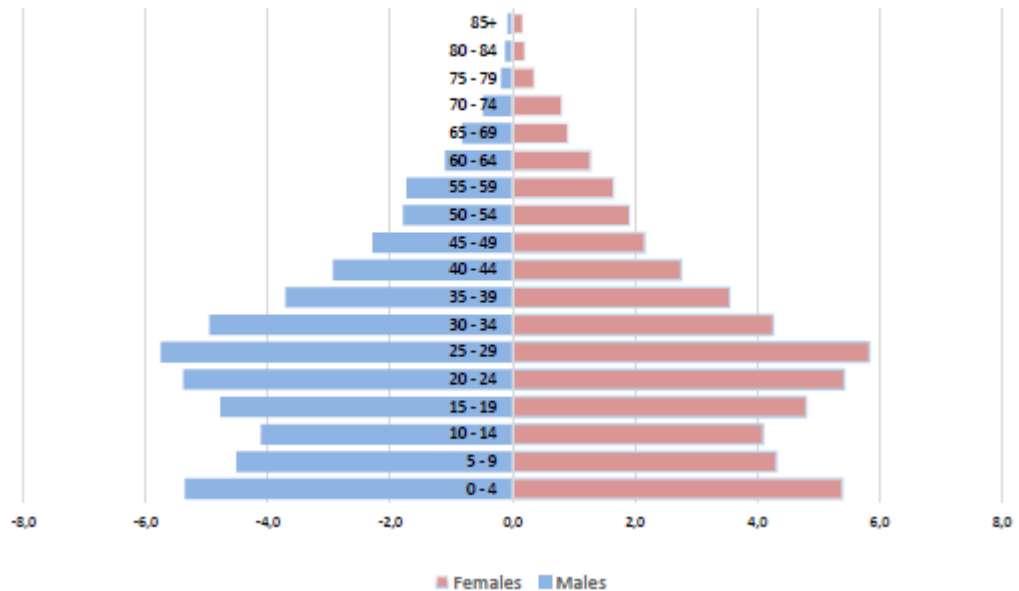


Figure 20: Population Pyramid (Information extracted from the Msukalingwa Municipality Integrated Development Plan – 2020/21) - Source: Statistics South Africa: Census 2011 and Community Survey, 2016.

### Economic Profile

Efforts to reduce government spending, prioritise resources more effectively and improve the efficiency of the tax system are important and Government will address structural challenges in the economy that raise the cost of living and doing business. The Government is working with the Auditor-General to reduce irregular expenditure by shifting government spending from consumption expenditure to investment in infrastructure in its aims to improve the state of public finances.

The National Treasury and the South African Reserve Bank are working together to ease pressure on business and consumers. Government is also proceeding with the establishment of a state bank as part of an effort to extend access to financial services to all South Africans.

With regard to the SOEs, Government is working to ensure that all SOEs are able to fulfil their developmental mandate and be financially sustainable. In consultation with the Presidential SOE Council, government will undertake a process of rationalisation of SOEs and ensure that they serve strategic economic or developmental purposes.

The municipality is predominantly rural in nature with key anchor towns that dominate the urban settlements. These create a big challenge for the municipality to provide services especially at the rural or farmlands as coordinated planning and development became expensive in services provision. The Municipality also comprises of Mining operations, Timber Industries, Agricultural Land, Transport and Tourism areas as its economic base.

### Education Levels

Generally, there is an overall improvement at all levels of education over the past 5 years. Data from the Community Survey (2016) indicates that the population in Msukaligwa aged 20 and above completed grade 12 which increased from 33 673 in 2011 to 43 234 in 2016 (increase of 9 561) being an increase of 28.4% for the period under review. Msukaligwa's grade 12 pass rate improved from 74.1% in 2011 to 77.8% in 2016, which was the 3rd highest in the District and 7th lowest of the municipal areas of the Province (Stats SA, 2016). According to basic education data obtained from the District Municipality's IDP, the Grade 12 pass rate for Msukaligwa was 82.3% (2017) and 80% (2018) thus placing Msukaligwa 8th highest of the municipal areas of the Province. The decrease in matric results remains a concern that requires municipal assistance in the form of the provision of services that will assist the Department of Education (DoE).

In 2018, Msukaligwa municipality matriculants achieved a 37% university admission. Once these students graduate, the municipality needs to ensure that it provides the educated young people in the area with economic opportunities. The dilemma is that currently; such opportunities do not exist as the economy is slowing down whilst the population continues to grow.

In terms of goal 4 of the Sustainable Development Goals (SDGs), ensuring inclusive and equitable quality education and promote lifelong learning opportunities for all children is imperative. Essentially, ensuring equitable quality education requires that,

amongst other things, children everywhere, boys and girls alike are able to complete a full course of primary schooling.

The table below also illustrates improvements in the functional literacy rate as there has been a decrease in the number of people who unable to adequately read and write between the years 2011-2016. In 2018, Msukaligwa ranked 6th in terms of functional literacy in the province and has been showing a steady improvement which is a positive for the municipality. This is a decrease further supports goal 4 of the SDGs which encourages lifelong learning opportunities for all (United Nations, 2018).

*Table 13: Levels of Education (Information extracted from the Msukaligwa Municipality Integrated Development Plan – 2020/21) - Source: Statistics South Africa: Census 2011 and Community Survey, 2016.*

<b>Education Indicators</b>	<b>2011</b>	<b>2016</b>
Number of people 15+ with no schooling	12 213	11 030
% Population 15+ with no schooling	8.2%	9.6%
% Population 15+ with matric and post matric qualification (%)	23.6%	39.6%
% Functional Literacy rate (%)	51.4%	42.7%

#### Sectors of Employment and their Contribution to the Regional Economy

The municipality comprises a number of sectors that contribute to the regional economy and providing employment to the people of Msukaligwa and surrounding areas.

The table below depicts percentage of employment per sector with the leading industries in terms of employment being Trade, Community Services and Agriculture and with 23.7%, 19% and 11.5% respectively. There is a significant increase in the Trade sector and a decrease of 8.8% and 1.8% in Agriculture and Community Services sector respectively in the period 2012 to 2015.

Table 14: Employment per Sector & Contribution to Regional (Gert Sibande) GVA (Information extracted from the Msukalingwa Municipality Integrated Development Plan – 2020/21) - Source: Mpumalanga Department of Finance 2015

	2012		2015	
	Employment	Contr. to GVA	Employment	Contr. to GVA
Agriculture	20.3%	14.4%	11.5%	14.6%
Mining	9.8%	10.8%	7.7%	11.5%
Manufacturing	5.4%	0.6%	7.8%	0.8%
Utilities	0.7%	8.4%	0.8%	9.5%
Construction	5.3%	6.9%	3.9%	7.4%
Trade	17.7%	18.9%	23.7%	20.4%
Transport	5.4%	28.3%	6.9%	28.7%
Finance	5.7%	25.1%	9.6%	24.3%
Community Services	20.8%	21.2%	19.0%	21.4%
Private Households	8.9%	-	9.1%	-
<b>Total</b>	<b>100%</b>	<b>11.8%</b>	<b>100%</b>	<b>13.4%</b>

**(b) Description of the current land uses**

a portion of Portion 15 on the Farm Rietspruit nr 437, IS Msukaligwa Local Municipality, Mpumalanga Province is situated in a rural setting. The R39 forms the north western boundary of the farm. The land use of the property mainly comprises of mining, agriculture and grassland. The land use was also extended to include small scale mining.

The following table provides a description of the land uses and/or prominent features that currently occur within a 500 m radius of the proposed site:

Table 15: Land uses and/or prominent features that occur within 500 m radius of S1 and S2.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	YES	-	The study area is surrounded by natural areas used for agricultural (small holding) purposes.
Low density residential	-	NO	
Medium density residential	-	NO	
High density residential	-	NO	
Informal residential	-	NO	
Retail commercial & warehousing	-	NO	
Light industrial	-	NO	
Medium industrial	-	NO	
Heavy industrial	-	NO	
Power station	-	NO	
High voltage power line	-	NO	
Office/consulting room	-	NO	
Military or police base / station / compound	-	NO	
Spoil heap or slimes dam	-	NO	
Quarry, gravel or borrow pit	YES	-	The footprint of the proposed mining area is superimposed over the dolerite ridge present on the face of the hill.
Dam or reservoir		NO	.



LAND USE CHARACTER	YES	NO	DESCRIPTION
Hospital/medical centre	-	NO	
School/ crèche	-	NO	
Tertiary education facility		NO	
Church	-	NO	
Old age home	-	NO	
Sewage treatment plant	-	NO	
Train station or shunting yard	-	NO	
Railway line	-	NO	
Major road (4 lanes or more)	YES		The R39 passes the site on the south eastern side
Airport	-	NO	
Harbour	-	NO	
Sport facilities	-	NO	
Golf course	-	NO	
Polo fields	-	NO	
Filling station	-	NO	
Landfill or waste treatment site	-	NO	
Plantation	-	NO	
Agriculture	-	NO	
River, stream or wetland	-	NO	Two artificial wetlands lays ± 450m north-west of the proposed mining area.
Nature conservation area	-	NO	
Mountain, hill or ridge	YES	-	The mining area is located on the face of a hill (koppie).
Museum	-	NO	
Historical building	-	NO	
Protected Area	-	NO	
Graveyard	-	NO	
Archaeological site	-	NO	
Other land uses (describe)	-	NO	

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

**SPECIFIC ENVIRONMENTAL FEATURES**

**SITE SPECIFIC TOPOGRAPHY**

The natural topography of the proposed excavated comprised of undulating grassland plains, with small scattered patches of dolerite outcrops in areas. The vegetation is comprised of a short closed grassland cover, largely dominated by a dense *Themeda triandra* sward, often severely grazed to form a short lawn. The elevation loss from the proposed mining footprint to the town of Ermelo to be 1759m over 6.59km.

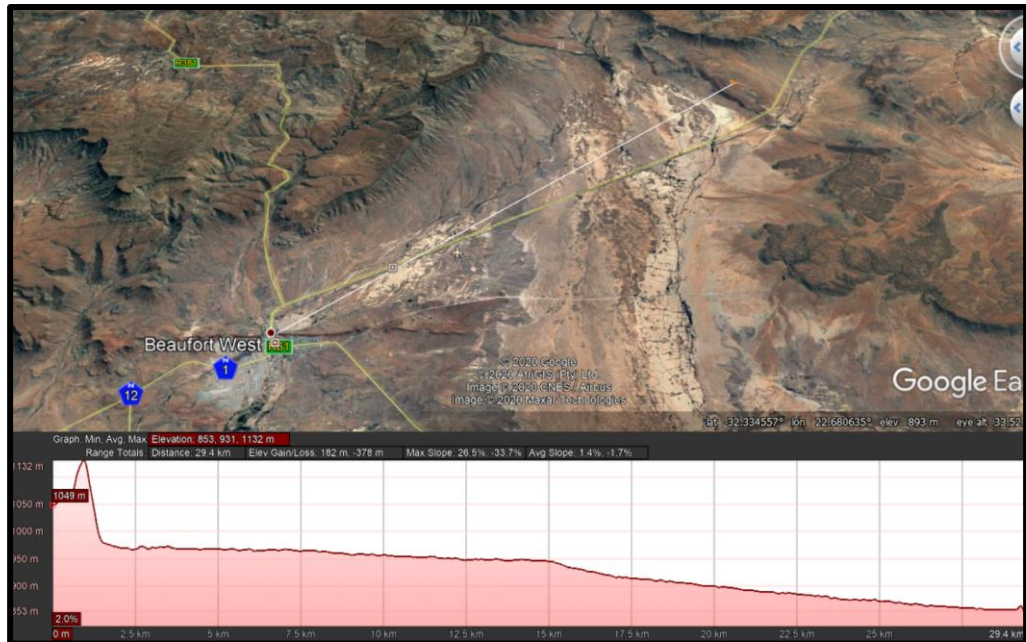


Figure 21: Elevation profile of the proposed mining footprint (Image obtained from Google Earth).

### SITE SPECIFIC VISUAL CHARACTERISTICS

The proposed mining activities will be visible within close proximity ( $\pm 1$  km radius) of the footprint. However, as one moves away the visibility of the area greatly lessens. The figure below shows the viewshed analysis for the footprint within a  $\pm 10$  km radius. The green shaded areas show the positions from where the mining area will be visible. From this analysis it is proposed that the visual impact of the proposed gravel mining operation will be of low significance, especially as no permanent structures will be constructed. The small scale of the proposed operation, and the mining area will be located between two hills in order to minimize the visual impact. Should the Applicant successfully rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mine.



Figure 22: Viewshed of the proposed mining footprint as well as site alternative 2 where the green shaded areas shows the positions from where the mining area (Proposed mining area) will be visible. (Image obtained from Google Earth).

## SITE SPECIFIC AIR AND NOISE QUALITY

The residential dwellings nearest to the proposed footprint is approximately 4.5 km away (north). Currently the air quality of the study area is mainly impacted by the existing quarry as well as surrounding traffic on the R39 passing the site. Therefore, the surrounding communities are familiar with mining activities.

Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004. The proposed mining activity does not trigger an application in terms of the said act. The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase

The Air Quality Impact Statement (Appendix M1) conducted by Airshed Planning Professionals (Pty) Ltd states it is unlikely that the proposed operations will result in significant detrimental impact on air quality in the area, with very low impacts expected at nearby sensitive receptor locations.

As per Noise Impact Statement (Appendix M2) conducted by Airshed Planning Professionals (Pty) Ltd - it is unlikely that the proposed operations will result in significant detrimental impact on environmental noise for most of the study area. However, mining and processing activities are currently planned to be 24 hours per day, and noise generated by night-time operations are likely to be much more noticeable, given the typical low baseline noise levels in rural areas.

Should the permit holder implement the mitigation measures proposed in this document, the EMPR and the above-mentioned impact statements, the impact on the noise and air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.

### **SITE SPECIFIC GEOLOGY AND SOIL**

The site specific geology is representative of the regional geology and soil as described earlier in this report. The geology of the study area is restricted to vertic clay soils derived from dolerite that is intrusive in the Karoo sediments of the Madzaringwe Formation in the north and the Volksrust Formation and the Adelaide Subgroup in the south. Dominant land type Ca, while Ea land type is of subordinate importance.

The aggregate / gravel of the study area is aggregate highly suitable for construction purposes. The mining method will make use of blasting in order to loosen the hard rock; upon which the loosened material will be transported to a processing area (inside mining boundary) where it will be crushed and screened to various sized stockpiles, before being sold and transported from site to clients.

### **SITE SPECIFIC HYDROLOGY**

The proposed mining area falls within the C11F quaternary catchment which falls within the upper reaches of the Vaal River primary catchment that is situated in the Upper Vaal Water Management Area which is managed by the Department of Water and Sanitation (DWS). A small artificial dam and wetland area forming in previous excavations occur approximately 450 meters to the west of the site. These artificial wetland areas also fall within a separate catchment, upstream of the site and therefore the proposed mining area will not be able to have any effect on these artificial wetland areas.

As per the botanical assessment report conducted by DPR Ecologist dated February 2022 attached as appendix M – It is clear that although not situated on the site, a small wetland system is located adjacent to the southern border of the site. Being a small

wetland, almost its entire catchment originates in the immediate area, especially the low ridge of which the site also forms part. The site is located approximately 130 meters from this wetland (Figure 27). It is therefore also clear that the proposed mining operations is likely to also cause at least some impacts on this wetland which will therefore form the focus of this study.

Soil samples were quite clear but indicated only a seasonal/temporary zone of wetness within the interior of the valley-bottom wetland with a temporary zone of wetness along its borders. This also substantiates the small nature of the wetland and its seasonal nature. The area had received a high amount of recent rainfall but despite this, surface water and waterlogged soils were absent, also further indicating that this wetland area is strictly seasonal. This also confirms the border of the wetland area and that it is located not nearer than 130 meters from the site.

Furthermore, concentrated surface flow is clearly absent and diffuse flow dominates. Water inputs are also clearly from the surrounding slopes. A defined channel also becomes more prominent in downstream areas. The portion of this valley-bottom wetland to the south of the site, is still largely natural, though immediately to the west it becomes heavily modified by a small artificial dam and previous mining operations which had heavily modified its flow pattern.

A Risk Assessment for the proposed mining permit application area in close proximity to the adjacent unchanneled valley-bottom wetland has been undertaken according to the Department of Water & Sanitation's requirements for risk assessment and the provisional Risk Assessment Matrix for Section 21(c) & (i) water use (Appendix E). The mining area is located approximately 130 meters to the north of this wetland area and consequently will not have any direct impact on it. However, sediment runoff and flow diversion may still have some influence on this wetland.

Mining within close proximity of the valley-bottom wetland is anticipated to have a low risk as long as a 100-meter buffer between the edge of the wetland as delineated and the quarry excavations, stockpile areas, chemical toilets, wastes and any hazardous materials (diesel, etc.) are maintained.

Although the risk is anticipated to be low the quarry will likely still have impacts on the stream in terms of an increased sediment load. Through adequate mitigation, including storm water management measures, this can be minimised and provided adequate rehabilitation is undertaken no permanent modification to the functioning of the wetland will result. The principles of storm water management should be implemented, i.e. runoff generated in the surrounding natural areas should be diverted around the mining

area and storm water generated on the mining footprint itself should be contained on the site.

The following recommendations and mitigation measures should be implemented in order to manage impacts on the adjacent valley-bottom wetland to the south of the site.

- The small valley-bottom wetland to the south of the site should be treated as no-go area during the lifetime of the mining area and kept as a natural area (Map 2). This should include that the area not be used as stockpile areas, laydown areas, parking or any other activities associated with mining operations.
- Mining within close proximity of the valley-bottom wetland is anticipated to have a low risk as long as a 100-meter buffer between the edge of the wetland as delineated and the quarry excavations, chemical toilets, wastes and any hazardous materials (diesel, etc.) are maintained.
- The principles of the separation of clean and dirty storm water must be implemented and runoff generated in the surrounding natural areas should be diverted around the mining footprint and storm water generated on the site itself should be contained on the site.
- During the operation of the mining area it is also important that storm water management be implemented to prevent erosion and sedimentation from entering the adjacent wetland system. The storm water management should therefore also include measures such as structures along the border of the mining area including berms and cut-off trenches.
- All structures and mitigation measures should be maintained throughout the lifetime of the mining operations.
- The necessary authorisations should be obtained from the Department of Water and Sanitation (DWS).
- 

Any water required for the implementation of the project will be bought from a registered source and transported to on site. The use of potable water for dust suppression should be avoided.

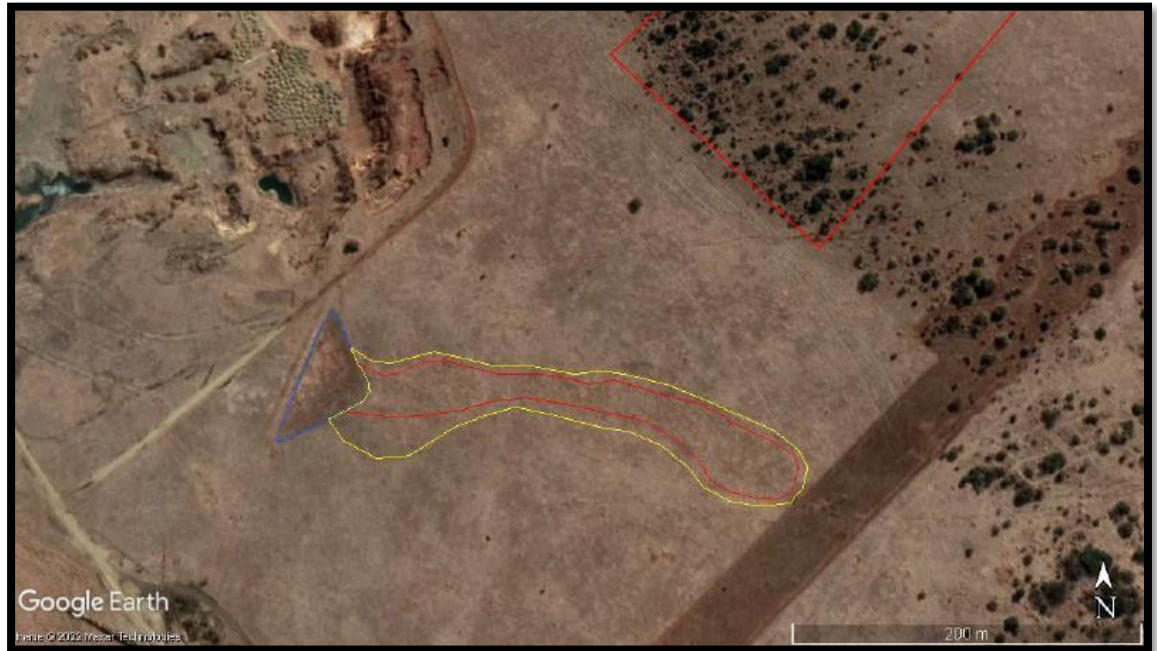


Figure 23: Aerial view of the valley-bottom wetland (Google Earth 2021). The border and temporary zone (Yellow), seasonal (red) and artificial dam (Blue) is indicated. Note that the wetland is situated to the south and downslope of the mining area. Downstream there is also extensive transformation caused by previous mining.

#### **SITE SPECIFIC MINING AND BIODIVERSITY CONSERVATION AREAS**

As mentioned earlier, when the mining footprint is layered over the Mining and Biodiversity Map, it falls over an area of moderate biodiversity importance with a corresponding rating of moderate risk for mining. The Mining and Biodiversity Guideline's describes areas of moderate risk biodiversity importance as: "*These areas are of moderate biodiversity value.*" The guideline notes that environmental screening, the EIA and specialists should focus on confirming the presence and significance of biodiversity features, and provide a site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision-making.

According to Mucina & Rutherford (2006) the area consists of Amersfoort Highveld Clay Grassland (Gm 13) while the north eastern border of the site consists of a marginal portion of Soweto Highveld Grassland (Gm 8). Both of these vegetation types are heavily affected by transformation for agricultural crop production though Amersfoort Highveld Clay Grassland is still regarded as being Least Concern (LC) while Soweto Highveld Grassland is a listed Threatened Ecosystem under the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004). The Soweto Highveld Grassland remaining in the area is currently listed as being Vulnerable (VU). The vegetation on the site itself is largely still natural while areas to the south and west have been transformed by previous mining activities.

The site and surroundings has also been identified as being a Critical Biodiversity Area 1 and Ecological Support Area which significantly increases the conservation value. The site also falls within the Mpumalanga Protected Area Expansion Strategy (MPAES) which also contributes toward its conservation value.

Although not part of the site, the adjacent wetland system to the south has a high conservation value and its continued integrity is dependent on the runoff generated on the site which the proposed mining area may impact on. The overall conservation value of the site is therefore still regarded as high. Please refer to the above-mentioned mitigation measures 1(h)(iv)(1) SITE SPECIFIC HYDROLOGY

- The following recommendations and mitigation measures should be implemented in order to manage impacts.
  - Adequate monitoring of weed establishment and their continued eradication must be maintained. Where category 1 and 2 weeds occur, they require removal by the property owner according to the Conservation of Agricultural Resources Act, No. 43 of 1983 and National Environmental Management: Biodiversity Act, No. 10 of 2004.
  - No littering must be allowed and all litter must be removed from the site.
  - Mining should be confined to the site footprint and should not encroach into adjacent areas.
  - Monitoring of mining operations including weed establishment and erosion should take place.
  - After completion of mining operations comprehensive rehabilitation of the mining area should be implemented and should include the following:
    - Overburden and tailings resulting from the mining operations should be returned to excavations in order to aid in re-establishing a more natural topography.
    - The topography of the site should be re-instated as far as possible.
    - Eradication and monitoring of weed establishment should take place and should be extended after cessation of mining.
    - Topsoil should be removed prior to mining, protected from wind erosion and weed establishment and replaced on the site during rehabilitation.
    - Adequate monitoring of rehabilitation success should be done and remedial action taken where required.
    - After mining has ceased all manmade materials should be removed from the site, i.e. structures, concrete, waste, etc.

#### **SITE SPECIFIC GROUNDCOVER**



The site specific groundcover of the mining area consists of undulating grassland plains, with small scattered patches of dolerite outcrops in areas. The vegetation is comprised of a short closed grassland cover, largely dominated by a dense *Themeda triandra* sward, often severely grazed to form a short lawn.



Figure 24: National land cover map showing the mining area (Image obtained from BGIS Map Viewer – National land cover Map 2014)

As per the botanical assessment report conducted by DPR Ecologist dated February 2022 attached as appendix M – The site itself still consists of natural vegetation which is dominated by scattered trees and a well-developed grass layer. Disturbances are present and include overgrazing by domestic livestock and low-level infestation by exotic weeds and shrubs, though overall the site is still largely natural. However, the surrounding areas, especially toward the south and west of the site, has been heavily modified by previous mining activities. The site contains several plants listed as protected in Mpumalanga such as *Eucomis montana* *Haemanthus humilis* subsp. *Hirsutus* *Gladiolus dalenii* subsp. *dalenii*, *Gladiolus ecklonii*, *Gladiolus crassidolius*, *Boophone distichia* and *Zantedeschia rehmannii*. Please see the pictures below

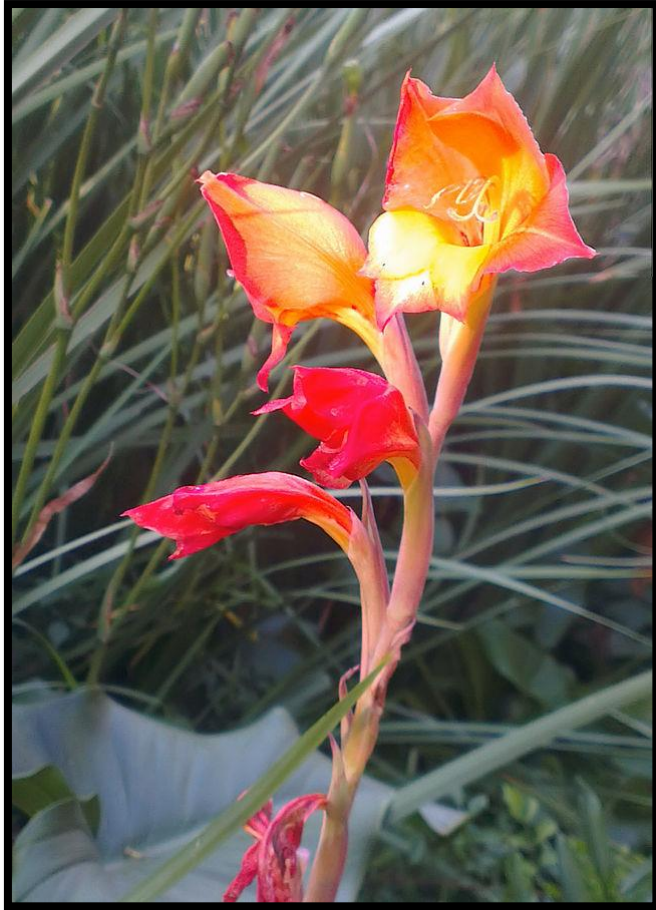
***Eucomis montana***



*Haemanthus humilis subsp*



*Hirsutus Gladiolus dalenii subsp*



*Gladiolus ecklonii*



*Gladiolus crassidolius*



***Boophone distichia***



***Zantedeschia rehmannii***



These plants are not listed as endangered but are protected and therefore listed as SCC. The necessary permits should be obtained and plants moved to adjacent areas. This is standard recommendation for these plants.

In light of this, there should be a preconstruction walk-through of the development footprint/project site in order to locate individual plant species of conservation concern. Any trans locatable protected species must be relocated to a suitable and similar habitat where these plants can grow without any disturbance.

#### **SITE SPECIFIC FAUNA**

Various small mammals and reptiles occur are likely to on the property. Since there is an existing quarry nearby, the fauna at the site are used to mining activities and will not be impacted by the proposed mining activities as they will be able to move away or through the site, without being harmed. This was also confirmed by the land owner during the site visit. Workers should be educated and managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data faunal species could be identified within the earmarked footprint. The study area falls over a property that is noted to be operational game farms, should this mining permit be granted farm owner will be consulted prior to commencement of any activities to ensure that safety of animals and workers. Workers will be informed and managed to ensure that no fauna at the site is harmed. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in

and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.

## **SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT**

As per the Heritage Impact Assessment (Appendix N), the study area is fallow and has not been developed or impacted on by adjacent mining activities. Examination of historical topographic maps and aerial images showed no structures or stone walled settlements in the study area and the impact footprint is considered to be of low heritage potential. This was confirmed during the site visit and no heritage finds of significance was recorded during the survey.

According to the SAHRA Paleontological sensitivity map the study area is of insignificant paleontological significance, but very close to an area of very high sensitivity and an independent study (Appendix N1) was conducted for this aspect. Bamford (2022) concluded that the proposed site lies on the non-fossiliferous Jurassic dolerite but is very close to the very highly sensitive Vryheid Formation that could preserve fossil plants of the Glossopteris flora. No fossils were found during the site visit. Nonetheless a Fossil Chance Find Protocol should be added to the EMPr.

No adverse impact on heritage resources is expected by the project and it is recommended that the project can commence on the condition that the following recommendations (Section 10) are implemented as part of the EMPr and based on approval from SAHRA.

## **SITE SPECIFIC INFRASTRUCTURE**

The following is located within close proximity:

- An existing quarry is located 150m south west of the site with unpreferred mineral resources.
- Farm house 1.10km east of the site and another farm house north-west of the site
- The R39 - 600m towards the western part of the site.

None of the existing infrastructure falls within the site area and will therefore not be affected.

### **(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 D.

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

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

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

**SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT:**

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

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

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

**SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT:**

**Alteration of the agricultural sense of place**

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
2	2	1	1.6	4	5	4.5	<b>7.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: None</b>					
2	2	1	1.6	4	5	4.5	<b>7.2</b>				

**Loss of agricultural land for duration of mining**

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: None</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				

Visual intrusion as a result of site establishment

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
2	2	1	1.6	4	3	3.5	5.6				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: None</b>					
2	2	1	1.6	4	3	3.5	5.6				

Potential impact on fauna within the footprint area

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
4	4	1	3	4	4	4	12				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
2	2	1	1.6	4	3	3.5	5.6				

Potential impact on vegetation and listed and/or protected plant species

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
4	4	1	3	4	4	4	12				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
2	2	1	1.6	4	3	3.5	5.6				

Dust nuisance due to excavation and from loading and vehicles transporting the material

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	9.1				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	9.1				

Potential impact on archaeological artefacts

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	9.1				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	9.1				



New job opportunities as a result of the mining operation (Positive Impact)

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: N/A</b>					
4	4	5	4.6	5	5	5	<b>23</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: N/A</b>					
4	4	5	4.6	5	5	5	<b>23</b>				

**CONSTRUCTION OF SITE ACCESS ROAD:**

Visual intrusion caused by construction of site access road

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: None</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				

Loss of stockpiled topsoil during construction of access road

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: None</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				

Dust nuisance as a result of the construction of access road

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	<b>9.2</b>				

Noise nuisance generated by earthmoving machinery

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	<b>9.2</b>				

Potential erosion of denuded areas

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

**STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN:**

Visual intrusion caused by mining activities

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: None</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Loss of stockpiled topsoil during mining and stockpiling

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				

Dust nuisance as a result of the disturbance of soil

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 - 19.9	High 20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	9.2				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	9.2				

Noise nuisance generated by earthmoving machinery

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 - 19.9	High 20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	9.2				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	9.2				

Infestation of the topsoil heaps and mining area with weeds or invader plant species

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 - 19.9	High 20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	6.9				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	6.9				

Potential impact on local fauna due to disturbance and loss of available habitat

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 - 19.9	High 20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
2	4	1	2.3	4	4	4	9.2				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
4	4	1	3	4	4	4	12				

Potential erosion of denuded areas

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 - 19.9	High 20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	6.9				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	6.9				

Loss of stockpiled material due to ineffective storm water control

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

**DRILLING AND BLASTING:**

Health and safety risk posed by blasting activities

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				

Dust nuisance caused by blasting activities

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				

Noise nuisance as a result of blasting

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				

## EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT

Visual intrusion as a result of excavation and from loading and vehicles transporting the material

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
3			3			1					
3	3	1	2.3	4	2	3	<b>6.9</b>				

Dust nuisance due to excavation and from loading and vehicles transporting the material

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Noise nuisance as a result of the mining activities

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				

Unsafe working environment for employees

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Soil contamination from hydrocarbon spills and/or littering

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	5	4.5	<b>11.7</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	5	4.5	<b>11.7</b>				

Potential impact on areas of palaeontological concern

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Facilitation of erosion due to mining activities

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				

**PROCESSING, STOCKPILING AND TRANSPORTING OF MATERIAL:**

Dust nuisance generated at the processing plant

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Noise nuisance stemming from operation of the processing plant

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Visual intrusion as a result of operation of the processing plant

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Potential contamination of environment due to improper waste management

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Overloading of trucks impacting road infrastructure

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	4	4	<b>10.4</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	4	4	<b>10.4</b>				

Degradation of the access road

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	4	2	3	4	5	4.5	<b>13.5</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	4	2	3	4	5	4.5	<b>13.5</b>				

## CUMULATIVE IMPACTS:

Impact the broad-scale ecological processes - The loss of unprotected vegetation types on a cumulative basis from the broad area may impact the country's ability to meet its conservation targets.

						Significance					
			Consequence			Likelihood	Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent		Probability	Frequency		1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Partial</b>					
3	4	1	2.6	4	4	4	<b>10.4</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Partial</b>					
3	4	1	2.6	4	4	4	<b>10.4</b>				

Transformation of intact habitat would contribute to the fragmentation of the landscape and would potentially disrupt the connectivity of the landscape for fauna, avifauna, and flora and impair their ability to respond to environmental fluctuations.

						Significance					
			Consequence			Likelihood	Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent		Probability	Frequency		1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Partial</b>					
3	4	1	2.6	4	4	4	<b>10.4</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Partial</b>					
3	4	1	2.6	4	4	4	<b>10.4</b>				

Impact on existing infrastructure as a direct result of the mining operation

						Significance					
			Consequence			Likelihood	Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent		Probability	Frequency		1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
1	1	1	1	1	5	3	<b>3</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: None</b>					
1	1	1	1	1	5	3	<b>3</b>				

## SLOPING AND LANDSCAPING DURING REHABILITATION:

Safety risk posed by un-sloped areas

						Significance					
			Consequence			Likelihood	Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent		Probability	Frequency		1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	5	1	3	4	5	4.5	<b>13.5</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	5	1	3	4	5	4.5	<b>13.5</b>				



### Erosion of returned topsoil after rehabilitation

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	5	1	3	4	3	3.5	<b>10.5</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	5	1	3	4	3	3.5	<b>10.5</b>				

### Infestation of the reinstated areas by weeds and invader plant species

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

### Potential impact associated with litter/waste left at the mining area

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

### Return of the mining area to agricultural use upon closure (Positive Impact)

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: N/A</b>					
3	5	1	3	5	5	5	<b>15</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: N/A</b>					
3	5	1	3	5	5	5	<b>15</b>				

## 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:

$$\text{Environmental Significance} = \text{Overall Consequence} \times \text{Overall Likelihood}$$

### 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.

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

Table 16: Table to be used to obtain an overall rating of severity, taking into consideration the various criteria.

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

#### **Determination of Duration**

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

Table 17: Criteria for the 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.

*Table 18: Criteria for the rating of extent / spatial scale.*

<b>Rating</b>	<b>Description</b>
1	Immediate, fully contained area
2	Surrounding area
3	Within Business Unit area of responsibility
4	Within the farm/neighbouring 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.

Table 19: Example of calculating overall consequence.

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

### **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.

Table 20: Criteria for the 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.

Table 21: Criteria for the 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.

Table 22: Example of calculating overall likelihood.

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

**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.

Table 23: 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.

Table 24: Description of environmental significance and related action required.

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

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

High                      Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for

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

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

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

The environmental impact assessment process assessed the feasibility of the proposed site alternative to identify fatal flaws that are deemed as severe as to prevent the activity continuing, or warrant another site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. In light of the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently Drafted and is depicted on the attached site activities plan (Appendix C). The aggregate / gravel mining area can be moved to various alternative sites within close proximity of the proposed mining area but will

entail disturbing a greenfield area. However, the proposed mining area was identified as the preferred and only viable site alternative as it entails the mining of an area previously used for aggregate / gravel mining purposes. In light of this, S1 was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team due to the following:

- The position of the proposed site is ideal due to it being superimposed over the dolerite ridge present on the face of the hill. This was deemed the only viable site alternative as this is the only area that will be viable for the applicant due to the presence of the dolerite ridge. Access to the proposed mining area is possible via the existing access road with a formal (existing) entrance onto the R39.
- The quality of the aggregate / gravel, in the earmarked area, complies with the requirements of the Applicant's clients and/or contracts.

#### **PROJECT ASSOCIATED POSITIVE IMPACTS:**

- Possible work opportunities to local residents;
- Return of the mining area to agricultural use upon closure of the project; and
- Diversification of the land use of the property.

#### **POTENTIAL NEGATIVE IMPACTS:**

##### **Site establishment, construction of access road & infrastructure development**

- Alteration of the agricultural sense of place;
- Loss of agricultural land for duration of mining;
- Visual intrusion as a result of site establishment;
- Potential impact on fauna within the footprint area;
- Potential impact on archaeological artefacts;

##### **Stripping and stockpiling of topsoil and/or overburden:**

- Visual intrusion caused by mining activities;
- Construction of site access road
- Loss of stockpiled topsoil during mining and stockpiling;
- Dust nuisance as a result of the disturbance of soil;
- Noise nuisance generated by earthmoving machinery;
- Infestation of the topsoil heaps and mining area with weeds or invader plant species;
- Potential impact on local fauna due to disturbance and loss of available habitat;
- Potential erosion of denuded areas;
- Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages;

##### **Drilling and blasting:**



- Health and safety risk posed by blasting activities;
- Dust nuisance caused by blasting activities;
- Noise nuisance as a result of blasting;

Excavation, loading and hauling to the processing plant:

- Dust nuisance due to excavation and from loading and vehicles transporting the material;
- Noise nuisance as a result of the mining activities;
- Unsafe working environment for employees;
- Soil contamination from hydrocarbon spills and/or littering;
- Potential impact on areas of palaeontological concern;
- Facilitation of erosion due to mining activities;

Processing, stockpiling and transporting of material:

- Dust nuisance generated at the processing plant;
- Noise nuisance stemming from operation of the processing plant;
- Potential contamination of environment due to improper waste management;
- Overloading of trucks impacting road infrastructure;
- Degradation of the access road;

Cumulative impacts:

- Impact the broad-scale ecological processes;
- Impact on existing infrastructure as a direct result of the mining operation;

Sloping and landscaping during rehabilitation:

- Safety risk posed by un-sloped areas;
- Erosion of returned topsoil after rehabilitation;
- Infestation of the reinstated areas by weeds and invader plant species;
- Potential impact associated with litter/waste left at the mining area.

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

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/discussion of the 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)

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

**TOPOGRAPHY**

**Rehabilitating/Landscaping of Mining Area:**

- The excavated area must serve as a final depositing area for the placement of overburden.

- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- Stockpiles must be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.
- No waste may be permitted to be deposited in the excavations.
- Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.
- The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.
- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).
- On completion of mining operations, the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

## **VISUAL CHARACTERISTICS**

### **Visual Mitigation:**

- The site must have a neat appearance and be kept in good condition at all times.
- Mining equipment must be stored neatly in dedicated areas when not in use.
- The permit holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the mining/use of a specific area.
- The excavation must be contained within the approved footprint of the permitted area.
- Upon closure the site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.

## **AIR AND NOISE QUALITY**

### **Fugitive Dust Emission Mitigation Measures:**

- The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).
- The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the haul roads must be limited to 40 km/h on the access road to prevent the generation of excess dust.
- Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.
- The crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts.
- Fines, blowing from the drop end of the crusher plant, can be minimized by attaching strips of used conveyor belts to the conveyor's end.
- Compacted dust must weekly be removed from the crusher plant to eliminate the dust source.
- Loads must be flattened to prevent spillage during transportation on public roads.
- Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts.
- All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).
- Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.

#### **Noise Handling:**

- The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.
- No loud music may be permitted at the mining area.
- All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).
- The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding land owners must be notified in writing prior to each blasting occasion.
- A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.

- Site management must strive to minimise the noise caused by generators. All generators must be maintained and equipped with sound mufflers. If possible the generators must be positioned towards the western part of the mining area (S1) as this will point it away from the neighbouring land users. Further to this, all generators must be placed on a level area/footing to minimise vibration noise.
- Best practice measures shall be implemented in order to minimize potential noise impacts.

## **GEOLOGY AND SOIL**

### **Topsoil Management:**

- The upper 300 mm of the soil must be stripped and stockpiled before mining.
- Topsoil is a valuable and essential resource for rehabilitation and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.
- Topsoil stripping, stockpiling and re-spreading must be done in a systematic way. The mining plan have to be such that topsoil is stockpiled for the minimum possible time.
- The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas.
- Topsoil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion.
- Topsoil heaps may 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.
- The temporary topsoil stockpiles must be kept free of invasive plant species.
- Topsoil heaps to be stored longer than a period of 6 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.
- Storm- and runoff water must be diverted around the stockpile area to prevent erosion.
- The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site.
- The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.
- A cover crop must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum

biomass production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established.

- Run-off water must be controlled via temporary berms, where necessary, on the slopes to ensure that accumulation of run-off does not cause down-slope erosion.
- Silt/sediment traps/barriers should be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas.
- These sediment/silt barriers should be regularly maintained and cleared so as to ensure effective drainage of the areas
- The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.

## HYDROLOGY

### **Erosion Control and Storm Water Management:**

- Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place.
- Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion.
- Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms.
- When mining within steep slopes, it must be ensured that adequate slope protection is provided.
- During mining, the outflow of run-off water from the mining excavation must be controlled to prevent down-slope erosion. This must be done by way of the construction of temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur.
- Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation.
- Any erosion problems within the mining area as a result of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.
- Silt/sediment traps/barriers must be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. These sediment/silt barriers must regularly be maintained and cleared so as to ensure effective drainage of the areas.
- Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and

waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose:

- Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.
  - Dirty water must be collected and contained in a system separate from the clean water system.
  - Dirty water must be prevented from spilling or seeping into clean water systems.
  - A 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 a storm water management plan.
- Polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards must be restricted to the workshop areas and must be undertaken on impermeable hard standing surfaces, which are formally drained to a dirty water drainage system at the site.
- Vehicle maintenance or refueling should be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refueling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary
- All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. In order to prevent pollution of the surrounding environment during an accidental spillage, the designated storage areas must be situated on an impermeable surface and must feature a perimeter bund and a drainage sump. The volume of the bund and sump must be sized to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. The storage areas must feature a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently.

## **TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER**

### **Management of Vegetation Removal:**

- The mining boundaries must be clearly demarcated and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly.

- A pre-commencement walk-through of the final mining footprint, must be done by a suitably qualified botanist to identify species of conservation concern that need to be removed/relocated prior to bush clearance.
- Permits for the removal of protected plant species (if required) must be obtained and kept on-site in the possession (at all times) of the flora search and rescue team.
- A pre-commencement environmental induction for all site staff must be provided to ensure that basic environmental principles are adhered to. This includes awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc.
- Bush-clearance may only commence once the recommendations of the specialist (pre-commencement walkthrough) have been implemented.
- Cleared vegetation to be retained at any time may not be burned, but can be mulched and stockpiled. Ideally the heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes.
- The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place.
- All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed.
- No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits.
- No fires must be allowed on-site.
- If deemed necessary by the ECO, a firebreak must be made around the periphery of the site in autumn every year. Vegetated areas inside the break should be burned (upon recommendation of the ECO) on a biennial basis if deemed necessary. The relevant veld burning legislation must be adhered to.

### **Management of Invasive Plant Species:**

- An invasive plant species management plan (Appendix K) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities.
- No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed.
- All stockpiles (topsoil & overburden) must be kept free of invasive plant species.
- 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 chemically by a registered pest control officer (PCO) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.

## **FAUNA**

### **Protection of Fauna:**

- The site manager must ensure no fauna is caught, killed, harmed, sold or played with.
- Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person.
- All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area.
- No snares may be set or nests raided for eggs or young.
- All vehicles must adhere to a low speed limit (40 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises.
- No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in the site vehicles and daily removed to the site camp.

## **CULTURAL AND HERITAGE ENVIRONMENT**

### **Archaeological, Heritage and Palaeontological Aspects:**

- No pre-quarrying archaeological mitigation of the proposed quarry site is recommended. Although unlikely, should any human remains be encountered at any stage during the works associated with the project, work in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately.;
- Should any human remains be encountered at any stage during the works associated with the project, work in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately in order to make a decision about how to deal with the remains.
- All mining must be confined to the development footprint area.
- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.



- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.
- The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA.
- Work may only continue once the go-ahead was issued by SAHRA.
- Built Environment:
- If fossils are found during quarrying, they must be excavated and collected by a professional palaeontologist, working under a SAHRA permit and then housed in a recognised repository.

## **LAND USE**

### **Loss of agricultural land for duration of mining:**

- The Applicant signed a lease agreement with the landowner to compensate for the loss of agricultural land for the duration of the mining period. If needed, mined-out/rehabilitated areas could revert back to agricultural use once the cover crop stabilised.
- Restrict the proposed development to the smallest footprint possible and do not disturb/alter areas outside the development;
- Ensure that the mining activities and associated infrastructure is adequately fenced to prevent livestock from gaining access to the base station; and,
- Ensure that access roads are kept clear and that construction and operational activities do not interfere with agricultural activities.

### **Management of the Access Road:**

- Storm water must be diverted around the access road to prevent erosion.
- Vehicular movement must be restricted to the existing access road and crisscrossing of tracks through undisturbed areas must be prohibited.
- Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder.
- Overloading of the trucks must be prevented and proof of load weights must be filed and be available for auditing by relevant officials.
- The speed of all mining equipment/vehicles must be restricted to 40 km/h on the access roads.

## GENERAL

### Waste Management:

- Regular vehicle maintenance, repairs and services may only take place at the workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop in order to ensure proper disposal. This waste must be treated as hazardous waste and must be disposed of at a registered hazardous waste handling facility, alternatively collected by a registered hazardous waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- Vehicle maintenance or refueling should be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refueling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary
- If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must 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. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof of safe disposal must be filed for auditing purposes.
- An oil spill kit must be obtained, and the employees must be trained in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.
- Spills must be cleaned up immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. Proof must be filed.
- Suitable covered receptacles must be available at all times and conveniently placed for the disposal of general waste.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Specific precautions must be taken

to prevent refuse from being dumped on or in the vicinity of the mine area. Proof of disposal must be available for auditing purposes.

- Biodegradable refuse must be handled as indicated above.
- Re-use or recycling of waste products must be encouraged on site.
- No waste may be buried or burned on the site.
- Ablution facilities must be provided in the form of a chemical toilet/s. The chemical toilet must be anchored (to prevent blowing/falling over) and shall be serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- The use of any temporary, chemical toilet facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder.
- When small volumes of wastewater are generated during the life of the mine the following is applicable:
  - Water containing waste must not be discharged into the natural environment.
  - Measures to contain the waste water and safely dispose thereof must be implemented.
- It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the to all relevant authorities. In the event of a significant accidental spill or leak of hazardous substances (e.g. petrol, diesel, etc.) during any phase of the proposed activities, such an incident(s) must be reported.
- Site management must implement the use of waste registers to keep record of the waste generated and removed from the mining area.

#### **Storage/Handling of Hazardous Substances/Chemicals:**

- Chemical storage areas must be placed on level ground to prevent offsite migration of any spilled product.
- The floor of the storage area must be impermeable to prevent seepage of spilled products into the ground or ground water.
- Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member.
- A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site.
- Any fuel/used oil tanks must have secondary containment in the form of an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. The distance and height of the bund wall relative to that of the tank must also be taken into

consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.

- The site manager must 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 must be inspected at least weekly and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely.
- The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water, and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility.
- Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and are not be stored on bare soil. The waste water originating from the cleaning of drip trays must be discarded into the oil sump.

#### **Management of health and safety risks:**

- Workers must have access to the correct personal protection equipment (PPE) as required by law.
- Sanitary facilities must be located within 100 m from any point of work.
- All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).
- The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity.
- The surrounding landowners must be informed in writing ahead of each blasting event.
- The compliance of ground vibration and airblast levels must be monitored to USBM standards with each blasting event.
- A vibro recorder must be used to record all blasts.
- Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.
- Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.

#### **ix) Motivation where no alternative sites were considered.**

As mentioned previously, the proposed mining area was identified as the preferred and only viable site alternative as it is superimposed over the dolerite ridge present on the face of the hill, the aggregate (dolerite) / gravel mining area can be moved to various alternative sites within close proximity of the proposed mining area but will result in the complete destruction of the unchanneled valley-bottom wetland. However, the proposed mining area, as indicated

on the Regulation 2.2 Mine Plan (attached as Appendix A), was identified as the preferred and only viable site alternative as the proposed area falls over an undisturbed area of the farm but would be the idealist due to the underlying dolerite ridge. The proposed project will not necessitate the loss of agricultural field with high potential to the land owner. This was deemed the only site alternative as this is the only area that will be viable for the land owner due to the low agricultural potential.

### **Site Alternative 2:**

Site Alternative 2 (S2) was assessed for the proposed mining but found not environmentally and practically suitable. The earmarked area is situated between the two existing quarries however this will result in the complete destruction of the unchanneled valley-bottom wetland that is within the earmarked area. Site alternative 1, was deemed the only viable site alternative as this is the only area that will be viable for the applicant due to the presence of the dolerite ridge. Although the position of Site Alternative 2 will still allow the development of the quarry on the property, it is believed that the impact associated with this site alternative is of higher significance without the need or motivation justifying it.

This alternative site was not deemed to be the preferred option as the mining activities will be conducted on top of the valley-bottom wetland. In light of this, no alternative sites were considered during this assessment.

### **x) Statement motivating the alternative development location within the overall site.**

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

Site Alternative 1 was identified during the assessment phase of the environmental impact assessment as the preferred and only site alternative. The following matters contributed to the identification of the preferred development footprint:

1. **Topography** – The natural topography of the proposed excavated comprised of undulating grassland plains, with small scattered patches of dolerite outcrops in areas. The vegetation is comprised of a short-closed grassland cover, largely dominated by a dense *Themeda triandra* sward, often severely grazed to form a short lawn. The elevation loss from the proposed mining footprint to the town of Ermelo to be 1759m over 6.59km.
2. **Visual Characteristics** –The viewshed analysis showed that the visual impact of the proposed gravel mining operation will be of low significance. The small scale of the proposed operation, and the mining area will be located on the face of the hill in order to minimize the visual impact. Should the Applicant successfully rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mine.

3. **Air and Noise Quality** – The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. The Air Quality Impact Statement (Appendix M1) conducted by Airshed Planning Professionals (Pty) Ltd states it is unlikely that the proposed operations will result in significant detrimental impact on air quality in the area, with very low impacts expected at nearby sensitive receptor locations. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.

As per Noise Impact Statement (Appendix M2) conducted by Airshed Planning Professionals (Pty) Ltd - it is unlikely that the proposed operations will result in significant detrimental impact on environmental noise for most of the study area. However, mining and processing activities are currently planned to be 24 hours per day, and noise generated by night-time operations are likely to be much more noticeable, given the typical low baseline noise levels in rural areas. Should the permit holder implement the mitigation measures proposed in this document, EMPR and the Noise Impact Statement (Appendix M2) the impact on the noise of the surrounding environment is deemed to be of low significance.

4. **Geology and Soil** –. The geology of the study area is restricted to vertic clay soils derived from dolerite that is intrusive in the Karoo sediments of the Madzaringwe Formation in the north and the Volksrust Formation and the Adelaide Subgroup in the south. Dominant land type Ca, while Ea land type is of subordinate importance.
5. **Mining, Biodiversity and Groundcover** – Ground truthing, by the specialists, showed that the proposed footprint of the mining area of natural vegetation which is dominated by scattered trees and a well-developed grass layer. Disturbances are present and include overgrazing by domestic livestock and low-level infestation by exotic weeds and shrubs, though overall the site is still largely natural. However, the surrounding areas, especially toward the south and west of the site, has been heavily modified by previous mining activities. The site contains several plants listed as protected in Mpumalanga such as *Eucomis montana* *Haemanthus humilis* subsp. *Hirsutus Gladiolus dalenii* subsp. *dalenii*, *Gladiolus ecklonii*, *Gladiolus crassidolius*, *Boophone distichia* and *Zantedeschia rehmannii*. The Mpumalanga Biodiversity Sector Plan (2014) has been published and has identified areas which are essential to meeting conservation targets for specific vegetation types, i.e. Critical Biodiversity Areas. The terrestrial component of the site has been listed as a Critical Biodiversity Area (CBA), mostly as it contains portions of a threatened ecosystem, intact grassland containing a significant species diversity and is an optimal area for meeting the required conservation targets. A portion of the site is also listed as an

Ecological Support Area (ESA) as it forms part of an ecological corridor for maintaining ecosystem function. The freshwater component of the site is regarded as an Other Natural Area (ONA) which indicates that it does not form part of a Strategic Water Source Area (SWSA). The Applicant will construct a road from the existing access point to the mining area. It is proposed that should the applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the vegetation and groundcover in general is deemed to be of low significance

6. **Fauna** - No protected or red data species were identified during ground truthing to be resident within the proposed footprint area. Various small mammals and reptiles occur on the property. Larger herbivore species are very scarce or absent due to the conflicting land use. 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 will be informed and managed to ensure that no fauna at the site is harmed. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations must not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed must contain soil ramps allowing fauna to escape the trench.
7. **Cultural and Heritage Environment** - The proposed mining footprint extends into an undisturbed area. As per the Heritage Impact Assessment (Appendix N), the study area is fallow and has not been developed or impacted on by adjacent mining activities. Examination of historical topographic maps and aerial images showed no structures or stone walled settlements in the study area and the impact footprint is considered to be of low heritage potential. This was confirmed during the site visit and no heritage finds of significance was recorded during the survey.

According to the SAHRA Paleontological sensitivity map the study area is of insignificant paleontological significance, but very close to an area of very high sensitivity and an independent study (Appendix N1) was conducted for this aspect. Bamford (2022) concluded that the proposed site lies on the non-fossiliferous Jurassic dolerite but is very close to the very highly sensitive Vryheid Formation that could preserve fossil plants of the Glossopteris flora. No fossils were found during the site visit. Nonetheless a Fossil Chance Find Protocol should be added to the EMPr. No adverse impact on heritage resources is expected by the project and it is recommended that the project can commence on the condition that the following recommendations (Section 10) are implemented as part of the EMPr and based on approval from SAHRA

A chance-find protocol must be incorporated in the EMPR to be adhered to for the duration of the site establishment, operational- and decommissioning phases.

8. **Site Specific Infrastructure** – The following is located within close proximity:

- An existing quarry is located 150m south west of the site with unpreferred mineral resources.
- Farm house 1.10km east of the site and another farm house north-west of the site
- The R39 - 600m towards the western part of the site

None of the existing infrastructure falls within the site area and will therefore not be affected.

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

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

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

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

**SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT:**

Alteration of the agricultural sense of place

							Significance				
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>				<b>Degree of Mitigation: None</b>				
2	2	1	1.6	4	5	4.5	7.2				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>				<b>Degree of Mitigation: None</b>				
2	2	1	1.6	4	5	4.5	7.2				

Loss of agricultural land for duration of mining

							Significance				
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High



Severity	Duration	Extent	Probability	Frequency	Likelihood	Significance	
3	4	1	2.6	4	3	3.5	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>	
3	4	1	2.6	4	3	3.5	<b>9.1</b>
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: None</b>	
3	4	1	2.6	4	3	3.5	<b>9.1</b>

Visual intrusion as a result of site establishment

						Significance					
			Consequence		Likelihood		Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
2	2	1	1.6	4	3	3.5	<b>5.6</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
2	2	1	1.6	4	3	3.5	<b>5.6</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: None</b>					
2	2	1	1.6	4	3	3.5	<b>5.6</b>				

Potential impact on fauna within the footprint area

						Significance					
			Consequence		Likelihood		Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
4	4	1	3	4	4	4	<b>12</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
2	2	1	1.6	4	3	3.5	<b>5.6</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
2	2	1	1.6	4	3	3.5	<b>5.6</b>				

Potential impact on vegetation and listed and/or protected plant species

						Significance					
			Consequence		Likelihood		Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
4	4	1	3	4	4	4	<b>12</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
2	2	1	1.6	4	3	3.5	<b>5.6</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
2	2	1	1.6	4	3	3.5	<b>5.6</b>				

Dust nuisance due to excavation and from loading and vehicles transporting the material

						Significance					
			Consequence		Likelihood		Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
3	4	1	2.6	4	3	3.5	<b>9.1</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				

Potential impact on archaeological artefacts

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				

New job opportunities as a result of the mining operation (Positive Impact)

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: N/A</b>					
4	4	5	4.6	5	5	5	<b>23</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: N/A</b>					
4	4	5	4.6	5	5	5	<b>23</b>				

**CONSTRUCTION OF SITE ACCESS ROAD:**

Visual intrusion caused by construction of site access road

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: None</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				

Loss of stockpiled topsoil during construction of access road

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: None</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				

Dust nuisance as a result of the construction of access road

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					

2	3	2	2.3	4	4	4	9.2
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Noise nuisance generated by earthmoving machinery

			Consequence			Likelihood	Significance				
Severity	Duration	Extent					Low	Low-Medium	Medium	Medium-High	High
2	3	2	2.3	4	4	4	1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	9.2				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	9.2				

Potential erosion of denuded areas

			Consequence			Likelihood	Significance				
Severity	Duration	Extent					Low	Low-Medium	Medium	Medium-High	High
3	3	1	2.3	4	2	3	1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	6.9				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	6.9				

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

			Consequence			Likelihood	Significance				
Severity	Duration	Extent					Low	Low-Medium	Medium	Medium-High	High
3	3	1	2.3	4	4	4	1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	9.2				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	9.2				

**STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN:**

Visual intrusion caused by mining activities

			Consequence			Likelihood	Significance				
Severity	Duration	Extent					Low	Low-Medium	Medium	Medium-High	High
3	3	1	2.3	4	4	4	1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
3	3	1	2.3	4	4	4	9.2				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: None</b>					
3	3	1	2.3	4	4	4	9.2				

Loss of stockpiled topsoil during mining and stockpiling

			Consequence			Likelihood	Significance				
Severity	Duration	Extent					Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					

3	4	1	2.6	4	3	3.5	9.1
Rating: Medium			Site Layout Alternative 2			Degree of Mitigation: Full	
3	4	1	2.6	4	3	3.5	9.1

Dust nuisance as a result of the disturbance of soil

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 - 19.9	High 20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	9.2				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	9.2				

Noise nuisance generated by earthmoving machinery

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 - 19.9	High 20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	9.2				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
2	3	2	2.3	4	4	4	9.2				

Infestation of the topsoil heaps and mining area with weeds or invader plant species

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 - 19.9	High 20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	6.9				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	6.9				

Potential impact on local fauna due to disturbance and loss of available habitat

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 - 19.9	High 20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
2	4	1	2.3	4	4	4	9.2				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
4	4	1	3	4	4	4	12				

Potential erosion of denuded areas

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 - 19.9	High 20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	6.9				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	6.9				

Loss of stockpiled material due to ineffective storm water control

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

**DRILLING AND BLASTING:**

Health and safety risk posed by blasting activities

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				

Dust nuisance caused by blasting activities

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				

Noise nuisance as a result of blasting

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				

## EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT

Visual intrusion as a result of excavation and from loading and vehicles transporting the material

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
3			3			1					
3	3	1	2.3	4	2	3	<b>6.9</b>				

Dust nuisance due to excavation and from loading and vehicles transporting the material

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Noise nuisance as a result of the mining activities

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	2	3	<b>6.9</b>				

Unsafe working environment for employees

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Soil contamination from hydrocarbon spills and/or littering

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	5	4.5	<b>11.7</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	5	4.5	<b>11.7</b>				

Potential impact on areas of palaeontological concern

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Facilitation of erosion due to mining activities

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	3	3.5	<b>9.1</b>				

**PROCESSING, STOCKPILING AND TRANSPORTING OF MATERIAL:**

Dust nuisance generated at the processing plant

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Noise nuisance stemming from operation of the processing plant

			Consequence			Likelihood	Significance				
Severity	Duration	Extent		Probability	Frequency		Low	Low-Medium	Medium	Medium-High	High
						1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25	
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				



Visual intrusion as a result of operation of the processing plant

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Potential contamination of environment due to improper waste management

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Overloading of trucks impacting road infrastructure

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	4	4	<b>10.4</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	4	1	2.6	4	4	4	<b>10.4</b>				

Degradation of the access road

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	4	2	3	4	5	4.5	<b>13.5</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	4	2	3	4	5	4.5	<b>13.5</b>				

## CUMULATIVE IMPACTS:

Impact the broad-scale ecological processes - The loss of unprotected vegetation types on a cumulative basis from the broad area may impact the country's ability to meet its conservation targets.

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Partial</b>					
3	4	1	2.6	4	4	4	<b>10.4</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Partial</b>					
3	4	1	2.6	4	4	4	<b>10.4</b>				

Transformation of intact habitat would contribute to the fragmentation of the landscape and would potentially disrupt the connectivity of the landscape for fauna, avifauna, and flora and impair their ability to respond to environmental fluctuations.

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Partial</b>					
3	4	1	2.6	4	4	4	<b>10.4</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Partial</b>					
3	4	1	2.6	4	4	4	<b>10.4</b>				

Impact on existing infrastructure as a direct result of the mining operation

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: None</b>					
1	1	1	1	1	5	3	<b>3</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: None</b>					
1	1	1	1	1	5	3	<b>3</b>				

## SLOPING AND LANDSCAPING DURING REHABILITATION:

Safety risk posed by un-sloped areas

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	5	1	3	4	5	4.5	<b>13.5</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	5	1	3	4	5	4.5	<b>13.5</b>				

Erosion of returned topsoil after rehabilitation

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	5	1	3	4	3	3.5	<b>10.5</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	5	1	3	4	3	3.5	<b>10.5</b>				

Infestation of the reinstated areas by weeds and invader plant species

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Potential impact associated with litter/waste left at the mining area

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: Full</b>					
3	3	1	2.3	4	4	4	<b>9.2</b>				

Return of the mining area to agricultural use upon closure (Positive Impact)

						Significance					
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25
<b>Rating: Medium</b>			<b>Site Layout Alternative 1</b>			<b>Degree of Mitigation: N/A</b>					
3	5	1	3	5	5	5	<b>15</b>				
<b>Rating: Medium</b>			<b>Site Layout Alternative 2</b>			<b>Degree of Mitigation: N/A</b>					
3	5	1	3	5	5	5	<b>15</b>				

**j) Assessment of each identified potentially significant impact and risk**

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

*Table 25: Assessment of each identified potentially significant impact and risk*

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
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.)		In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	If not mitigated.	(modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc)  E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	If mitigated.
Demarcation of site with visible beacons.	No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	N/A	Site Establishment & Operational Phase	Low-Medium(S1&S2)	<u>Control:</u> Implementing proper housekeeping.	Low-Medium(S1&S2)
Site establishment and infrastructure development.	Alteration of the agricultural sense of place.	The impact may affect the agricultural opportunities of the property.	Site Establishment- and Decommissioning phase )	Low-Medium(S1&S2)	<u>Control &amp; Remedy:</u> Proper housekeeping and storm water management.	Low-Medium(S1&S2)
Site establishment and infrastructure development.	Loss of agricultural land for duration of mining.	The impact may affect the agricultural opportunities of the property.	Site Establishment-, Operational- and Decommissioning phase	Medium (S1&S2)	<u>Control:</u> Implementing soil- and storm water management.	Medium(S1&S2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
<ul style="list-style-type: none"> <li>Site establishment and infrastructure development.</li> <li>Stripping and stockpiling of topsoil and overburden.</li> <li>Excavation, Loading and Hauling to the processing plant</li> </ul>	<ul style="list-style-type: none"> <li>Visual intrusion as a result of site establishment.</li> <li>Visual intrusion caused by mining activities.</li> <li>Visual intrusion as a result of excavation and from loading and vehicles transporting the material</li> </ul>	The visual impact may affect the aesthetics of the landscape.	Site Establishment- and Operational phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> <li>Medium(S1&amp; S2)</li> <li>Medium(S1&amp; S2)</li> </ul>	<u>Control &amp; Stop:</u> Implementing good management practices.	<ul style="list-style-type: none"> <li>Low-Medium(S1&amp; S2)</li> <li>Low-Medium(S1&amp; S2)</li> <li>Low-Medium(S1&amp; S2)</li> </ul>
<ul style="list-style-type: none"> <li>Site establishment and infrastructure development.</li> </ul>	<ul style="list-style-type: none"> <li>Potential impact on vegetation and listed and/or protected plant species.</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>Medium - High(S1) &amp; - Medium (S2)</li> </ul>	<u>Control:</u> Noise suppression methods and proper housekeeping.	<ul style="list-style-type: none"> <li>Medium(S1) &amp; Low - Medium (S2)</li> </ul>
<ul style="list-style-type: none"> <li>Site establishment and infrastructure development.</li> <li>Stripping and stockpiling of topsoil and overburden.</li> </ul>	<ul style="list-style-type: none"> <li>Potential impact on fauna within the footprint area.</li> <li>Potential impact on local fauna due to disturbance and loss of available habitat.</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>Medium – High (S1) &amp; Medium (S2)</li> <li>Medium (S1) &amp; Medium - High (S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	<ul style="list-style-type: none"> <li>Medium (S1) &amp; Low-medium (S2)</li> <li>Low – Medium (S1) &amp; Medium (S2)</li> </ul>
<ul style="list-style-type: none"> <li>Site establishment and infrastructure development</li> </ul>	<ul style="list-style-type: none"> <li>Dust nuisance due to excavation and from loading and vehicles transporting the material</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	<ul style="list-style-type: none"> <li>Low-Medium (S1&amp;S2)</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
<ul style="list-style-type: none"> <li>█ Stripping and stockpiling of topsoil and overburden.</li> <li>█ Excavation, Loading and Hauling to the processing plant</li> </ul>	<ul style="list-style-type: none"> <li>█ Noise nuisance as a result of the mining activities</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>█ Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	<ul style="list-style-type: none"> <li>█ Low-Medium (S1&amp;S2)</li> </ul>
	<ul style="list-style-type: none"> <li>█ Unsafe working environment for employees</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>█ Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	<ul style="list-style-type: none"> <li>█ Low-Medium(S1&amp;S2)</li> </ul>
	<ul style="list-style-type: none"> <li>█ Soil contamination from hydrocarbon spills and/or littering</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>█ Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	<ul style="list-style-type: none"> <li>█ Low-Medium(S1&amp;S2)</li> </ul>
	<ul style="list-style-type: none"> <li>█ Facilitation of erosion due to mining activities</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>█ Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	<ul style="list-style-type: none"> <li>█ Low-Medium(S1&amp;S2)</li> </ul>
<ul style="list-style-type: none"> <li>█ Site establishment and infrastructure development.</li> <li>█ Excavation, loading and hauling to the processing plant.</li> </ul>	<ul style="list-style-type: none"> <li>█ Potential impact on archaeological artefacts.</li> <li>█ Potential impact on areas of palaeontological concerns.</li> </ul>	This could impact on the cultural and heritage legacy of the receiving environment.	Operational Phase	<ul style="list-style-type: none"> <li>█ Medium (S1&amp;S2)</li> <li>█ Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol.	<ul style="list-style-type: none"> <li>█ Low-Medium(S1&amp;S2)</li> <li>█ Low-Medium(S1&amp;S2)</li> </ul>
<ul style="list-style-type: none"> <li>█ Construction of Access Road</li> </ul>	<ul style="list-style-type: none"> <li>█ Visual intrusion caused by construction of site access road</li> </ul>	The visual impact may affect the aesthetics of the landscape.	Site establishment phase	<ul style="list-style-type: none"> <li>█ Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol	<ul style="list-style-type: none"> <li>█ Low-Medium(S1&amp;S2)</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	Loss of stockpiled topsoil during construction of access road	This will impact on the biodiversity of the receiving environment.	Site establishment phase	Medium (S1&S2)	<u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol	Low Medium (S1&S2)
	Dust nuisance as a result of the construction of access road	This will impact on the biodiversity of the receiving environment.	Site establishment phase	Medium (S1&S2)	<u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol	Low Medium (S1&S2)
	Noise nuisance generated by earthmoving machinery	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	Medium (S1&S2)	<u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol	Low Medium (S1&S2)
	Potential erosion of denuded areas	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	Medium (S1&S2)	<u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol	Low Medium (S1&S2)
	Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	Medium (S1&S2)	<u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol	Low Medium (S1&S2)
Drilling and Blasting	Health and safety risk posed by blasting activities	This will impact on the biodiversity of the receiving environment	Operational Phase	Medium (S1&S2)	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	Low-Medium(S1&S2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	<ul style="list-style-type: none"> <li>Dust nuisance caused by blasting activities</li> </ul>	This will impact on the biodiversity of the receiving environment	Operational Phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	<ul style="list-style-type: none"> <li>Low-Medium(S1&amp;S2)</li> </ul>
	<ul style="list-style-type: none"> <li>Noise nuisance as a result of blasting</li> </ul>	This will impact on the biodiversity of the receiving environment	Operational Phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	<ul style="list-style-type: none"> <li>Low-Medium(S1&amp;S2)</li> </ul>
<ul style="list-style-type: none"> <li>Site establishment and infrastructure development.</li> </ul>	<ul style="list-style-type: none"> <li>New job opportunities as a result of the mining operation (+)</li> </ul>	Contribution to the socio-economic status of the area.	Operational Phase	<ul style="list-style-type: none"> <li>High (S1&amp;S2)</li> </ul>	<u>Control:</u> Proper site management.	<ul style="list-style-type: none"> <li>High (S1&amp;S2)</li> </ul>
<ul style="list-style-type: none"> <li>Stripping and stockpiling of topsoil and overburden</li> </ul>	<ul style="list-style-type: none"> <li>Loss of stockpiled topsoil during mining and stockpiling</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol	<ul style="list-style-type: none"> <li>Low – Medium (S1&amp;S2)</li> </ul>
	<ul style="list-style-type: none"> <li>Dust nuisance as a result of the disturbance of soil</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol	<ul style="list-style-type: none"> <li>Low – Medium (S1&amp;S2)</li> </ul>
	<ul style="list-style-type: none"> <li>Noise nuisance generated by earthmoving machinery</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol	<ul style="list-style-type: none"> <li>Low – Medium (S1&amp;S2)</li> </ul>
	<ul style="list-style-type: none"> <li>Infestation of the topsoil heaps and mining area with weeds or invader plant species</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol	<ul style="list-style-type: none"> <li>Low-Medium(S1&amp;S2)</li> </ul>



ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
			Decommissioning Phase			
	<ul style="list-style-type: none"> <li>Potential erosion of denuded areas</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol	<ul style="list-style-type: none"> <li>Low – Medium (S1&amp;S2)</li> </ul>
	<ul style="list-style-type: none"> <li>Loss of stockpiled material due to ineffective storm water control</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol	<ul style="list-style-type: none"> <li>Low – Medium (S1&amp;S2)</li> </ul>
<ul style="list-style-type: none"> <li>Processing, Stockpiling and transporting of material</li> </ul>	<ul style="list-style-type: none"> <li>Dust nuisance generated at the processing plant</li> </ul>	This will impact on the biodiversity of the receiving environment	Operational Phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	<ul style="list-style-type: none"> <li>Low-Medium(S1&amp;S2)</li> </ul>
	<ul style="list-style-type: none"> <li>Noise nuisance stemming from operation of the processing plant</li> </ul>	This will impact on the biodiversity of the receiving environment	Operational Phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	<ul style="list-style-type: none"> <li>Low-Medium (S1&amp;S2)</li> </ul>
	<ul style="list-style-type: none"> <li>Visual intrusion as a result of operation of the processing plant</li> </ul>	This will impact on the biodiversity of the receiving environment	Operational Phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2))</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	<ul style="list-style-type: none"> <li>Low-Medium (S1&amp;S2)</li> </ul>
	<ul style="list-style-type: none"> <li>Potential contamination of environment due to improper waste management</li> </ul>	This will impact on the biodiversity of the receiving environment	Operational Phase	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and	<ul style="list-style-type: none"> <li>Low-Medium(S1&amp;S2))</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
					waste management plan and Proper site management.	
	Overloading of trucks impacting road infrastructure	This will impact on the biodiversity of the receiving environment	Operational Phase	Medium – High (S1&S2)	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	Medium (S1&S2)
	Degradation of the access road	This will impact on the biodiversity of the receiving environment	Operational Phase	Medium – High (S1&S2)	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	Medium (S1&S2)
Sloping and landscaping during rehabilitation	Safety risk posed by un-sloped areas	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	Medium – High (S1&S2)	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	Medium (S1&S2)
	Erosion of returned topsoil after rehabilitation	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	Medium – High (S1&S2)	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	Medium (S1&S2)
	Infestation of the reinstated areas by weeds and invader plant species	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	Medium (S1&S2)	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	Low-Medium(S1&S2)
	Potential impact associated with litter/waste left at the mining area	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	Medium (S1&S2)	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and	Low-Medium(S1&S2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
					waste management plan and Proper site management	
	<ul style="list-style-type: none"> <li>Return of the mining area to agricultural use upon closure (Positive Impact)</li> </ul>	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	<ul style="list-style-type: none"> <li>Medium - High (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	<ul style="list-style-type: none"> <li>Medium - High (S1&amp;S2)</li> </ul>
<ul style="list-style-type: none"> <li>Cumulative Impacts</li> </ul>	<ul style="list-style-type: none"> <li>Impact the broad-scale ecological processes - The loss of unprotected vegetation types on a cumulative basis from the broad area may impact the country's ability to meet its conservation targets.</li> </ul>	This will impact on the biodiversity of the receiving environment	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>Medium - High (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>
	<ul style="list-style-type: none"> <li>Transformation of intact habitat would contribute to the fragmentation of the landscape and would potentially disrupt the connectivity of the landscape for fauna, avifauna, and flora and impair their ability to respond to environmental fluctuations.</li> </ul>	This will impact on the biodiversity of the receiving environment	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>Medium - High (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	<ul style="list-style-type: none"> <li>Medium (S1&amp;S2)</li> </ul>
	<ul style="list-style-type: none"> <li>Impact on existing infrastructure as a direct result of the mining operation</li> </ul>	This will impact on the biodiversity of the receiving environment	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>Low - Medium (S1&amp;S2)</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	<ul style="list-style-type: none"> <li>Low (S1&amp;S2)</li> </ul>

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

**k) Summary of specialist reports.**

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

Table 26: Summary of specialist reports

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT  (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
<p>The screening report for an environmental authorisation, as required in terms of the 2014 NEMA EIA Regulations of a portion of portion 15 on Farm Rietspruit nr 437, IS, Msukaligwa Local Municipality, Mpumalanga Province. The report identified the following list of specialist assessment for inclusion in the assessment report:</p> <ul style="list-style-type: none"> <li>■ Agricultural Impact Assessment;</li> <li>■ Archaeological and Cultural Heritage Impact Assessment;</li> <li>■ Paleontology Impact Assessment;</li> <li>■ Terrestrial Biodiversity Impact Assessment;</li> <li>■ Aquatic Biodiversity Impact Assessment;</li> <li>■ Hydrology Assessment;</li> <li>■ Noise Impact Assessment;</li> <li>■ Radioactivity Impact Assessment;</li> <li>■ Traffic Impact Assessment;</li> <li>■ Geotechnical Assessment;</li> <li>■ Socio-economic Assessment;</li> <li>■ Plant Species Assessment;</li> <li>■ Animal Species Assessment.</li> </ul> <p>Inzalo Crushing and Aggregates (Pty) Ltd appointed Greenmined Environmental (Pty) Ltd as the environmental impact assessment practitioner (EAP) to undertake the EIA associated with the mining permit application. In light of this Greenmined would like to respond as follows to the list of required specialist studies:</p> <ul style="list-style-type: none"> <li>■ Agricultural Impact Assessment (AIA):</li> </ul>			

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT  (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
<p>According to the Agricultural Compliance Statement (Appendix M6) that was conducted by Blue Leaf Environmental, the following was found during the site visit:</p> <ul style="list-style-type: none"> <li>• Up to 90% of the site is covered by natural grassland vegetation dominated by <i>Themeda triandra</i>. Small trees occur on the low ridge running through the centre of the study site.</li> <li>• No agricultural activities were observed within the study site, literature also confirmed that other than grazing, no other agricultural activities were practised within the study site.</li> <li>• Water is a limiting factor and the nearest surface water occur over 2km away from the site.</li> </ul> <p>Based on the above, it is the opinion of the specialist that the land contained within the proposed mining study site is considered as low sensitivity for agriculture. A full Agricultural Assessment is therefore NOT required.</p> <p>■ Archaeological and Cultural Heritage Impact Assessment (HIA) &amp; Paleontology Impact Assessment (PIA):</p> <p>As per the Heritage Impact Assessment (Appendix N), the study area is fallow and has not been developed or impacted on by adjacent mining activities. Examination of historical topographic maps and aerial images showed no structures or stone walled settlements in the study area and the impact footprint is considered to be of low heritage potential. This was confirmed during the site visit and no heritage finds of significance was recorded during the survey.</p> <p>According to the SAHRA Paleontological sensitivity map the study area is of insignificant paleontological significance, but very close to an area of very high sensitivity and an independent study (Appendix N1) was conducted for this aspect. Bamford (2022) concluded that the proposed site lies on the non-fossiliferous Jurassic dolerite but is very close to the very highly sensitive Vryheid Formation that could preserve fossil plants of the Glossopteris flora. No fossils were found during the site visit. Nonetheless a Fossil Chance Find Protocol should be added to the EMPr.</p> <p>No adverse impact on heritage resources is expected by the project and it is recommended that the project can commence on the condition that the following recommendations (Section 10) are implemented as part of the EMPr and based on approval from SAHRA.</p> <p>■ Terrestrial Biodiversity Impact Assessment (TBIA) &amp; Plant Species Assessment (PSA) &amp; Animal Species Assessment (ASA):</p>			

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT  (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	<p>As mentioned earlier, as per the botanical assessment report conducted by DPR Ecologist dated February attached as appendix M – The site itself still consists of natural vegetation which is dominated by scattered trees and a well-developed grass layer. Disturbances are present and include overgrazing by domestic livestock and low-level infestation by exotic weeds and shrubs, though overall the site is still largely natural. However, the surrounding areas, especially toward the south and west of the site, has been heavily modified by previous mining activities. The site contains several plants listed as protected in Mpumalanga such as <i>Eucomis montana</i> <i>Haemanthus humilis subsp. Hirsutus Gladiolus dalenii subsp. dalenii</i>, <i>Gladiolus ecklonii</i>, <i>Gladiolus crassidolius</i>, <i>Boophone distichia</i> and <i>Zantedeschia rehmannii</i>.</p> <p>These plants are not listed as endangered but are protected and therefore listed as SCC. The necessary permits should be obtained and plants moved to adjacent areas. This is standard recommendation for these plants. The spatial guidelines for land use for these grasslands that are relevant to this project area include (SANBI,2013);</p> <ul style="list-style-type: none"> <li>■ Avoid any further fragmentation of primary grassland;</li> <li>■ Maintain connectivity between natural areas across the landscape;</li> <li>■ Direct impacting activities away from grasslands on dolomitic substrates; and</li> <li>■ Establish and respect buffers around protected areas, wetlands and rivers.</li> </ul> <p>Various small mammals and reptiles occur are likely to on the property. Since there is an existing quarry nearby, the fauna at the site are familiar with mining activities and will not be impacted by the proposed mining activities as they will be able to move away or through the site, without being harmed</p> <ul style="list-style-type: none"> <li>■ Aquatic Biodiversity Impact Assessment (ABIA) &amp; Hydrology Assessment (HA):</li> </ul> <p>The proposed mining area falls within the C11F quaternary catchment which falls within the upper reaches of the Vaal River primary catchment that is situated in the Upper Vaal Water Management Area which is managed by the Department of Water and Sanitation (DWS). A small wetland system is located 130m from the southern border of the site. According to the Risk Assessment conducted by DPR Ecologist, - mining within close proximity of the valley-bottom wetland is anticipated to have a low risk as long as a 100-meter buffer between the edge of the wetland as delineated and the quarry excavations, stockpile areas, chemical toilets, wastes and any hazardous materials (diesel, etc.) are maintained. A small artificial dam and wetland area forming in previous excavations occur approximately 450 meters to the west of the site. These artificial wetland areas also fall within a separate catchment, upstream of the site and therefore the proposed mining area will not be able to have any effect on these artificial wetland areas. Therefore, proposed project does require a General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998) which will be submitted to DWS by the applicant prior to commencement of mining activities on this application</p>		

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT  (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	<p>■ Air Quality Impact Statement (AQIS) &amp; Noise Impact Statement (NIS):</p> <p>The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. The Air Quality Impact Statement (Appendix M1) conducted by Airshed Planning Professionals (Pty) Ltd states it is unlikely that the proposed operations will result in significant detrimental impact on air quality in the area, with very low impacts expected at nearby sensitive receptor locations. It is, however, recommended that best practise mitigation measures, such as regular watering of all on-site unpaved roads, water sprays on crushers and screens, enclosure of conveyers and minimisation of drop heights to stockpiles, be implemented to ensure that particulate emissions, and their consequent impact on the receiving environment, is minimised and that off-site pollutant concentrations and dust fallout is compliant with the South African National Ambient Air Quality Standards (Gazette 32816, 24 December 2009) and the National Dust Control Regulations (Gazette 36974, 1 November 2013).</p> <p>A complaints register should be kept on-site and all interested and affected parties, including nearby residents but also personnel, be encouraged to report any air quality related issued, no matter how trivial.</p> <p>As per Noise Impact Statement (Appendix M2) conducted by Airshed Planning Professionals (Pty) Ltd - it is unlikely that the proposed operations will result in significant detrimental impact on environmental noise for most of the study area. However, mining and processing activities are currently planned to be 24 hours per day, and noise generated by night-time operations are likely to be much more noticeable, given the typical low baseline noise levels in rural areas.</p> <p>The increase in noise levels, given that baseline noise levels are likely to be very low due to types of activities in the area, could be noticeable and possibly disturbing at the two closest sensitive receptors: the farmstead to the northwest (on the opposite side of the R39 road) and the farmstead to the east-northeast (south of the Rand Agro Rietspruit bunker). It is recommended that a noise survey campaign be conducted at these two locations before activities commence to establish baseline noise levels, and then again once the mine and processing plant is fully operational to establish operational noise levels. Noise levels recorded during these sampling campaigns should be compared, and if an increase of greater than 3 dBA is noted, additional mitigation measures (either source based, receiver based, or both) should be considered. If night-time noise levels recorded during operations are significantly higher (&gt; 5 dBA) than baseline noise levels, night-time noise generating activities should be avoided. While noise generated by the activities are not expected to impact at any sensitive receptors except possibly at the two closest farmsteads, it is recommended that best practise mitigation and management measures be implemented to ensure minimal impact on the receiving environment. Recommended measures include regular maintenance and servicing of the vehicle fleet, avoidance of unnecessary vehicle idling times, maintenance of all road surfaces to avoid potholes and corrugations, minimising the need for vehicles to reverse (and thereby use of their reverse alarms), implementation of strict speed limits, enclosure of stationary noise sources such as compressors and pumps, and wherever possible, limiting noise generating activities to between 06:00 and 22:00. In addition to the above, it is imperative that blasting schedules be communicated to all surrounding residents, and that a complaints register be in place and that all interested and affected parties be encouraging to report any noise related complaints.</p>		

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT  (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
<ul style="list-style-type: none"> <li>■ Radioactivity Impact Assessment</li> </ul>	<p>A radioactivity impact assessment is not deemed necessary for the proposed mining operation that will not store any chemicals on site, perform activities of radioactive nature or generate hazardous waste of radioactive nature.</p>		
<ul style="list-style-type: none"> <li>■ Traffic Impact Assessment (TIA):</li> </ul>	<p>Access to the proposed mining area will be via the R39, making use of the new internal/haul roads to access the mining area. Haul roads will be extended as the open cast mining progress, and will be rehabilitated as part of the final reinstatement of the area. Trucks delivering the materials to the destinations will take the R39 provincial route. In light of the small scale of the proposed operation a TIA is not deemed necessary, should the Applicant implement the mitigation measures to be proposed in the EMPR.</p>		
<ul style="list-style-type: none"> <li>■ Geotechnical Assessment:</li> </ul>	<p>No reason for a geotechnical assessment could be identified as no permanent infrastructure will be established at the proposed mining area, and mining will not create a deep void with high faces.</p>		
<ul style="list-style-type: none"> <li>■ Geohydrological Impact Statement</li> </ul>	<p>As per Geohydrological Impact Statement (Appendix M5), the Geological map of the area can be concluded that the area is characterised by low permeability lithology such as shale, sandstone and associated dolerite intrusive rocks, which indicate that the underlying Geology has a low probability for groundwater contamination, however as the expected quarry will be 35 meters deep with the possibility to go deeper the potential of the mining activity to influence the groundwater and cause groundwater pollution exists if mitigation measures are not implemented and managed correctly.</p>		



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<p>Therefore, from a Geohydrological perspective taking Geology into account, it can be concluded that the probability of the proposed mining influencing the Groundwater in the area is high irrespective of the low permeability of the geology and the expected low groundwater vulnerability. This is mainly due to the shallow groundwater table and aquifer type. It is important to note that precautionary measures should be taken to assure that groundwater from the mining activity is not contaminated. Please refer to (Appendix M5) for the full report.</p> <p>■ Socio-economic Assessment (SEA):</p> <p>Based on the findings of the desktop Screening of the Social Impact Statement (Appendix M3), the proposed development is expected to have an overall positive impact at a municipal and local level. From a social perspective, no fatal flaws have been identified for the development and operation of an aggregate quarry at the proposed site. The quarry must employ mitigation measures to reduce impacts that will impact the areas 'sense of place', as perceived by the residents in the immediate surroundings, and agricultural activities. The Applicant must ensure, through consultation with the relevant municipal officials, that the development is in line with the municipal spatial planning. It must be noted that this statement is in the form of an 'Social Impact Opinion' which has been based solely on a desktop assessment and a limited review of available information.</p> <p>According to the Economic Opinion (Appendix M4) It is evident that the proposed mining project will generate both positive and negative impacts during the operational period. The following paragraphs and tables summarise the key economic impacts that were identified to have the potential to occur (please table 3.1 in the Economic Opinion Statement). The net positive impacts associated with the development and operation of the proposed mining project are expected to outweigh the net negative effects. The project is also envisaged to have a positive stimulus on the local economy and employment creation, leading to the economy's diversification and a small reduction in the unemployment rate. The negative economic impact that will need to be addressed is the fact that the proposed project is planned to operate 24 hours a day, this will have an impact on nearby residents and disturbing livestock in close vicinity leading to a negative economic impact. It is important to note that the economic opinion of the proposed mining project is based on available information and not a full economic impact assessment</p> <p>■ Visual Impact Statement</p> <p>The overall Visual Impact of the proposed development will be low given the low visual exposure thereof. It must be noted that the quarry will be situated within the rural landscape and is predominantly surrounded by Agricultural Farmland. The highest visual impact will occur from the R39 as it is situated adjacent to the proposed development; however, the visual impact will be temporary as motorists will only traverse through the area. The proposed development will be in line with the sense of place as Ermelo is a well-known mining town. The following mitigation measures can be considered in order to minimise the visual impact even further:</p>			

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	<ul style="list-style-type: none"> <li>■ A visual screen of Searsia pyroides can be planted which takes three (3) weeks to germinate. These trees grow very quickly and occur throughout South Africa;</li> <li>■ The quarry must be managed appropriately to ensure that stockpiled heaps are not stored for excessive periods;</li> <li>■ Housekeeping throughout the mining area must be managed appropriately;</li> <li>■ Rehabilitation must be done according to the rehabilitation plan of the mine; and,</li> <li>■ Avoid shiny materials in structures. Where possible shiny metal structures should be darkened or screened to prevent glare.</li> </ul>		

## **I) Environmental impact statement**

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

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

#### **Project Proposal**

Inzalo Crushing and Aggregates (Pty) Ltd applied for authorisation to mine aggregate (dolerite)/ gravel from a 4.9 ha area over an undisturbed area of the farm. The mining method will make use of blasting in order to loosen the hard rock; the material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. The aggregate will be stockpiled until it is transported from site using tipper trucks. All mining related activities will be contained within the approved mining permit boundaries. The proposed area is over an undisturbed area of the farm occasionally used for grazing but with very low agricultural potential due to the rocky surface, after consultation with the land owner the application footprint extends into an area with low agricultural potential. The proposed project will not necessitate the loss of agricultural field with high potential to the land owner.

#### **Topography**

The natural topography of the proposed excavated comprised of undulating grassland plains, with small scattered patches of dolerite outcrops in areas. The vegetation is comprised of a short closed grassland cover, largely dominated by a dense *Themeda triandra* sward, often severely grazed to form a short lawn. The elevation loss from the proposed mining footprint to the town of Ermelo to be 1759m over 6.59km

#### **Visual Characteristics**

The viewshed analysis showed that the visual impact of the proposed aggregate / gravel mining operation will be of low significance. The small scale of the proposed operation, and the mining area will be located between two hills in order to minimize the visual impact. Should the Applicant successfully rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mine.

#### **Air and Noise Quality**

The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. The Air Quality

Impact Statement (Appendix M1) conducted by Airshed Planning Professionals (Pty) Ltd states it is unlikely that the proposed operations will result in significant detrimental impact on air quality in the area, with very low impacts expected at nearby sensitive receptor locations. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.

As per Noise Impact Statement (Appendix M2) conducted by Airshed Planning Professionals (Pty) Ltd - it is unlikely that the proposed operations will result in significant detrimental impact on environmental noise for most of the study area. However, mining and processing activities are currently planned to be 24 hours per day, and noise generated by night-time operations are likely to be much more noticeable, given the typical low baseline noise levels in rural areas. Should the permit holder implement the mitigation measures proposed in this document, EMPR and the Noise Impact Statement (Appendix M2) the impact on the noise of the surrounding environment is deemed to be of low significance.

### **Geology and Soil**

The site specific geology is representative of the regional geology and soil as described earlier in this report. The geology of the study area is restricted to vertic clay soils derived from dolerite that is intrusive in the Karoo sediments of the Madzaringwe Formation in the north and the Volksrust Formation and the Adelaide Subgroup in the south. Dominant land type Ca, while Ea land type is of subordinate importance.

The aggregate / gravel of the study area is aggregate highly suitable for construction purposes. The mining method will make use of blasting in order to loosen the hard rock; upon which the loosened material will be transported to a processing area (inside mining boundary) where it will be crushed and screened to various sized stockpiles, before being sold and transported from site to clients.

### **Mining, Biodiversity and Groundcover**

The Mpumalanga Biodiversity Sector Plan (2014) has been published and has identified areas which are essential to meeting conservation targets for specific vegetation types, i.e. Critical Biodiversity Areas. The terrestrial component of the site has been listed as a Critical Biodiversity Area (CBA), mostly as it contains portions of a threatened ecosystem, intact grassland containing a significant species diversity and

is an optimal area for meeting the required conservation targets. A portion of the site is also listed as an Ecological Support Area (ESA) as it forms part of an ecological corridor for maintaining ecosystem function. The freshwater component of the site is regarded as an Other Natural Area (ONA) which indicates that it does not form part of a Strategic Water Source Area (SWSA).

The site itself still consists of natural vegetation which is dominated by scattered trees and a well-developed grass layer. Disturbances are present and include overgrazing by domestic livestock and low-level infestation by exotic weeds and shrubs, though overall the site is still largely natural. However, the surrounding areas, especially toward the south and west of the site, has been heavily modified by previous mining activities. The site contains several plants listed as protected in Mpumalanga such as *Eucomis montana*, *Haemanthus humilis subsp. Hirsutus*, *Gladiolus dalenii subsp. dalenii*, *Gladiolus ecklonii*, *Gladiolus crassidolius*, *Boophone distichia* and *Zantedeschia rehmannii*.

Presently it is proposed that the applicant will construct a road from the existing access point to the mining area. It is proposed that should the Applicant implement the mitigation measures proposed in the EMP the impact of the proposed activity on the vegetation and groundcover in general is deemed to be of low significance.

### **Fauna**

Various small mammals and reptiles occur are likely to on the property. Since there is an existing quarry nearby, the fauna at the site are familiar with mining activities and will not be impacted by the proposed mining activities as they will be able to move away or through the site, without being harmed. This was also confirmed by the land owner during the site visit. Workers should be educated and managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data faunal species could be identified within the earmarked footprint. The study area falls over undisturbed area of the farm, should this mining permit be granted farm owner will be consulted prior to commencement of any activities to ensure that safety of animals and workers. Workers will be informed and managed to ensure that no fauna at the site is harmed. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them.

Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.

### **Cultural and Heritage Environment**

As per the Heritage Impact Assessment (Appendix N), the study area is fallow and has not been developed or impacted on by adjacent mining activities. Examination of historical topographic maps and aerial images showed no structures or stone walled settlements in the study area and the impact footprint is considered to be of low heritage potential. This was confirmed during the site visit and no heritage finds of significance was recorded during the survey.

According to the SAHRA Paleontological sensitivity map the study area is of insignificant paleontological significance, but very close to an area of very high sensitivity and an independent study (Appendix N1) was conducted for this aspect. Bamford (2022) concluded that the proposed site lies on the non-fossiliferous Jurassic dolerite but is very close to the very highly sensitive Vryheid Formation that could preserve fossil plants of the Glossopteris flora. No fossils were found during the site visit. Nonetheless a Fossil Chance Find Protocol should be added to the EMPr.

No adverse impact on heritage resources is expected by the project and it is recommended that the project can commence on the condition that the following recommendations (Section 10) are implemented as part of the EMPr and based on approval from SAHRA.

### **Site Specific Infrastructure**

The following is located within close proximity:

- An existing quarry is located 150m south west of the site with unpreferred mineral resources.
- Farm house 1.10km east of the site and another farm house north-west of the site
- The R39 - 600m towards the western part of the site.

None of the existing infrastructure falls within the site area and will therefore not be affected.

## ii) Final Site Map

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

See the map indicating site activities attached as Appendix C.

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

The positive impacts associated with the project include:

- Possible work opportunities to local residents;
- Return of the mining area to agricultural use upon closure of the project; and
- Diversification of the land use of the property.

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

- Visual intrusion as a result of site establishment **Medium (S1 & S2)**
- Visual intrusion caused by mining activities **Medium (S1 & S2)**
- No impact could be identified other than the beacons being outside the boundaries of the approved mining area **Low-Medium (S1&S2)**
- Alteration of the agricultural sense of place **Low-Medium (S1&S2)**
- Loss of agricultural land for duration of mining **Medium(S1&S2)**
- Visual intrusion as a result of site establishment. **Low-Medium (S1&S2)**
- Visual intrusion caused by mining activities. **Low-Medium (S1&S2)**
- Visual intrusion as a result of excavation and from loading and vehicles transporting the material **Low-Medium (S1&S2)**
- Potential impact on vegetation and listed and/or protected plant species. **Medium(S1) & Low – Medium (S2)**
- Potential impact on fauna within the footprint area Low – **Medium (S1) & Medium (S2)**
- Potential impact on local fauna due to disturbance and loss of available habitat **Medium (S1) & Low-medium (S2)**
- Dust nuisance due to excavation and from loading and vehicles transporting the material **Low-Medium(S1&S2)**
- Noise nuisance as a result of the mining activities **Low - Medium (S1&S2)**
- Unsafe working environment for employees **Low-Medium(S1&S2)**
- Soil contamination from hydrocarbon spills and/or littering **Low-Medium(S1&S2)**
- Facilitation of erosion due to mining activities **Low-Medium(S1&S2)**
- Potential impact on archaeological artefacts **Low-Medium(S1&S2)**

- Potential impact on areas of palaeontological concerns **Low-Medium(S1&S2)**
- Visual intrusion caused by construction of site access road **Low-Medium(S1&S2)**
- Loss of stockpiled topsoil during construction of access road. **Low – Medium (S1&S2)**
- Dust nuisance as a result of the construction of access road **Low – Medium (S1&S2)**
- Noise nuisance generated by earthmoving machinery **Low – Medium (S1&S2)**
- Potential erosion of denuded areas **Low – Medium (S1&S2)**
- Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages **Low – Medium (S1&S2)**
- Health and safety risk posed by blasting activities **Low-Medium(S1&S2)**
- Dust nuisance caused by blasting activities **Low-Medium(S1&S2)**
- Noise nuisance as a result of blasting **Low-Medium(S1&S2)**
- Loss of stockpiled topsoil during mining and stockpiling **Low – Medium (S1&S2)**
- Dust nuisance as a result of the disturbance of soil **Low – Medium (S1&S2)**
- Noise nuisance generated by earthmoving machinery **Low – Medium (S1&S2)**
- Infestation of the topsoil heaps and mining area with weeds or invader plant species **Low-Medium(S1&S2)**
- Potential erosion of denuded areas **Low – Medium (S1&S2)**
- Loss of stockpiled material due to ineffective storm water control **Low – Medium (S1&S2)**
- Dust nuisance generated at the processing plant **Low-Medium(S1&S2)**
- Noise nuisance stemming from operation of the processing plant. **Low - Medium (S1&S2)**
- Visual intrusion as a result of operation of the processing plant **Low - Medium (S1&S2)**
- Potential contamination of environment due to improper waste management **Low-Medium(S1&S2)**
- Overloading of trucks impacting road infrastructure **Medium (S1&S2)**
- Degradation of the access road **Medium (S1&S2)**
- Safety risk posed by un-sloped areas **Medium (S1&S2)**
- Erosion of returned topsoil after rehabilitation **Medium (S1&S2)**
- Infestation of the reinstated areas by weeds and invader plant species **Medium (S1&S2)**
- Potential impact associated with litter/waste left at the mining area **Low-Medium(S1&S2)**



- Impact the broad-scale ecological processes - The loss of unprotected vegetation types on a cumulative basis from the broad area may impact the country's ability to meet its conservation targets **Medium (S1&S2)**
- Transformation of intact habitat would contribute to the fragmentation of the landscape and would potentially disrupt the connectivity of the landscape for fauna, avifauna, and flora and impair their ability to respond to environmental fluctuations **Medium (S1&S2)**
- Impact on existing infrastructure as a direct result of the mining operation **Low (S1&S2)**

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

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

*Table 27: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr*

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
<p><b>TOPOGRAPHY</b></p> <p>Landscaping of Mining Area</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>• Use the excavated area for the final depositing of overburden.</li> <li>• Dump rocks and coarse material removed from the excavation into the excavation.</li> <li>• Remove coarse natural material used for the construction of ramps and dump it into the excavations.</li> <li>• Remove stockpiles during the decommissioning phase, rip the area and return the topsoil to its original depth to provide a growth medium.</li> <li>• Do not permit any waste to be deposited into the excavations.</li> <li>• Return the previously stored topsoil to its original depth, once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures.</li> <li>• If necessary, fertilize the area to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site.</li> <li>• If required by the Regional Manager (DMRE) the soil must be analysed and any deleterious effects on the</li> </ul>	<ul style="list-style-type: none"> <li>• Effectively restoring the mined area to allow the return of land use to agricultural purposes.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		<p>soil arising from the mining operation must be corrected and the area be seeded with a vegetation seed mix to his/her specification.</p> <ul style="list-style-type: none"> <li>• On completion of operations, deal with all structures or objects in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).</li> <li>■ On completion of mining operations, scarify the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, to a depth of at least 200mm and graded it to an even surface condition. Where applicable/possible return topsoil to its original depth over the area.</li> </ul>	
<p><b>VISUAL CHARACTERISTICS</b></p> <p>Visual mitigation</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>• Ensure that the site have a neat appearance and is kept in good condition at all times.</li> <li>• Store mining equipment in a dedicated area when not in use.</li> <li>• Limit vegetation removal, and only strip topsoil immediately prior to the mining/use of a specific area.</li> <li>■ Contain excavations to the approved footprint of the permitted area.</li> <li>■ Upon closure, rehabilitate the site to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.</li> </ul>	<ul style="list-style-type: none"> <li>■ Minimise the impact of the mining operations on the visual characteristics of the receiving environment during the operational phase, and minimise the residual impact after closure.</li> </ul>
<p><b>AIR AND NOISE QUALITY</b></p> <p>Dust Mitigation</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p>	<ul style="list-style-type: none"> <li>• Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents.</li> <li>• Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.</li> </ul>	<ul style="list-style-type: none"> <li>■ Dust prevention measures are applied to minimise the impact.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
	Compliance to be monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> <li>• Limit speed on the haul roads to 40 km/h on the access road to prevent the generation of excess dust.</li> <li>• Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining.</li> <li>• Install water sprayers at the crusher plant to alleviate dust generation from the conveyor belts.</li> <li>• Minimise fines, blowing from the drop end of the crusher plant by attaching strips of used conveyor belts to the conveyor's end.</li> <li>• Enclosure of conveyers</li> <li>• Minimisation of drop heights to stockpiles</li> <li>• Weekly remove compacted dust from the crusher plant to eliminate the dust source.</li> <li>• Flatten loads to prevent spillage during transportation on public roads.</li> <li>• Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts.</li> <li>• Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012).</li> <li>■ Implement best practice measures during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.</li> </ul>	
<b>AIR AND NOISE QUALITY</b>  Noise Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	<ul style="list-style-type: none"> <li>• Ensure that employees and staff conduct themselves in an acceptable manner while on site.</li> <li>• No loud music may be permitted at the mining area.</li> <li>• Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy</li> </ul>	<ul style="list-style-type: none"> <li>■ Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
	<p>Compliance to be monitored by the Environmental Control Officer.</p>	<p>condition in terms of the National Road Traffic Act, 1996.</p> <ul style="list-style-type: none"> <li>• Avoidance of unnecessary vehicle idling times.</li> <li>• Maintenance of all road surfaces to avoid potholes and corrugations.</li> <li>• Minimising the need for vehicles to reverse (prevent reverse alarms).</li> <li>• Enclosure of stationary noise sources such as compressors and pumps,</li> <li>• Wherever possible, limiting noise generating activities to between 06:00 and 22:00</li> <li>• Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Notify the surrounding land owners in writing prior to each blasting occasion.</li> <li>• Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA 2004, SANS 10103:2008.</li> </ul> <p>■ Implement best practice measures to minimise potential noise impacts.</p>	
<p><b>GEOLOGY AND SOIL</b> Topsoil Handling</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>• Strip and stockpile the upper 300 mm of the soil before mining.</li> <li>• Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process.</li> <li>• Ensure topsoil stripping, stockpiling and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time.</li> </ul>	<p>■ Adequate fertile topsoil is available to rehabilitate the mined area.</p>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		<ul style="list-style-type: none"> <li>• Place the topsoil on a levelled area, within the mining footprint. Do not stockpile topsoil in undisturbed areas.</li> <li>• Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so it is not vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion.</li> <li>• Ensure that topsoil heaps do 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.</li> <li>• Keep temporary topsoil stockpiles free of invasive plant species.</li> <li>• Vegetate the topsoil heaps to be stored longer than 6 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.</li> <li>• Divert storm- and runoff water around the stockpile area to prevent erosion.</li> <li>• Spread the topsoil evenly, to a depth of 300 mm, over the rehabilitated area upon closure of the site.</li> <li>• Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season.</li> <li>• Plant a cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum production. Rehabilitation extends until the first cover crop is well established.</li> <li>• Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion.</li> </ul>	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		<ul style="list-style-type: none"> <li>■ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.</li> </ul>	
<p><b>HYDROLOGY</b></p> <p>Erosion Control and Storm Water Management</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>● Limit clearing of vegetation to the proposed mining footprint and associated infrastructure. Ensure no clearing takes place outside the minimum required footprint.</li> <li>● Divert stormwater around the topsoil heaps and mining areas to prevent erosion.</li> <li>● Protect stockpiles from erosion, and store it on flat areas surrounded by appropriate berms where possible.</li> <li>● Ensure that adequate slope protection is provided when mining within steep slopes.</li> <li>● Control the outflow of run-off water from the mining excavation to prevent down-slope erosion, by constructing temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur.</li> <li>● Regularly monitor roads and other disturbed areas within the project for erosion, and ensure problem areas receive follow-up monitoring to assess the success of the remediation.</li> <li>● Rectify erosion problems within the mining area as a result of the mining activities immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.</li> <li>● Use silt/sediment traps/barriers where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other</li> </ul>	<ul style="list-style-type: none"> <li>■ Impact on the environment caused by stormwater discharge is avoided and erosion is managed.</li> <li>■ Impact on the environment caused by mining activities close to a water body is minimised and mitigated.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		<p>sensitive areas. Regularly maintain and clear the sediment/silt barriers to ensure effective drainage of the areas.</p> <ul style="list-style-type: none"> <li>• Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.</li> <li>• Restrict polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards to the workshop areas and ensure it takes place on impermeable hard standing surfaces, which formally drain to a dirty water drainage system at the site.</li> <li>■ Vehicle maintenance or refuelling must be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refuelling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary</li> <li>■ Contain all fuels and chemicals stored or used on site in fit for purpose containers and store within designated storage areas. Ensure the designated storage areas are situated on an impermeable surface with a perimeter bund and a drainage sump. Size the volume of the bund and sump to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. Ensure that the storage areas have a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently.</li> </ul>	



MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		<ul style="list-style-type: none"> <li>■ A 100 meter buffer zone must be implemented between the edge of the wetland as delineated and the quarry excavations, stockpile areas, chemical toilets, wastes and any hazardous materials (diesel, etc.) are maintained. (Please see Appendix C – Site Activities Map)</li> </ul>	
<p><b>TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER</b></p> <p>Management of vegetation removal.</p>	<p>Permit holder to apply for a destruction/removal plant permit from DEADP</p> <p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>• Clearly demarcate the mining boundaries and contain all operations to the approved mining area. Declare the area outside the mining boundaries a no-go area, and educate all staff accordingly.</li> <li>• Arrange a pre-commencement walk-through of the final mining footprint by a suitably qualified botanist for species of conservation concern that need to be removed/relocated prior to bush clearance.</li> <li>• Obtain permits for the removal of protected plant species (if required) and keep it on-site in the possession (at all times) of the flora search and rescue team.</li> <li>• Arrange a pre-commencement environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This must include awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc.</li> <li>• Only commence with bush-clearance once the recommendations of the specialist (pre-commencement walkthrough) have been implemented.</li> <li>• Do not burn cleared vegetation to be retained at any time, but rather mulch and stockpiled it. Ideally cover</li> </ul>	<ul style="list-style-type: none"> <li>■ Vegetation clearing is restricted to the authorised development footprint of the mine.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		<p>the heaps with stockpiled topsoil and retain the material for future site rehabilitation.</p> <ul style="list-style-type: none"> <li>• The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place.</li> <li>• Ensure all vehicles remain on demarcated roads and prevent unnecessary driving in the veld outside these areas.</li> <li>• Do not translocated, uprooted or disturbed plants for rehabilitation or other purposes without express permission from the ECO and without the relevant permits.</li> <li>• Do not allow fires on-site.</li> <li>• Provide spoil heaps and topsoil stockpiles with a vegetation cover of indigenous grasses.</li> <li>• If deemed necessary by the ECO, make a firebreak around the periphery of the site in autumn every year. Upon recommendation of the ECO, burn the vegetated areas inside the break on a biennial basis if deemed necessary. Adhere to the relevant veld burning legislation.</li> </ul>	
<b>TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER</b>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>• Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. Do weed/alien ongoing clearing on throughout the life of the mining activities.</li> </ul>	<ul style="list-style-type: none"> <li>▀ Mining area is kept free of invasive plant species.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
Management of invasive plant species.		<ul style="list-style-type: none"> <li>• Do not allow planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose.</li> <li>• Keep all stockpiles (topsoil &amp; overburden) free of invasive plant species.</li> <li>▢ Control declared invader or exotic species on the rehabilitated areas.</li> </ul>	
<p><b>FAUNA</b></p> <p>Protection of fauna</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>• Ensure no fauna is caught, killed, harmed, sold or played with.</li> <li>• The ECO or other suitably qualified person must remove any fauna directly threatened by the operational activities to a safe location.</li> <li>• Arrange that all personnel undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Instruct workers to report any animals that may be trapped in the working area.</li> <li>• Ensure no snares are set or nests raided for eggs or young.</li> <li>• Ensure all vehicles adhere to a low speed limit (40 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises.</li> <li>▢ Prevent litter, food or other foreign material thrown or left around the site. Keep such items in the site vehicles and daily removed it to the site camp.</li> </ul>	<ul style="list-style-type: none"> <li>▢ Disturbance to fauna is minimised.</li> </ul>
<p><b>CULTURAL AND HERITAGE ENVIRONMENT</b></p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p>	<ul style="list-style-type: none"> <li>• Confine all mining to the development footprint area.</li> <li>• Implement the following change find procedure when discoveries are made on site:</li> </ul>	<ul style="list-style-type: none"> <li>▢ Impact to cultural/heritage resources is avoided or at least minimised.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
Archaeological, heritage and palaeontological aspects.	Compliance to be monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> <li>• The following mitigation measures are recommended as per the Heritage Impact Assessment (Appendix N): <ul style="list-style-type: none"> <li>▪ Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately in order to make a decision about how to deal with the remains.</li> </ul> </li> </ul> <p>The Palaeontological Impact Assessment (Appendix N1) conducted by Prof Marion Bamford) concluded that the proposed site lies on the non-fossiliferous Jurassic dolerite but is very close to the very highly sensitive Vryheid Formation that could preserve fossil plants of the Glossopteris flora. No fossils were found during the site visit. Nonetheless a Fossil Chance Find Protocol should be added to the EMP.</p> <p>The following procedure is only required if fossils are seen on the surface and when drilling/excavations/mining commence.</p> <ul style="list-style-type: none"> <li>■ When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (trace fossils, fossils of plants, insects, bone or coalified material) should be put aside in a suitably protected place. This way the project activities will not be interrupted.</li> <li>■ Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. This information</li> </ul>	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		<p>will be built into the EMP's training and awareness plan and procedures.</p> <ul style="list-style-type: none"> <li>■ Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment. If there is any possible fossil material found by the developer/environmental officer/miners then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.</li> <li>■ Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.</li> <li>■ If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.</li> <li>■ If no fossils are found and the excavations have finished, then no further monitoring is required. of the finds who will notify the SAHRA.</li> <li>■ Work may only continue once the go-ahead was issued by SAHRA.</li> </ul>	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
<p><b>LAND USE</b></p> <p>Loss of agricultural land for duration of mining.</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>■ If needed, sign mined-out/rehabilitated areas back to agricultural use once the cover crop stabilised.</li> </ul>	<ul style="list-style-type: none"> <li>■ Mining has the least possible impact on the operation of the property.</li> </ul>
<p><b>EXISTING INFRASTRUCTURE</b></p> <p>Management of the access road.</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>● Divert storm water around the access road to prevent erosion.</li> <li>● Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas.</li> <li>● Repair rutting and erosion of the access road caused as a direct result of the mining activities.</li> <li>● Prevent the overloading of the trucks and file proof of load weights for auditing by relevant officials.</li> <li>■ Restrict the speed of all mining equipment/vehicles to 40 km/h on the access roads.</li> </ul>	<ul style="list-style-type: none"> <li>■ The access road remains accessible to the landowner and lawful occupiers during the operational phase, and upon closure, the road is returned in a better, or at least the same state as received by the permit holder.</li> </ul>
<p><b>GENERAL</b></p> <p>Waste management</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>● Ensure regular vehicle maintenance, repairs and services only take place at the workshop and service area. Ensure drip trays are present if emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be removed from the emergency service area (same day) to the workshop in order to ensure proper disposal. Treat this as hazardous waste and dispose of it at a registered hazardous waste handling facility, alternatively arrange collection by a</li> </ul>	<ul style="list-style-type: none"> <li>■ Wastes are appropriately handled and safely disposed of at recognised waste facilities.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		<p>registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes.</p> <ul style="list-style-type: none"> <li>• If a diesel bowser is used on site, equip it with a drip tray at all times. Use drip trays during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.</li> <li>• Ensure drip trays are cleaned after each use. Do not allow dirty drip trays to be used on site. Dispose of dirty rags used to clean the drip trays as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system.</li> <li>• Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a recognized facility. File proof.</li> <li>• Obtain an oil spill kit, and train the employees in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.</li> <li>• Clean spills immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. File proof.</li> <li>• Ensure suitable covered receptacles are available at all times and conveniently placed for the disposal of general waste.</li> <li>• Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point to be collected at least</li> </ul>	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		<p>once a month and disposed of at a recognized landfill site. Take specific precautions to prevent refuse from being dumped on or in the vicinity of the mine area. File proof of disposal.</p> <ul style="list-style-type: none"> <li>• Handle biodegradable refuse as indicated above.</li> <li>• Encourage re-use or recycling of waste products.</li> <li>• Do not bury or burn waste on the site.</li> <li>• Provide ablution facilities in the form of a chemical toilet/s. Anchor the chemical toilet (to prevent blowing/falling over) and arrange that it is serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. File the safe disposal certificates.</li> <li>• Ensure that the use of any temporary, chemical toilet facilities do not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately.</li> <li>• Do not discharge water containing waste into the natural environment.</li> <li>• Implement measures to contain the waste water and safely dispose thereof.</li> <li>• Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the to all relevant authorities, including Department Environmental Affairs and Development Planning – Directorate - Pollution and Chemicals Management, in accordance with section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (“NEMA”) pertaining to the <i>control of</i></li> </ul>	



MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		<p><i>incidents</i>. In the event of a significant accidental spill or leak of hazardous substances (e.g. petrol, diesel, etc.) during any phase of the proposed activities, such an incident(s) must be reported.</p> <ul style="list-style-type: none"> <li>■ Implement the use of waste registers to keep record of the waste generated and removed from the mining area.</li> <li>■ The storage of hazardous and/or general waste in excess of 80m<sup>3</sup> and 100m<sup>3</sup> respectively, excluding the storage of waste in lagoons or the temporary storage of such waste, would require the applicant to comply with the National Norms and Standards for the Storage of Waste, published in GN No. 926 of 29 November 2013. Although the storage of general and hazardous waste below these mentioned thresholds is not regulated, section 28 of the NEMA, 1998 would apply to ensure that any waste storage does not impact negatively on the environment.</li> </ul>	
<p><b>GENERAL</b></p> <p>Storage/handling of hazardous substances/chemicals.</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>• Place chemical storage areas on level ground to prevent offsite migration of any spilled product.</li> <li>• Ensure that the floor of the storage area is impermeable to prevent seepage of spilled products into the ground or ground water.</li> <li>• Control access to the chemicals/substances and implement a notification system of an appropriate staff member.</li> <li>• Ensure that the storage area is out of the 1:100 year floodline or further than 100 m from the edge of a watercourse, whichever is greatest.</li> </ul>	<ul style="list-style-type: none"> <li>■ The chemical/hazardous substances used on site are stored according to specifications without contaminating the receiving environment.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		<ul style="list-style-type: none"> <li>• Maintain a Hazardous Substances Register, and keep Safety Data Sheets (SDS) current for all chemicals used on site.</li> <li>• Ensure any fuel/used oil tanks have secondary containment in the form of an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. Check that the bund capacity is sufficient to contain 110% of the tank's maximum capacity. Ensure that the distance and height of the bund wall relative to that of the tank is taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.</li> <li>• Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. Inspect the bund area at least weekly and remove any accumulated rainwater and hand it as contaminated water. Check all valves and outlets to ensure that its intact and closed securely.</li> <li>• Ensure that the bund base slope towards an oil sump of sufficient size. Do not allow contaminated water to mix with clean water, and contain it until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility.</li> <li>• Use drip trays under all stationary equipment or vehicles. Place used drip trays within a bund area and do not store on the bare soil. Discard the waste water originating from the cleaning of drip trays into the oil sump.</li> </ul>	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
<p><b>GENERAL</b></p> <p>Management of health and safety risks</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>• Ensure that workers have access to the correct PPE as required by law.</li> <li>• Locate sanitary facilities within 100 m from any point of work.</li> <li>• Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).</li> <li>• Plan the type, duration and timing of blasting with due cognizance of other land users and structures in the vicinity.</li> <li>• Inform the surrounding landowners and communities in writing ahead of any blasting event.</li> <li>• Monitor the compliance of ground vibration and airblast levels to USBM standards with each blasting event.</li> <li>• Record all blasts with a vibro recorder.</li> <li>• Give audible warning of a pending blast at least 3 minutes in advance of the blast.</li> </ul> <p>■ Limit fly rock, and collect and remove flyrock and rock spill that falls beyond the working area.</p>	<p>■ Employees work in a healthy and safe environment.</p>

**n) Aspects for inclusion as conditions of Authorisation.**

Any aspects which must be made conditions of the Environmental Authorisation

The management objectives listed in this report under *Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR* above should be considered for inclusion in the environmental authorisation.

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

(Which relate to the assessment and mitigation measures proposed)

The assumptions made in this document which relate to the assessment and mitigation measures proposed, stem from site specific information gathered from site inspections, desktop studies as well as the specialist study. No uncertainty regarding the proposed project or the receiving environment could be identified.

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

**i) Reasons why the activity should be authorised or not.**

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

**ii) Conditions that must be included in the authorisation**

The management objectives listed in this report under *Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR* should be considered for inclusion in the environmental authorisation.

**q) Period for which the Environmental Authorisation is required.**

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

**r) Undertaking**

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

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

**s) Financial Provision**

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

**i) Explain how the aforesaid amount was derived**

The annual amount required to manage and rehabilitate the environment was estimated to be R 429 124.35. Please see the explanation as to how this amount was derived at attached as Appendix H – Financial and Technical Competence Report.

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

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

Inzalo Crushing and Aggregates (Pty) Ltd will be responsible for the financial and technical aspects of the proposed mining project. The operating expenditure is provided for as such in the Financial and Technical Competence Report attached as Appendix H to this report.

**t) Specific Information required by the competent Authority**

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

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

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

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

**Visual intrusion associated with the proposed mining activities:**

The viewshed analysis showed that the visual impact of the proposed aggregate / gravel mining operation will be of low significance, especially as no permanent structures will be constructed. The small scale of the proposed operation, and the mining area will be located on the face of a hill in order to minimize the visual impact. Should the Applicant successfully rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mine.

■ **Dust nuisance caused as a result of the proposed mining activities:**

The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.

■ **Noise nuisance as a result of mining activities:**

The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the traffic of the surrounding area. The distance of the proposed mining area from residential infrastructure further lessens the potential noise impact.

■ **Employment opportunities and socio-economic impact:**

The proposed labour component of the activity will be four employees. The operation will contribute to the local economy in the area, both directly and through the multiplier effect that its continued presence will create.

Equipment and supplies will be purchased locally, and wages are spent at local businesses, generating both jobs and income in the area. Although the employees are not resident on the site, they will be from the surrounding community.

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

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

As per the Heritage Impact Assessment (Appendix N), the study area is fallow and has not been developed or impacted on by adjacent mining activities. Examination of historical topographic maps and aerial images showed no structures or stone walled settlements in the study area and the impact footprint is considered to be of low heritage potential. This was confirmed during the site visit and no heritage finds of significance was recorded during the survey.

According to the SAHRA Paleontological sensitivity map the study area is of insignificant paleontological significance, but very close to an area of very high sensitivity and an independent study (Appendix N1) was conducted for this aspect. Bamford (2022) concluded that the proposed site lies on the non-fossiliferous Jurassic dolerite but is very close to the very highly sensitive Vryheid Formation that could preserve fossil plants of the Glossopteris flora. No fossils were found during the site visit. Nonetheless a Fossil Chance Find Protocol should be added to the EMPr.

No adverse impact on heritage resources is expected by the project and it is recommended that the project can commence on the condition that the following recommendations (Section 10) are implemented as part of the EMPr and based on approval from SAHRA.

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

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

Site Alternative 1, as discussed earlier, was identified during the assessment phase of the environmental impact assessment by the Applicant and project team, as the preferred and only viable site alternative. The Applicant will recover the aggregate / gravel by means of mechanical excavation with earthmoving equipment, crush, screen, and store it at the proposed mining area.

The no-go alternative entails no change to the status quo and is therefore a real alternative that must be considered. The aggregate / gravel to be mined at the site will be used in the building and construction industries, if however, the no-go alternative is implemented the Applicant will not be able to utilise the mineral present in the area.

## PART B

### ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

#### 1. FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME.

##### a) Details of the EAP,

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

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

##### b) Description of the Aspects of the Activity

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

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

##### c) Composite Map

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

As mentioned under Part A, section (1)(l)(ii) this map has been compiled and is attached as Appendix C to this document.

##### d) Description of impact management objectives including management statements

###### i) Determination of closure objectives.

(Ensure that the closure objectives are informed by the type of environment described in 2.4 herein)

The primary objective, at the end of the mine's life, is to obtain a closure certificate at minimum cost and in as short a time period as possible whilst still complying with the requirements of the Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) [MPRDA]. To realise this, the following main objectives must be achieved:

- Remove all temporary infrastructure and waste from the mine as per the requirements of this EMPR and of the Provincial Department of Minerals and Resources.
- Shape and contour disturbed areas in compliance with the EMPR.



- Ensure that permanent changes in topography (due to mining) are sustainable and do not cause erosion or the uncontrolled damming of surface water.
- Make all excavations safe.
- Use the topsoil effectively to promote the re-establishment of vegetation.
- Ensure that all rehabilitated areas are stable and self-sustaining in terms of vegetation cover.
- Eradicate all weeds/invaser plant species by intensive management of the mining area.

The site-specific closure objectives are discussed in the attached Closure Plan (Appendix J), however, a summary of the closure objectives for the proposed mine were included below.

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the quarry area to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be 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.

The decommissioning activities will therefore consist of the following:

- Sloping and landscaping the quarry pit;
- Removing all stockpiled material;
- Removing all mining machinery and equipment from site;
- Landscaping all disturbed areas and replacing the topsoil;
- Vegetating the reinstated area; and
- Controlling/monitoring the invasive plant species.

The future land use of the proposed area will be agriculture. Upon replacement of the topsoil, the area around the excavation will once again be available for grazing purposes, and the planting of the cover crop (to protect the topsoil) will tie in with the proposed land use.

The applicant will comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

■ Rehabilitation of the excavated area:

The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be dumped into the excavation.

No waste may be permitted to be deposited in the excavations.

Once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.

The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

■ Rehabilitation of plant, office and service areas:

Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.

Stockpiles must be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.

On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.

- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager.

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

🌱 Final rehabilitation:

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing.

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

Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.

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

Once the mining area was rehabilitated the permit holder is required to submit a closure application to the Department of Mineral Resources and Energy in accordance with section 43(4) of the MPRDA, 2002 that states: *“An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report”*. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

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

As no washing is proposed for this project, the applicant will exclusively use water for dust suppression purposes on the access road when needed. Approximately 30 000 litre water/day will be needed during the dry months. The water will be bought and transported to the mining area in a water truck that will moisten the problem area. The use of potable water for dust suppression should be avoided.

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

As no washing is proposed for this project, the Applicant will exclusively use water for dust suppression purposes on the access road when needed. Approximately 30 000 litre water/day will be needed during the dry months. The water will be bought and transported to the mining area in a water truck that will moisten the problem area and therefore the proposed project does not trigger the NWA, 1998 and no additional water use licence is needed. The use of potable water for dust suppression should be avoided.

**iv) Impacts to be mitigated in their respective phases**

Table 28: Impact to be mitigated in their respective phases

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
(as listed in (1)(d)(i)-Listed and specified activities)	of operation in which activity will take place.  State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	(volumes, tonnages and hectares or m <sup>2</sup> )	(describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Demarcation of site with visible beacons.	Site Establishment phase	4.9 ha	Demarcation of the site will ensure that all employees are aware of the boundaries of the mining area, and that work stay within the approved area.	Mining of aggregate / gravel is only allowed within the boundaries of the approved area. <ul style="list-style-type: none"> <li>■ MPRDA, 2008</li> <li>■ NEMA, 1998</li> </ul>	Beacons need to be in place throughout the life of the activity.
<ul style="list-style-type: none"> <li>■ Site establishment and infrastructure development.</li> <li>■ Construction of site access road</li> </ul>	Site Establishment & Operational Phase	4.9 ha	<p><b><u>Loss of agricultural land for duration of mining:</u></b></p> <p>The Applicant signed a lease agreement with the landowner to compensate for the loss of agricultural land for the duration of the mining period. If needed,</p>	Use of agricultural land must be managed in accordance with the: <ul style="list-style-type: none"> <li>■ CARA, 1983</li> <li>■ Closure Plan (Appendix J)</li> </ul>	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			mined-out/rehabilitated areas could revert back to agricultural use once the cover crop stabilised.		
<ul style="list-style-type: none"> <li>■ Site establishment</li> <li>■ Construction of site access road</li> </ul>	Site Establishment & Operational Phase	4.9 ha	<p><b><u>Visual Mitigation</u></b></p> <ul style="list-style-type: none"> <li>■ Mining must be contained to the boundaries of the permitted area.</li> <li>■ The site must have a neat appearance and be kept in good condition at all times.</li> <li>■ Mining equipment must be stored neatly in dedicated areas when not in use.</li> <li>■ The permit holder must limit vegetation removal (if applicable), and stripping of topsoil may only be done immediately prior to the use of a specific area.</li> <li>■ Upon closure the mining area must be rehabilitated and levelled to remove the visual impact on the aesthetic value of the area.</li> </ul>	<p>Management of the mining area must be in accordance with the:</p> <ul style="list-style-type: none"> <li>■ MPRDA, 2008</li> <li>■ NEMA, 1998</li> </ul>	Throughout the site establishment, and operational phase.
<ul style="list-style-type: none"> <li>■ Site establishment and infrastructure development.</li> <li>■ Construction of site access road</li> <li>■ Cumulative Impacts</li> </ul>	Site Establishment phase	±4.9 ha	<p><b><u>Management of vegetation removal:</u></b></p> <ul style="list-style-type: none"> <li>■ The mining boundaries must be clearly demarcated and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly.</li> <li>■ Permits for the removal of protected plant species (if required) must be obtained and kept on-site in the possession (at all times) of the flora search and rescue team.</li> <li>■ Cleared vegetation to be retained at any time may not be burned, but can be mulched and</li> </ul>	<p>Natural vegetated areas must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NEM:BA 2004</li> <li>■ Mpumalanga Biodiversity Sector Plan</li> </ul>	Throughout the site establishment phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>stockpiled. Ideally the heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes.</p> <ul style="list-style-type: none"> <li>■ The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place.</li> <li>■ All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed.</li> <li>■ No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits.</li> <li>■ No fires must be allowed on-site.</li> </ul>		
<ul style="list-style-type: none"> <li>■ Site establishment.</li> <li>■ Construction of site access road</li> <li>■ Sloping and landscaping upon closure of the mining area.</li> </ul>	<p>Site Establishment- and Decommissioning phase</p>	<p>±4.9 ha</p>	<p><b><u>Topsoil Management:</u></b></p> <ul style="list-style-type: none"> <li>■ The upper 300 mm of the soil must be stripped and stockpiled.</li> <li>■ Topsoil is a valuable and essential resource for rehabilitation and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.</li> <li>■ Topsoil stripping, stockpiling and re-spreading must be done in a systematic way. The mining plan have to be such that topsoil is stockpiled for the minimum possible time.</li> <li>■ The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas.</li> <li>■ Topsoil stockpiles must be protected against losses by water and wind erosion. Stockpiles must be positioned so as not to be vulnerable to</li> </ul>	<p>Topsoil must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ CARA, 1983</li> <li>■ NEM:BA, 2004</li> <li>■ MPRDA, 2008</li> </ul>	<p>Throughout the site establishment-, operational, and decommissioning phase.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion.</p> <ul style="list-style-type: none"> <li>■ Topsoil heaps may 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.</li> <li>■ The temporary topsoil stockpiles must be kept free of invasive plant species.</li> <li>■ Storm- and runoff water must be diverted around the mining area to prevent erosion.</li> <li>■ The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site.</li> <li>■ The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.</li> <li>■ A cover crop must be planted, irrigated and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established.</li> <li>■ The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.</li> </ul>		



ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<ul style="list-style-type: none"> <li>■ Site establishment.</li> <li>■ Screening, stockpile, and transporting material from site.</li> <li>■ Sloping and landscaping upon closure of the mining area.</li> </ul>	Site Establishment-, Operational- and Decommissioning phase	±1 ha	<p><b><u>Management of Invader Plant Species:</u></b></p> <ul style="list-style-type: none"> <li>■ An invasive plant species management plan (Appendix I) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities.</li> <li>■ All stockpiles (topsoil) must be kept free of invasive plant species.</li> <li>■ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: <ul style="list-style-type: none"> <li>▪ The plants can be uprooted, felled or cut off and can be destroyed completely.</li> <li>▪ The plants can be treated chemically by a registered pest control officer (PCO) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.</li> </ul> </li> </ul>	<p>Invader plants must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ CARA, 1983</li> <li>■ NEM:BA 2004</li> <li>■ Invasive Plant Species Management Plan (Appendix I)</li> </ul>	Throughout the site establishment-, operational, and decommissioning phase.
<ul style="list-style-type: none"> <li>■ Site establishment.</li> <li>■ Mining of aggregate / gravel .</li> </ul>	Site Establishment- and Operational phase	4.9 ha	<p><b><u>Protection of Fauna:</u></b></p> <ul style="list-style-type: none"> <li>■ The site manager must ensure no fauna is caught, killed, harmed, sold or played with.</li> <li>■ Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person.</li> <li>■ All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of</li> </ul>	<p>Fauna must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NEM:BA 2004</li> </ul>	Throughout the site establishment-, and operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>superstition. Workers must be instructed to report any animals that may be trapped in the working area.</p> <ul style="list-style-type: none"> <li>■ No snares may be set or nests raided for eggs or young.</li> <li>■ All vehicles must adhere to a low speed limit (40 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises.</li> <li>■ No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in the site vehicles and daily removed to the site camp..</li> </ul>		
<ul style="list-style-type: none"> <li>■ Site establishment and infrastructure development.</li> <li>■ Excavation, loading and hauling to the processing plant.</li> </ul>	Site Establishment, & Operational Phase.	4.9 ha	<p><b><u>Archaeological, Heritage and Palaeontological Aspects:</u></b></p> <ul style="list-style-type: none"> <li>■ All mining must be confined to the development footprint area.</li> <li>■ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.</li> <li>■ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.</li> <li>■ The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a</li> </ul>	<p>Cultural/heritage aspects on site must be managed in accordance with the:</p> <p>NHRA, 1999</p>	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>professional archaeologist for an assessment of the finds who must notify the SAHRA.</p> <p>Work may only continue once the go-ahead was issued by SAHRA.</p>		
<ul style="list-style-type: none"> <li>■ Stripping and stockpiling of topsoil and/or overburden.</li> <li>■ Construction of site access road</li> <li>■ Drilling and blasting.</li> <li>■ Excavation, loading and hauling to the processing plant.</li> <li>■ Processing, stockpiling and transporting of material.</li> </ul>	<p>Site Establishment-, Operational Phase</p>	<p>±1 ha</p>	<p><b><u>Fugitive Dust Emission Mitigation:</u></b></p> <ul style="list-style-type: none"> <li>■ The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).</li> <li>■ The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.</li> <li>■ Speed on the haul roads must be limited to 40 km/h on the access road to prevent the generation of excess dust.</li> <li>■ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.</li> <li>■ The crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts.</li> <li>■ Fines, blowing from the drop end of the crusher plant, can be minimized by attaching strips of used conveyor belts to the conveyor's end.</li> <li>■ Compacted dust must weekly be removed from the crusher plant to eliminate the dust source.</li> <li>■ Loads must be flattened to prevent spillage during transportation on public roads.</li> </ul>	<p>Dust generation must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NEM:AQA. 2004 Regulation 6(1)</li> <li>■ National Dust Control Regulations, GN No R827</li> <li>■ ASTM D1739 (SANS 1137:2012)</li> </ul>	<p>Throughout the site establishment-, operational, and decommissioning phase.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> <li>■ Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts.</li> <li>■ All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).</li> <li>■ Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.</li> </ul>		
<ul style="list-style-type: none"> <li>■ Site establishment.</li> <li>■ Construction of site access road</li> <li>■ Mining of aggregate / gravel .</li> <li>■ Crushing, screening, stockpiling and transporting material from site.</li> <li>■ Sloping and landscaping upon closure of the mining area.</li> </ul>	Site Establishment-, Operational-, and Decommissioning Phase	4.9 ha	<p><b><u>Noise Handling:</u></b></p> <ul style="list-style-type: none"> <li>■ The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.</li> <li>■ No loud music may be permitted at the mining area.</li> <li>■ All mining vehicles must 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).</li> <li>■ Best practice measures shall be implemented in order to minimize potential noise impacts.</li> <li>■ A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.</li> <li>■ All noise levels of machinery and work activities within the mining area must be monitored and controlled and noise generated from blasting,</li> </ul>	<p>Noise generation must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NEM:AQA. 2004 Regulation 6(1)</li> <li>■ NRTA, 1996</li> <li>■ Mpumalanga Noise Control Regulations (Provincial Notice 200/2013) of 20 June 2013</li> </ul>	Throughout the site establishment-, operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			excavations, crushing, stockpiling activities, loading of material, and the decommissioning/rehabilitation of the mining area must comply with the Mpumalanga Noise Control Regulations (Provincial Notice 200/2013) of 20 June 2013.		
<ul style="list-style-type: none"> <li>■ Stripping and stockpiling of topsoil and/or overburden.</li> <li>■ Excavation, loading and hauling to the processing plant.</li> <li>■ Processing, stockpiling and transporting of material.</li> <li>■ Sloping and landscaping during rehabilitation phase.</li> </ul>	Site Establishment-, Operational-, and Decommissioning Phase	4.9 ha	<p><b><u>Waste Management:</u></b></p> <ul style="list-style-type: none"> <li>■ Regular vehicle maintenance, repairs and services may only take place in a demarcated service area of the permit holder. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal.</li> <li>■ Vehicle maintenance or refueling must be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refueling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary</li> <li>■ Ablution facilities must be provided in the form of a chemical toilet. The chemical toilet must be placed outside the 1:100 year floodline of any open water resource, and must be serviced at least once every two weeks for the duration of the mining activities.</li> <li>■ The use of any temporary, chemical toilet facilities may not cause any pollution to water sources or pose a health hazard. In addition, no</li> </ul>	<p>Mining related waste must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NWA, 1998</li> <li>■ NEM:WA, 2008</li> <li>■ NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)</li> <li>■ NEMA, 1998 (Section 30)</li> </ul>	Throughout the site establishment-, operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder.</p> <ul style="list-style-type: none"> <li>■ If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.</li> <li>■ Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site.</li> <li>■ A spill kit must be available on-site which can be operated by trained employees for the adhoc remediation of minor chemical and hydrocarbon spillages.</li> <li>■ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility.</li> <li>■ Should spillage occur, such as oil or diesel leaking from a burst pipe, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof must be filed.</li> <li>■ A waste management plan must be compiled by site management and implemented on site. The plan must focus on the waste hierarchy of the NEM:WA.</li> <li>■ General waste must be contained in marked, sealable, refuse bins placed at a designated</li> </ul>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>area, to be removed when filled to capacity to a recognised general waste landfill site.</p> <ul style="list-style-type: none"> <li>■ No waste may be buried or burned on the site.</li> <li>■ No chemicals or hazardous materials may be stored at the mining area.</li> <li>■ Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the to all relevant authorities, including Department Environmental Affairs and Development Planning – Directorate - Pollution and Chemicals Management, in accordance with section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (“NEMA”) pertaining to the control of incidents. In the event of a significant accidental spill or leak of hazardous substances (e.g. petrol, diesel, etc.) during any phase of the proposed activities, such an incident(s) must be reported.</li> </ul>		
<ul style="list-style-type: none"> <li>■ Stripping and stockpiling of topsoil and overburden.</li> <li>■ Construction of site access road</li> <li>■ Excavation, loading and hauling to the processing plant.</li> <li>■ Sloping and landscaping during rehabilitation.</li> </ul>	Operational Phase	4.9 ha	<p><b><u>Erosion Control and Storm Water Management:</u></b></p> <ul style="list-style-type: none"> <li>■ Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place.</li> <li>■ Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion.</li> <li>■ Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms.</li> <li>■ When mining within steep slopes, it must be ensured that adequate slope protection is provided.</li> <li>■ During mining, the outflow of run-off water from the mining excavation must be controlled to prevent down-slope erosion. This must be done</li> </ul>	<p>Storm water must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ CARA, 1983</li> <li>■ NEMA, 1998</li> <li>■ NWA, 1998</li> </ul>	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>by way of the construction of temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur.</p> <ul style="list-style-type: none"> <li>■ Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation.</li> <li>■ Any erosion problems within the mining area as a result of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.</li> <li>■ 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: <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Dirty water must be collected and contained in a system separate from the clean water system.</li> <li>▪ Dirty water must be prevented from spilling or seeping into clean water systems.</li> <li>▪ A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns).</li> </ul> </li> </ul>		



ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> <li>▪ The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into a storm water management plan.</li> <li>■ Polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards must be restricted to the workshop areas and must be undertaken on impermeable hard standing surfaces, which are formally drained to a dirty water drainage system at the site.</li> <li>■ Vehicle maintenance or refueling must be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refueling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary</li> <li>▪ All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. In order to prevent pollution of the surrounding environment during an accidental spillage, the designated storage areas must be situated on an impermeable surface and must feature a perimeter bund and a drainage sump. The volume of the bund and sump must be sized to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. The storage areas must feature a roof to prevent inflow of</li> </ul>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			rainwater, which would require the sump to be emptied more frequently.		
<ul style="list-style-type: none"> <li>■ Construction of site access road</li> <li>■ Crushing, screening, stockpiling and transporting material from site.</li> </ul>	Operational Phase	±1 ha	<p><b><u>Access Road Mitigation:</u></b></p> <ul style="list-style-type: none"> <li>■ Storm water must be diverted around the access road to prevent erosion.</li> <li>■ Vehicular movement must be restricted to the existing access road to prevent crisscrossing of tracks through undisturbed areas.</li> <li>■ Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder.</li> <li>■ Overloading of the truck must be prevented, and proof of load weights must be filed for auditing purposes.</li> </ul>	<p>The access road must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NRTA, 1996</li> </ul>	Throughout the operational phase.
<ul style="list-style-type: none"> <li>■ Construction of site access road</li> <li>■ Drilling and blasting.</li> <li>■ Excavation, loading and hauling to the processing plant.</li> <li>■ Sloping and landscaping during rehabilitation phase.</li> </ul>	Site Establishment-, Operational-, and Decommissioning phase	4.9 ha	<p><b><u>Management of health and safety risks:</u></b></p> <ul style="list-style-type: none"> <li>■ Workers must have access to the correct personal protection equipment (PPE) as required by law.</li> <li>■ Sanitary facilities must be located within 100 m from any point of work.</li> <li>■ All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).</li> <li>■ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity.</li> <li>■ The surrounding landowners must be informed in writing ahead of each blasting event.</li> </ul>	<p>Health and safety aspects must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ MHSA, 1996</li> <li>■ OHSA, 1993</li> <li>■ OHSAS, 18001</li> </ul>	Throughout the site establishment-, operational and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> <li>■ The compliance of ground vibration and airblast levels must be monitored to USBM standards with each blasting event.</li> <li>■ A vibro recorder must be used to record all blasts.</li> <li>■ Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.</li> <li>■ Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.</li> </ul>		
<ul style="list-style-type: none"> <li>■ Site establishment and infrastructure development.</li> </ul>	Site Establishment, & Operational Phase.	±500 m <sup>2</sup>	<p><b><u>Storage/Handling of Hazardous Substances/Chemicals:</u></b></p> <ul style="list-style-type: none"> <li>■ Chemical storage areas must be placed on level ground to prevent offsite migration of any spilled product.</li> <li>■ The floor of the storage area must be impermeable to prevent seepage of spilled products into the ground or ground water.</li> <li>■ Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member.</li> <li>■ A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site.</li> <li>■ Any fuel/used oil tanks must have secondary containment in the form of an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. The distance and height of the bund wall relative to that of the tank must also be taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.</li> </ul>	<p>Chemicals/hazardous substances must be stored in accordance with the:</p> <ul style="list-style-type: none"> <li>■ HSA,1973</li> <li>■ NWA, 1998</li> <li>■ NEM:WA, 2008</li> </ul>	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> <li>■ The site manager must 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 must be inspected at least weekly and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely.</li> <li>■ The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water, and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility.</li> <li>■ Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and are not be stored on bare soil. The waste water originating from the cleaning of drip trays must be discarded into the oil sump.</li> </ul>		
<ul style="list-style-type: none"> <li>■ Sloping and landscaping during rehabilitation phase.</li> </ul>	Decommissioning Phase	4.9 ha	<p><b><u>Rehabilitation/landscaping of mining area:</u></b></p> <ul style="list-style-type: none"> <li>■ The excavated area must serve as a final depositing area for the placement of overburden.</li> <li>■ Rocks and coarse material removed from the excavation must be dumped into the excavation.</li> <li>■ Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.</li> <li>■ Stockpiles must be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.</li> </ul>	<p>Rehabilitation of the mining area must be in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ CARA, 1983</li> <li>❖ NEM:BA, 2004</li> <li>❖ MPRDA, 2002</li> </ul> <p>Closure Plan (Appendix J)</p>	Throughout the decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> <li>■ No waste may be permitted to be deposited in the excavations.</li> <li>■ Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.</li> <li>■ The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site.</li> <li>■ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.</li> <li>■ On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).</li> <li>■ On completion of mining operations, the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.</li> </ul>		

### e) Impact Management Outcomes

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

Table 29: Impact Management Outcomes

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<p>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.)</p>	<p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)</p>		<p>In which impact is anticipated  (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))</p>	<p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc..)  E.g.  <ul style="list-style-type: none"> <li>• Modify through alternative method.</li> <li>• Control through noise control</li> <li>• Control through management and monitoring</li> </ul> Remedy through rehabilitation.</p>	<p>(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.</p>
<p>Demarcation of site with visible beacons.</p>	<p>No impact could be identified other than the beacons being outside the boundaries of the approved mining area.</p>	<p>N/A</p>	<p>Site Establishment phase</p>	<p>Control through management and monitoring.</p>	<p>Mining of aggregate / gravel is only allowed within the boundaries of the approved area.  <ul style="list-style-type: none"> <li>• MPRDA, 2008</li> <li>• NEMA, 1998</li> </ul> </p>
<p>Site establishment, construction of access road and infrastructure development.  Stripping and stockpiling of topsoil and overburden.</p>	<p>Visual intrusion as a result of site establishment.</p>	<p>The visual impact may affect the aesthetics of the landscape.</p>	<p>Site Establishment &amp; Operational Phase</p>	<p><u>Control:</u> Implementing proper housekeeping.</p>	<p>Management of the mining area must be in accordance with the:  <ul style="list-style-type: none"> <li>• MPRDA, 2008</li> <li>• NEMA, 1998</li> </ul> </p>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<ul style="list-style-type: none"> <li>■ Site establishment and infrastructure development.</li> </ul>	<ul style="list-style-type: none"> <li>■ Loss of agricultural land for duration of mining.</li> </ul>	<p>The impact may affect the agricultural opportunities of the property.</p>	<p>Site Establishment &amp; Operational Phase</p>	<p>Should the proposed project be approved, the operation will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon the closure of the mine. The impact could be controlled through progressive rehabilitation.</p>	<p>Use of agricultural land must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ CARA, 1983</li> </ul> <p>Closure Plan (Appendix J)</p>
<ul style="list-style-type: none"> <li>■ Stripping and stockpiling of topsoil and overburden.</li> <li>■ Excavation, loading and hauling to the processing plant.</li> <li>■ Sloping and landscaping during rehabilitation.</li> <li>■ Construction of site access road</li> </ul>	<ul style="list-style-type: none"> <li>■ Loss of stockpiled topsoil during mining and stockpiling.</li> <li>■ Potential erosion of denuded areas.</li> <li>■ Facilitation of erosion due to mining activities.</li> <li>■ Erosion of returned topsoil after rehabilitation.</li> </ul>	<p>Loss of topsoil will affect the rehabilitation success upon closure of the mine.</p>	<p>Site Establishment-, Operational and Decommissioning Phase</p>	<p><u>Control &amp; Remedy:</u> Proper housekeeping and storm water management.</p>	<p>Topsoil must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ CARA, 1983</li> <li>■ NEM:BA, 2004</li> <li>■ MPRDA, 2008</li> </ul>
<ul style="list-style-type: none"> <li>■ Site establishment</li> <li>■ Screening, stockpile, and transporting material from site.</li> <li>■ Sloping and landscaping upon closure of the mining area.</li> </ul>	<ul style="list-style-type: none"> <li>■ Infestation of the topsoil heaps and mining area with invader plant species.</li> <li>■ Infestation of denuded areas with invader plant species</li> <li>■ Infestation of the reinstated area with invader plant species.</li> </ul>	<p>This will impact on the biodiversity of the receiving environment.</p>	<p>Site Establishment-, Operational- and Decommissioning phase</p>	<p><u>Control:</u> Implementing soil- and storm water management.</p>	<p>Invader plants must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ CARA, 1983</li> <li>■ NEM:BA 2004</li> <li>■ Invasive Plant Species Management Plan (Appendix I)</li> </ul>
<ul style="list-style-type: none"> <li>■ Site establishment and infrastructure development.</li> </ul>	<ul style="list-style-type: none"> <li>■ Potential impact on fauna within the footprint area.</li> </ul>	<p>This will impact on the biodiversity of the</p>	<p>Site Establishment- and Operational phase</p>	<p><u>Control &amp; Stop:</u> Implementing good management practices.</p>	<p>Fauna must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NEM:BA 2004</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<ul style="list-style-type: none"> <li>Stripping and stockpiling of topsoil and overburden.</li> </ul>	<ul style="list-style-type: none"> <li>Disturbance to aquatic fauna within the footprint area</li> </ul>	receiving environment.			
<ul style="list-style-type: none"> <li>Stripping and stockpiling of topsoil and/or overburden.</li> <li>Construction of site access road</li> <li>Drilling and blasting.</li> <li>Excavation, loading and hauling to the processing plant.</li> <li>Processing, stockpiling and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>Dust nuisance as a result of the mining activities.</li> <li>Dust nuisance as a result of the mining activities.</li> </ul>	Increased dust generation will impact on the air quality of the receiving environment.	Site Establishment- and Operational Phase	<u>Control:</u> Dust suppression methods and proper housekeeping.	Dust generation must be managed in accordance with the: <ul style="list-style-type: none"> <li>NEM:AQA. 2004 Regulation 6(1)</li> <li>National Dust Control Regulations, GN No R827</li> <li>ASTM D1739 (SANS 1137:2012)</li> </ul>
<ul style="list-style-type: none"> <li>Stripping and stockpiling of topsoil and/or overburden.</li> <li>Construction of site access road</li> <li>Drilling and blasting.</li> <li>Excavation, loading and hauling to the processing plant.</li> <li>Processing, stockpiling and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>Noise nuisance generated by earthmoving machinery.</li> <li>Noise nuisance as a result of blasting.</li> <li>Noise nuisance as a result of the mining activities.</li> <li>Noise nuisance stemming from operation of the processing plant.</li> </ul>	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<u>Control:</u> Noise suppression methods and proper housekeeping.	Noise generation on site must be managed in accordance with the: <ul style="list-style-type: none"> <li>NEM:AQA, 2004 Regulation 6(1)</li> <li>NRTA, 1996</li> </ul>
<ul style="list-style-type: none"> <li>Mining of aggregate / gravel .</li> <li>Screening, stockpile, and transporting material from site.</li> </ul>	<ul style="list-style-type: none"> <li>Soil contamination from hydrocarbon spills.</li> </ul>	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the	Site Establishment-, Operational-, and Decommissioning Phase	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	Mining related waste must be managed in accordance with the: <ul style="list-style-type: none"> <li>NWA, 1998</li> <li>NEM:WA, 2008</li> </ul>



ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<ul style="list-style-type: none"> <li>■ Sloping and landscaping upon closure of the mining area.</li> </ul>	<ul style="list-style-type: none"> <li>■ Potential impact associated with littering and hydrocarbon spills.</li> <li>■ Potential impact associated with litter left at the mining area.</li> </ul>	<p>groundwater. It will also incur additional costs to the permit holder.</p>			<ul style="list-style-type: none"> <li>■ NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)</li> <li>■ NEMA, 1998 (Section 30)</li> </ul>
<ul style="list-style-type: none"> <li>■ Site establishment and infrastructure development.</li> <li>■ Excavation, loading and hauling to the processing plant.</li> </ul>	<ul style="list-style-type: none"> <li>■ Potential impact on area/infrastructure of heritage or cultural concern.</li> </ul>	<p>This could impact on the cultural and heritage legacy of the receiving environment.</p>	Operational Phase	<p><u>Control &amp; Stop:</u> Implementing good management practices, as well as the chance-find protocol.</p>	<p>Cultural/heritage aspects must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NHRA, 1999</li> </ul>
<ul style="list-style-type: none"> <li>■ Construction of site access road</li> <li>■ Screening, stockpile, and transporting material from site.</li> </ul>	<ul style="list-style-type: none"> <li>■ Deterioration of the access road to the mining area.</li> </ul>	<p>Collapse of the road infrastructure will affect the landowner.</p>	Operational Phase	<p><u>Control &amp; Remedy:</u> Maintaining the access road for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to mining.</p>	<p>The access road must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NRTA, 1996</li> </ul>
<ul style="list-style-type: none"> <li>■ Drilling and blasting.</li> <li>■ Excavation, loading and hauling to the processing plant.</li> <li>■ Sloping and landscaping during rehabilitation phase.</li> </ul>	<ul style="list-style-type: none"> <li>■ Health and safety risk posed by blasting activities.</li> <li>■ Unsafe working environment for employees.</li> <li>■ Safety risk posed by un-sloped areas.</li> </ul>	<p>An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.</p>	Operational-, and Decommissioning Phase	<p><u>Stop &amp; Control:</u> Adherence to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.</p>	<p>Health and safety aspects on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ MHSA, 1996</li> <li>■ OHSAs, 1993</li> <li>■ OHSAS 18001</li> </ul> <p>USBM standards</p>
<ul style="list-style-type: none"> <li>■ Screening, stockpile, and transporting material from site.</li> </ul>	<ul style="list-style-type: none"> <li>■ Overloading of trucks having an impact on the public roads.</li> </ul>	<p>Overloading will negatively affect the</p>	Operational Phase	<p><u>Control:</u> Proper site management.</p>	<p>Load weights must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NRTA, 1996</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
		roads in the vicinity of the mining area.			

## f) Impact Management Actions

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

Table 30: Impact Management Actions

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<p>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.)</p>	<p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)</p>	<p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.)</p> <p>E.g.</p> <ul style="list-style-type: none"> <li>• Modify through alternative method.</li> <li>• Control through noise control</li> <li>• Control through management and monitoring</li> </ul> <p>Remedy through rehabilitation.</p>	<p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.</p>	<p>(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>
<p>Demarcation of site with visible beacons.</p>	<p>No impact could be identified other than the beacons being outside the boundaries of the approved mining area.</p>	<p>Demarcation of the site will ensure that all employees are aware of the boundaries of the mining area, and that work stay within the approved area.</p>	<p>Beacons need to be in place throughout the life of the activity.</p>	<p>Mining of aggregate / gravel is only allowed within the boundaries of the approved area.</p> <ul style="list-style-type: none"> <li>• MPRDA, 2008</li> <li>• NEMA, 1998</li> </ul>
<p>Site establishment</p>	<p>Visual intrusion as a result of site establishment.</p>	<p><b>Visual Mitigation</b></p> <ul style="list-style-type: none"> <li>• Mining must be contained to the boundaries of the permitted area.</li> </ul>	<p>Throughout the site establishment-, site and operational phase.</p>	<p>Management of the mining area must be in accordance with the:</p> <ul style="list-style-type: none"> <li>• MPRDA, 2008</li> </ul>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<ul style="list-style-type: none"> <li>■ Construction of site access road</li> </ul>		<ul style="list-style-type: none"> <li>■ The site must have a neat appearance and be kept in good condition at all times.</li> <li>■ The permit holder must limit vegetation removal (if applicable), and stripping of topsoil may only be done immediately prior to the use of a specific area.</li> <li>■ Upon closure the mining area must be rehabilitated and levelled to remove the visual impact on the aesthetic value of the area.</li> </ul>		<ul style="list-style-type: none"> <li>■ NEMA, 1998</li> </ul>
<ul style="list-style-type: none"> <li>■ Site establishment</li> <li>■ Construction of site access road</li> <li>■ Crushing, screening, stockpiling and transporting material from site.</li> <li>■ Sloping and landscaping upon closure of the mining area.</li> </ul>	<ul style="list-style-type: none"> <li>■ Loss of topsoil and fertility during mining and stockpiling</li> <li>■ Loss of stockpiled material due to ineffective storm water control.</li> <li>■ Erosion of returned topsoil after rehabilitation</li> </ul>	<p><b><u>Topsoil Management:</u></b></p> <ul style="list-style-type: none"> <li>■ The upper 300 mm of the soil must be stripped and stockpiled.</li> <li>■ Topsoil is a valuable and essential resource for rehabilitation and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.</li> <li>■ Topsoil stripping, stockpiling and re-spreading must be done in a systematic way. The mining plan have to be such that topsoil is stockpiled for the minimum possible time.</li> <li>■ The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas.</li> <li>■ Topsoil stockpiles must be protected against losses by water and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion.</li> </ul>	<p>Throughout the site establishment-, operational, and decommissioning phase.</p>	<p>Topsoil must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ CARA, 1983</li> <li>■ NEM:BA, 2004</li> <li>■ MPRDA, 2008</li> </ul>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		<ul style="list-style-type: none"> <li>■ Topsoil heaps may 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.</li> <li>■ The temporary topsoil stockpiles must be kept free of invasive plant species.</li> <li>■ Storm- and runoff water must be diverted around the mining area to prevent erosion.</li> <li>■ The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site.</li> <li>■ The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.</li> <li>■ A cover crop must be planted, irrigated and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established.</li> <li>■ The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.</li> </ul>		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<ul style="list-style-type: none"> <li>■ Site establishment</li> <li>■ Construction of site access road</li> <li>■ Screening, stockpile, and transporting material from site.</li> <li>■ Sloping and landscaping upon closure of the mining area.</li> </ul>	<ul style="list-style-type: none"> <li>■ Infestation of the topsoil heaps and mining area with invader plant species.</li> <li>■ Infestation of denuded areas with invader plant species</li> <li>■ Infestation of the reinstated area with invader plant species.</li> </ul>	<p><b><u>Management of Invader Plant Species:</u></b></p> <ul style="list-style-type: none"> <li>■ An invasive plant species management plan (Appendix I) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities.</li> <li>■ All stockpiles (topsoil) must be kept free of invasive plant species.</li> <li>■ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: <ul style="list-style-type: none"> <li>▪ The plants can be uprooted, felled or cut off and can be destroyed completely.</li> <li>▪ The plants can be treated chemically by a registered pest control officer (PCO) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.</li> </ul> </li> </ul>	<p>Throughout the site establishment-, operational, and decommissioning phase.</p>	<p>Invader plants must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ CARA, 1983</li> <li>■ NEM:BA 2004</li> <li>■ Invasive Plant Species Management Plan (Appendix I)</li> </ul>
<ul style="list-style-type: none"> <li>■ Site establishment.</li> <li>■ Construction of site access road</li> <li>■ Mining of aggregate / gravel</li> </ul>	<ul style="list-style-type: none"> <li>■ Potential impact on fauna within the footprint area.</li> </ul>	<p><b><u>Protection of Fauna:</u></b></p> <ul style="list-style-type: none"> <li>■ The site manager must ensure no fauna is caught, killed, harmed, sold or played with.</li> <li>■ Workers must be instructed to report any animals that may be trapped in the working area.</li> <li>■ No snares may be set or nests raided for eggs or young.</li> </ul>	<p>Throughout the site and operational phase.</p>	<p>Fauna must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NEM:BA 2004</li> </ul>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<ul style="list-style-type: none"> <li>■ Site establishment</li> <li>■ Screening, stockpile, and transporting material from site.</li> </ul>	<ul style="list-style-type: none"> <li>■ Dust nuisance as a result of the mining activities.</li> <li>■ Dust nuisance as a result of the mining activities.</li> </ul>	<p><b><u>Fugitive Dust Emission Mitigation:</u></b></p> <ul style="list-style-type: none"> <li>■ The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).</li> <li>■ The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.</li> <li>■ Speed on the access road must be limited to 40 km/h to prevent the generation of excess dust.</li> <li>■ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.</li> <li>■ Loads must be flattened and covered to ensure that minimal spillage of material takes place during transportation, also preventing windblown dust.</li> <li>■ Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts.</li> <li>■ All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).</li> <li>■ Best practice measures shall be implemented during the stripping of topsoil, loading, and transporting of the aggregate /</li> </ul>	<p>Throughout the site establishment-, operational, and decommissioning phase.</p>	<p>Dust generation must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NEM:AQA. 2004 Regulation 6(1)</li> <li>■ National Dust Control Regulations, GN No R827</li> <li>■ ASTM D1739 (SANS 1137:2012)</li> </ul>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		<p>gravel from site to minimize potential dust impacts.</p>		
<ul style="list-style-type: none"> <li>■ Site establishment</li> <li>■ Construction of site access road</li> <li>■ Mining of aggregate / gravel</li> <li>■ Screening, stockpile, and transporting material from site.</li> <li>■ Sloping and landscaping upon closure of the mining area.</li> </ul>	<ul style="list-style-type: none"> <li>■ Noise nuisance as a result of the mining activities.</li> <li>■ Noise nuisance as a result of the decommissioning activities.</li> </ul>	<p><b><u>Noise Handling:</u></b></p> <ul style="list-style-type: none"> <li>■ The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.</li> <li>■ No loud music may be permitted at the mining area.</li> <li>■ All mining vehicles must 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).</li> <li>■ Best practice measures shall be implemented in order to minimize potential noise impacts.</li> <li>■ A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.</li> </ul>	<p>Throughout the site establishment-, operational-, and decommissioning phase.</p>	<p>Noise generation must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NEM:AQA. 2004 Regulation 6(1)</li> <li>■ NRTA, 1996</li> </ul>
<ul style="list-style-type: none"> <li>■ Mining of aggregate / gravel</li> <li>■ Screening, stockpile, and transporting material from site.</li> <li>■ Sloping and landscaping upon closure of the mining area.</li> </ul>	<ul style="list-style-type: none"> <li>■ Soil contamination from hydrocarbon spills.</li> <li>■ Potential impact associated with littering and hydrocarbon spills.</li> <li>■ Potential impact associated with litter left at the mining area.</li> </ul>	<p><b><u>Waste Management:</u></b></p> <ul style="list-style-type: none"> <li>■ Regular vehicle maintenance, repairs and services may only take place in a demarcated service area of the permit holder. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal.</li> </ul>	<p>Throughout the site establishment-, operational-, and decommissioning phase.</p>	<p>Mining related waste must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NWA, 1998</li> <li>■ NEM:WA, 2008</li> <li>■ NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)</li> <li>■ NEMA, 1998 (Section 30)</li> <li>■ Regulation 8(1) of the Waste Classification and Management</li> </ul>



ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		<ul style="list-style-type: none"> <li data-bbox="878 250 1406 783"> <span style="color: green;">■</span> All safe disposal certificates, including hazardous waste and waste from the chemical ablution facilities, should be retained for a minimum period of five years. This requirement is stipulated in regulation 8(1) of the Waste Classification and Management Regulations published in GN No. R. 634 of 23 August 2013: <i>“All waste generators, transporters and managers subjected to the requirements of subregulations (1), (2), (4), (5), (6) and (7) must retain copies, or be able to access copies/records, of the waste manifest documentation for a period of at least five (5) years.”</i>Waste registers, as described in this document must be made available for review upon request by any relevant authority.         </li> <li data-bbox="878 788 1406 1134"> <span style="color: green;">■</span> Vehicle maintenance or refueling must be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refueling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary         </li> <li data-bbox="878 1139 1406 1358"> <span style="color: green;">■</span> Ablution facilities must be provided in the form of a chemical toilet. The chemical toilet must be placed outside the 1:100 year floodline of any open water resource, and must be serviced at least once every two weeks for the duration of the mining activities.         </li> <li data-bbox="878 1362 1406 1423"> <span style="color: green;">■</span> The use of any temporary, chemical toilet facilities may not cause any pollution to         </li> </ul>		<p data-bbox="1832 250 2175 309">Regulations published in GN No. R. 634 of 23 August 2013</p>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		<p>water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder.</p> <ul style="list-style-type: none"> <li>■ If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.</li> <li>■ Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site.</li> <li>■ A spill kit must be available on-site which can be operated by trained employees for the adhoc remediation of minor chemical and hydrocarbon spillages.</li> <li>■ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility.</li> <li>■ Should spillage occur, such as oil or diesel leaking from a burst pipe, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof must be filed.</li> <li>■ A waste management plan must be compiled by site management and implemented on site. The plan must focus on the waste hierarchy of the NEM:WA.</li> </ul>		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		<ul style="list-style-type: none"> <li> <span style="color: green;">■</span> The storage of hazardous and/or general waste in excess of 80m<sup>3</sup> and 100m<sup>3</sup> respectively, excluding the storage of waste in lagoons or the temporary storage of such waste, would require the applicant to comply with the National Norms and Standards for the Storage of Waste, published in GN No. 926 of 29 November 2013. Although the storage of general and hazardous waste below these mentioned thresholds is not regulated, section 28 of the NEMA, 1998 would apply to ensure that any waste storage does not impact negatively on the environment.         </li> <li> <span style="color: green;">■</span> General waste must be contained in marked, sealable, refuse bins placed at a designated area, to be removed when filled to capacity to a recognised general waste landfill site.         </li> <li> <span style="color: green;">■</span> No waste may be buried or burned on the site.         </li> <li> <span style="color: green;">■</span> No chemicals or hazardous materials may be stored at the mining area.         </li> <li> <span style="color: green;">■</span> Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the to all relevant authorities, including Department Environmental Affairs Management, in accordance with section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA") pertaining to the <i>control of incidents</i>. In the event of a significant accidental spill or leak of hazardous substances (e.g. petrol, diesel, etc.) during any phase of the proposed activities, such an incident(s) must be reported.         </li> </ul>		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<ul style="list-style-type: none"> <li>■ Mining of aggregate / gravel</li> </ul>	<ul style="list-style-type: none"> <li>■ Potential impact on area/infrastructure of heritage or cultural concern.</li> </ul>	<p><b><u>Archaeological, Heritage and Palaeontological Aspects:</u></b></p> <ul style="list-style-type: none"> <li>■ All mining must be confined to the development footprint area.</li> <li>■ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.</li> <li>■ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.</li> <li>■ The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify SAHRA.</li> <li>■ Work may only continue once the go-ahead was issued by SAHRA.</li> </ul>	<p>Throughout the operational phase.</p>	<p>Cultural/heritage aspects must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NHRA, 1999</li> </ul>
<ul style="list-style-type: none"> <li>■ Crushing, screening, stockpiling and transporting material from site</li> <li>■ Construction of site access road.</li> </ul>	<ul style="list-style-type: none"> <li>■ Loss of stockpiled material due to ineffective storm water control.</li> </ul>	<p><b><u>Storm Water Mitigation:</u></b></p> <ul style="list-style-type: none"> <li>■ Storm water must be diverted around the topsoil heaps and mining area to prevent erosion.</li> <li>■ A 100 meter buffer zone must be implemented between the edge of the wetland as delineated and the quarry</li> </ul>	<p>Throughout the operational phase.</p>	<p>Storm water must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ CARA, 1983</li> <li>■ NEMA, 1998</li> <li>■ NWA, 1998</li> </ul>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<ul style="list-style-type: none"> <li>■ Mining of aggregate / gravel</li> </ul>		<p>excavations, stockpile areas, chemical toilets, wastes and any hazardous materials (diesel, etc.) are maintained.</p> <ul style="list-style-type: none"> <li>■ 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: <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Dirty water must be collected and contained in a system separate from the clean water system.</li> <li>▪ Dirty water must be prevented from spilling or seeping into clean water systems.</li> </ul> </li> </ul>		
<ul style="list-style-type: none"> <li>■ Construction of site access road</li> <li>■ Screening, stockpile, and transporting material from site.</li> </ul>	<ul style="list-style-type: none"> <li>■ Deterioration of the access road to the mining area.</li> <li>■ Overloading of trucks having an impact on the public roads.</li> </ul>	<p><b><u>Access Road Mitigation:</u></b></p> <ul style="list-style-type: none"> <li>■ Storm water must be diverted around the access road to prevent erosion.</li> <li>■ Vehicular movement must be restricted to the existing access road to prevent crisscrossing of tracks through undisturbed areas.</li> <li>■ Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder.</li> </ul>	<p>Throughout the operational phase.</p>	<p>The access road must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NRTA, 1996</li> </ul>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		<ul style="list-style-type: none"> <li>Overloading of the truck must be prevented, and proof of load weights must be filed for auditing purposes.</li> </ul>		
<ul style="list-style-type: none"> <li>Site establishment.</li> <li>Construction of site access road</li> <li>Mining of aggregate / gravel</li> <li>Crushing, screening, stockpiling and transporting material from site.</li> <li>Sloping and landscaping upon closure of the mining area.</li> </ul>	<ul style="list-style-type: none"> <li>Potential health and safety risk to employees.</li> </ul>	<p><b><u>Management of Health and Safety Risks:</u></b></p> <ul style="list-style-type: none"> <li>Adequate ablution facilities and water for human consumption must daily be available on site.</li> <li>Workers must have access to the correct personal protection equipment (PPE) as required by law.</li> <li>All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).</li> </ul>	<p>Throughout the site establishment-, operational and decommissioning phase.</p>	<p>Health and safety aspects must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>MHSA, 1996</li> <li>OHSA, 1993</li> <li>OHSAS, 18001</li> </ul>

**i) Financial Provision**

**(1) Determination of the amount of Financial Provision.**

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

The closure objectives entail removing the mining machinery from the site. Removal of the crushing and screening plant, containers, weighbridge and chemical toilet from the mining area, removal/levelling of all stockpiled material and the landscaping of the mining area to allow the replacement of stockpiled topsoil. The reinstated area will be vegetated and invasive plant species will be controlled during a 12 months' aftercare period to address germination of problem plants in the area. The Applicant will comply with the minimum closure objectives as prescribed by DMRE.

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

This report, the Final Basic Assessment Report, includes all the environmental objectives in relation to closure and will be made available for perusal by the landowner, registered I&AP's and stakeholders over a 30-days commenting period.

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

The requested rehabilitation plan is attached as Appendix E.

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

The decommissioning phase will entail the final rehabilitation of the mining site. Final landscaping, levelling and top dressing will be done. The rehabilitation of the mining area as indicated on the rehabilitation plan attached as Appendix E will comply with the minimum closure objectives as prescribed by DMRE and detailed below, and therefore is deemed to be compatible:

#### Rehabilitation of the Excavated Area:

The risk of unsloped and unrehabilitated areas posing a safety risk can be reduced to being Low through the implementation of the mitigation measures listed below:

- The excavated area must serve as a final depositing area for the placement of overburden.
- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- No waste may be permitted to be deposited in the excavations.
- Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.
- The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site. Seeds should be harvested prior to commencement of the mining activities and indigenous vegetation or a suitable crop should be reintroduced during the rehabilitation process;
- Where re-vegetation work will be done on the disturbed areas, only suitable crops, or locally indigenous, endemic vegetation must be used, and no “alien Plant” species are allowed.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

#### Rehabilitation of the Mining area:

Stockpiles will be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium. On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):



- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- Photographs of the office sites and workshop, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.
- On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified and graded to an even surface condition. Where applicable / possible topsoil needs to be returned to its original depth over the area.
- Prior to replacing the topsoil, the material that was removed from these areas will be replaced in the same order as it originally occurred. The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

■ Final Rehabilitation:

Final rehabilitation of the surface area shall entail landscaping, levelling, maintenance, and clearing of invasive plant species. All equipment, plant and other items used during the mining period will be removed from site (section 44 of the MPRDA, 2002). Waste material of any description will be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site. The management of invasive plant species will be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations

applicable thereto) will be eradicated from the site. Final rehabilitation shall be completed within a period specified by the Regional Manager.

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

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

**Mine type and saleable mineral by-product**

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

Mine type	Aggregate / gravel
Saleable mineral by-product	None

**Risk ranking**

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

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

**Environmental sensitivity of the mine area**

According to Table B.4

Environmental sensitivity of the mine area	Low
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**Level of information**

According to Step 4.2:

Level of information available	Limited
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**Identify closure components**

According to Table B.5 and site-specific conditions

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

### **Unit rates for closure components**

According to Table B.6 master rates and multiplication factors for applicable closure components.

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	-
2(A)	Demolition of steel buildings and structures	-	-
2(B)	Demolition of reinforced concrete buildings and structures	-	-
3	Rehabilitation of access roads	-	-
4(A)	Demolition and rehabilitation of electrified railway lines	-	-
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	-
5	Demolition of housing and facilities	-	-
6	Opencast rehabilitation including final voids and ramps	253 019	0.5
7	Sealing of shafts, adits and inclines	-	-
8(A)	Rehabilitation of overburden and spoils	168 679	-
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	-
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	-
9	Rehabilitation of subsided areas	-	-
10	General surface rehabilitation, including grassing of all denuded areas	126 059	1.00
11	River diversions	-	-

<b>Component No.</b>	<b>Main description</b>	<b>Master rate</b>	<b>Multiplication factor</b>
12	Fencing	-	-
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	-
14	2 to 3 years of maintenance and aftercare	16 776	1.00

**Determine weighting factors**

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.1 (Undulating)
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05

### Calculation of closure costs

Table B.10 Template for Level 2: "Rules-based" assessment of the quantum for financial provision

Table 31: Calculation of closure cost

<b>CALCULATION OF THE QUANTUM</b>							
<b>Mine:</b>	Ermelo Quarry			<b>Location:</b>	Ermelo		
<b>Evaluators:</b>	S Smit			<b>Date:</b>	16 February 2022		
No	Description	Unit	A Quantity	B Master rate	C Multiplication factor	D Weighting factor 1	E=A *B*C*D Amount (Rand)
			Step 4.5	Step 4.3	Step 4.3	Step 4.4	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m <sup>2</sup>	0	19	1.00	1.1	R 0.00
2(A)	Demolition of steel buildings and structures	m <sup>2</sup>	0	271	1.00	1.1	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m <sup>2</sup>	0	400	1.00	1.1	R 0.00
3	Rehabilitation of access roads	m <sup>2</sup>	0	49	1.00	1.1	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	471	1.00	1.1	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	257	1.00	1.1	R 0.00
5	Demolition of housing and/or administration facilities	m <sup>2</sup>	0	542	1.00	1.1	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	4	284 292	0.04	1.1	R 50 035.39
7	Sealing of shaft, audits and inclines	m <sup>3</sup>	0	146	1.00	1.1	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0	189 528	1.00	1.1	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	236 054	1.00	1.1	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	685 612	0.51	1.1	R 0.00
9	Rehabilitation of subsided areas	ha	0	158 701	1.00	1.1	R 0.00
10	General surface rehabilitation	ha	0.9	150 138	1.00	1.1	R 148 636.62
11	River diversions	ha	0	150 138	1.00	1.1	R 0.00

12	Fencing	m	0	171	1.00	1.1	R 0.00
13	Water Management	ha	0	57 087	0.17	1.1	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	4.9	19 980	1.00	1.1	R 107 692.20
15(A)	Specialists study	Sum	0				R 0.00
15(B)	Specialists study	Sum	0				R 0.00
Sum of items 1 to 15 above							R 306 364.21
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R 142 835.00		<b>Sub Total 1</b>	R 321 682.42

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00					R 19 300.95
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00					-
2	Contingency	10.0% of Subtotal 1					R 32 168.24
<b>Sub Total 2</b>							
(Subtotal 1 plus management and contingency)						R 373 151.61	
Vat (15%)						R 55 972.74	
GRAND TOTAL							
(Subtotal 3 plus VAT)						<b>R 429 124.35</b>	

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total of **R 429 124.35**.

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

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



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

**g) Monitoring of Impact Management Actions**

**h) Monitoring and reporting frequency**

**i) Responsible persons**

**j) Time period for implementing impact management actions**

**k) Mechanisms for monitoring compliance**

*Table 32: Mechanisms for monitoring compliance with and performance assessment against the EMPR and reporting thereon.*

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<ul style="list-style-type: none"> <li>Demarcation of site with visible beacons</li> </ul>	Maintenance of beacons	<ul style="list-style-type: none"> <li>Visible beacons need to be placed at the corners of the mining area.</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>Ensure beacons are in place throughout the life of the mine.</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>Daily compliance monitoring by site management.</li> <li>Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>
<ul style="list-style-type: none"> <li>Site establishment</li> </ul>	<p><b><u>Visual Characteristics:</u></b></p> <ul style="list-style-type: none"> <li>Visual intrusion as a result of site establishment.</li> </ul>	<ul style="list-style-type: none"> <li>Minimize the visual impact of the activity on the surrounding environment through proper site management and implementing good housekeeping practices.</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>Daily compliance monitoring by site management.</li> <li>Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>█ Contain mining to the boundaries of the permitted area.</li> <li>█ Ensure that the site have a neat appearance and is kept in good condition at all times.</li> <li>█ Limit vegetation removal, and only strip topsoil immediately prior to the use of a specific area.</li> <li>█ Rehabilitate and level the site upon closure to ensure that the visual impact on the aesthetic value of the area is kept to a minimum.</li> </ul>	
<ul style="list-style-type: none"> <li>█ Site establishment and construction of access road</li> <li>█ Crushing, screening, stockpiling and transporting material from site.</li> <li>█ Sloping and landscaping upon closure of the mining area.</li> </ul>	<p><b><u>Geology and Soil:</u></b></p> <ul style="list-style-type: none"> <li>█ Loss of topsoil and fertility during mining and stockpiling</li> <li>█ Loss of stockpiled material due to ineffective storm water control.</li> <li>█ Erosion of returned topsoil after rehabilitation .</li> </ul>	<ul style="list-style-type: none"> <li>█ Earthmoving equipment to reinstate mined-out areas.</li> <li>█ Cover crop to be established on reinstated areas.</li> <li>█ Erosion control infrastructure (if necessary)</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>█ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>█ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>█ Strip and stockpile the upper 300 mm of the soil.</li> <li>█ Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process.</li> <li>█ Ensure topsoil stripping, stockpiling and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time.</li> <li>█ Place topsoil heaps on a levelled area within the mining footprint area. Do not stockpile topsoil in undisturbed areas.</li> <li>█ Protect topsoil stockpiles against losses by water and wind erosion. Position stockpiles so as not to be vulnerable to erosion by wind and water. Establishment of plants on the stockpiles will help prevent erosion.</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>█ Daily compliance monitoring by site management.</li> <li>█ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> <li>■ Ensure that topsoil heaps do 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.</li> <li>■ Keep temporary stockpiles free of invasive plant species.</li> <li>■ Divert storm- and runoff water around the mining area to prevent erosion.</li> <li>■ Spread the topsoil evenly over the rehabilitated area, to a depth of 300 mm, upon closure of the site.</li> <li>■ Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season.</li> <li>■ Plant and irrigate a cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum biomass production. Rehabilitation extends until the first cover crop is well established.</li> <li>■ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.</li> </ul>	
<ul style="list-style-type: none"> <li>■ Site establishment</li> <li>■ Screening, stockpile, and transporting material from site.</li> <li>■ Sloping and landscaping upon closure of the mining area.</li> </ul>	<p><b><u>Groundcover:</u></b></p> <ul style="list-style-type: none"> <li>■ Infestation of the topsoil heaps and mining area with invader plant species.</li> <li>■ Infestateion of denuded areas with invader plant species.</li> </ul>	<ul style="list-style-type: none"> <li>■ Designated team to cut or pull out invasive plant species that germinated on site.</li> <li>■ Herbicide application equipment.</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Responsibility:</u></p>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	<ul style="list-style-type: none"> <li>■ Infestation of the reinstated area with invader plant species.</li> </ul>		<ul style="list-style-type: none"> <li>■ Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983.</li> <li>■ Keep all stockpiles (topsoil) free of invasive plant species.</li> <li>■ Control declared invader or exotic species on the rehabilitated areas.</li> </ul>	
<ul style="list-style-type: none"> <li>■ Site establishment.</li> <li>■ Mining of aggregate / gravel .</li> </ul>	<p><b><u>Fauna:</u></b></p> <ul style="list-style-type: none"> <li>■ Potential impact on fauna within the footprint area.</li> <li>■ Disturbance to fauna within the footprint area.</li> </ul>	<ul style="list-style-type: none"> <li>■ Toolbox talks to educate employees how to handle fauna that enter the work areas.</li> </ul>	<p><b><u>Role:</u></b></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><b><u>Responsibility:</u></b></p> <ul style="list-style-type: none"> <li>■ Ensure no fauna is caught, killed, harmed, sold or played with.</li> <li>■ Instruct workers to report any animals that may be trapped in the working area.</li> <li>■ Ensure no snares are set or nests raided for eggs or young.</li> </ul>	<p>Applicable throughout site establishment-, and operational phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>
<ul style="list-style-type: none"> <li>■ Site establishment</li> <li>■ Screening, stockpile, and transporting material from site.</li> </ul>	<p><b><u>Air Quality:</u></b></p> <ul style="list-style-type: none"> <li>■ Dust nuisance as a result of the mining activities.</li> </ul>	<ul style="list-style-type: none"> <li>■ Dust suppression equipment such as a water car.</li> <li>■ Signage that clearly reduce the speed on the access roads.</li> </ul>	<p><b><u>Role:</u></b></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><b><u>Responsibility:</u></b></p> <ul style="list-style-type: none"> <li>■ Control the liberation of dust into the surrounding environment by the use of; inter alia, straw, water spraying and/or</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).</p> <ul style="list-style-type: none"> <li>■ Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.</li> <li>■ Limit speed on the haul roads to 40 km/h to prevent the generation of excess dust.</li> <li>■ Minimise areas devoid of vegetation.</li> <li>■ Flatten and cover loads to prevent spillage and windblown dust during transportation.</li> <li>■ Take weather conditions into consideration upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts.</li> <li>■ Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012).</li> <li>■ Implement best practice measures during the stripping of topsoil, loading, and transporting of material from site to minimize potential dust impacts.</li> </ul>	
<ul style="list-style-type: none"> <li>■ Site establishment</li> <li>■ Mining of aggregate / gravel</li> <li>■ Screening, stockpile, and transporting material from site.</li> <li>■ Sloping and landscaping upon closure of the mining area.</li> </ul>	<p><b>Noise Ambiance:</b></p> <ul style="list-style-type: none"> <li>■ Noise nuisance as a result of the mining activities.</li> <li>■ Noise nuisance as a result of the decommissioning activities.</li> </ul>	<ul style="list-style-type: none"> <li>■ Silencers fitted to all project related vehicles, and the use of vehicles that are in road worthy condition in terms of the National Road Traffic Act, 1996.</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Ensure that employees and staff conduct themselves in an acceptable manner while on site.</li> <li>■ No loud music may be permitted at the mining area.</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> <li>■ Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996.</li> <li>■ Implement best practice measures to minimise potential noise impacts.</li> <li>■ Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA 2004, SANS 10103:2008.</li> </ul>	
<ul style="list-style-type: none"> <li>■ Mining of aggregate (dolerite) / gravel .</li> <li>■ Screening, stockpile, and transporting material from site.</li> <li>■ Sloping and landscaping upon closure of the mining area.</li> </ul>	<p><b><u>Waste Management:</u></b></p> <ul style="list-style-type: none"> <li>■ Soil contamination from hydrocarbon spills.</li> <li>■ Potential impact associated with littering and hydrocarbon spills.</li> <li>■ Potential impact associated with litter left at the mining area.</li> </ul>	<ul style="list-style-type: none"> <li>■ Oil spill kit.</li> <li>■ Sealed drip trays.</li> <li>■ Formal waste disposal system with waste registers.</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Ensure regular vehicle maintenance, repairs and services take place in a demarcated service area of the permit holder. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal.</li> <li>■ Vehicle maintenance or refueling must be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refueling are required, it must be undertaken on an</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary. Provide ablution facilities in the form of a chemical toilet that is placed outside the 1:100 year floodline of any open water resource. Ensure the toilet is serviced at least once every two weeks for the duration of the mining activities.</p> <ul style="list-style-type: none"> <li>■ Ensure that the use of any temporary, chemical toilet facilities does not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately.</li> <li>■ Equip the diesel bowser with a drip tray if used on site. The nozzle of the bowser must rest in a sleeve to prevent dripping after refuelling.</li> <li>■ Clean drip trays after use. Do not use dirty drip trays.</li> <li>■ Keep a spill kit on site.</li> <li>■ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility.</li> <li>■ Collect the contaminated soil from spillage that occurred, such as oil or diesel leaking from a burst pipe, within the first hour of occurrence, in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. File proof.</li> </ul>	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> <li>■ Compile a waste management plan and implement it on site. The plan must focus on the waste hierarchy of the NEM:WA.</li> <li>■ Contain general waste in marked, sealable, refuse bins placed at a designated area and remove waste from the mining area to a recognised general waste landfill site.</li> <li>■ Prevent the burning or burying of waste on site.</li> <li>■ Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the to all relevant authorities, including Department Environmental Affairs and Development Planning – Directorate - Pollution and Chemicals Management, in accordance with section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (“NEMA”) pertaining to the <i>control of incidents</i>. In the event of a significant accidental spill or leak of hazardous substances (e.g. petrol, diesel, etc.) during any phase of the proposed activities, such an incident(s) must be reported.</li> <li>■ Park the machinery at the mining area with drip trays placed underneath stationary vehicles.</li> </ul>	
<ul style="list-style-type: none"> <li>■ Mining of aggregate (dolerite) / gravel .</li> </ul>	<ul style="list-style-type: none"> <li>■ Potential impact on areas/infrastructure of heritage or cultural concern.</li> </ul>	<ul style="list-style-type: none"> <li>■ Contact number of an archaeologist that can be contacted when a discovery is made on site.</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Confine all mining to the development footprint area.</li> <li>■ Implement the following change find procedure when discoveries are made on site:</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>



SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> <li>▪ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.</li> <li>▪ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.</li> <li>▪ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify SAHRA.</li> <li>▪ Work may only continue once the go-ahead was issued by SAHRA.</li> </ul>	
<ul style="list-style-type: none"> <li>■ Crushing, screening, stockpiling and transporting material from site.</li> <li>■ Mining of aggregate / gravel .</li> </ul>	<p><b>Hydrology:</b></p> <ul style="list-style-type: none"> <li>■ Storm water management</li> </ul>	<ul style="list-style-type: none"> <li>■ Storm water management structures such as berms to direct storm- and runoff water around the stockpiled topsoil area (when needed).</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Divert storm water around the topsoil heaps to prevent erosion.</li> <li>■ A 100 meter buffer zone must be implemented between the edge of the wetland as delineated and the quarry excavations, stockpile areas,</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>chemical toilets, wastes and any hazardous materials (diesel, etc.) are maintained.</p> <ul style="list-style-type: none"> <li>■ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.</li> </ul>	
<ul style="list-style-type: none"> <li>■ Screening, stockpile, and transporting material from site.</li> </ul>	<p><b>Existing Infrastructure:</b></p> <ul style="list-style-type: none"> <li>■ Deterioration of the access road to the mining area.</li> <li>■ Overloading of trucks having an impact on the public roads.</li> </ul>	<ul style="list-style-type: none"> <li>■ Grader to restore the road surface when needed.</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Divert storm water around the access road to prevent erosion.</li> <li>■ Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas.</li> <li>■ Repair rutting and erosion of the access road caused as a direct result of the mining activities.</li> <li>■ Prevent the overloading of the truck, and file proof of load weights for auditing purposes.</li> </ul>	<p>Applicable throughout operational phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>
<ul style="list-style-type: none"> <li>■ Site establishment.</li> <li>■ Mining of aggregate / gravel .</li> <li>■ Crushing, screening, stockpiling and transporting material from site.</li> <li>■ Sloping and landscaping upon</li> </ul>	<ul style="list-style-type: none"> <li>■ Potential health and safety risks to employees.</li> </ul>	<ul style="list-style-type: none"> <li>■ Stocked first aid box.</li> <li>■ Level 1 certified first aider.</li> <li>■ All appointments in terms of the Mine Health and Safety Act, 1996.</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Ensure adequate ablution facilities and water for human consumption is daily available on site.</li> <li>■ Ensure that workers have access to the correct PPE as required by law.</li> </ul>	<p>Applicable throughout operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
closure of the mining area.			<ul style="list-style-type: none"> <li>■ Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).</li> </ul>	

**l) Indicate the frequency of the submission of the performance assessment/environmental audit report.**

The Environmental Audit Report in accordance with Appendix 7 as prescribed in Regulation 34 of the EIA Regulations, 2014 (as amended) will annually be submitted to DMRE for compliance monitoring purposes or in accordance with the time period stipulated by the Environmental Authorisation.

**m) Environmental Awareness Plan**

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

Once the Applicant received the mining permit and may commence with the proposed activity, a copy of the Environmental Management Programme will be handed to the site manager for his perusal. Issues such as the mining boundaries, fire principals and waste handling will be discussed.

An induction meeting will be held with all the site workers to inform them of the Basic Rules of Conduct with regard to the environment.

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

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

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

**Site Management:**

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

🚩 **Water Management and Erosion:**

- Check that rainwater flows around work areas and are not contaminated.
- Report any erosion.
- Check that dirty water is kept from clean water.

🚩 **Waste Management:**

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

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

- Never mix general waste with hazardous waste.
- Use only sealed, non-leaking containers.
- Keep all containers closed and store only in approved areas.
- Always put drip trays under vehicles and machinery.
- Empty drip trays after rain.
- Stop leaks and spills, if safe:
  - ✓ Keep spilled liquids moving away.
  - ✓ Immediately report the spill to the site manager/supervision.
  - ✓ Locate spill kit/supplies and use to clean-up, if safe.
  - ✓ Place spill clean-up wastes in proper containers.
  - ✓ Label containers and move to approved storage area.

🚩 **Discoveries:**

- Stop work immediately.
- Notify site manager/supervisor.
- Includes – archaeological finds, cultural artefacts, contaminated water, pipes, containers, tanks and drums, any buried structures.

🚩 **Air Quality:**

- Wear protection when working in very dusty areas.
- Implement dust control measures:
  - ✓ Water all roads and work areas.

- ✓ Minimize handling of material.
- ✓ Obey speed limit and cover trucks.

🟩 **Driving and Noise:**

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

🟩 **Vegetation and Animal life:**

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

🟩 **Fire Management:**

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

🟩 **Duty of care towards the environment:**

- General “duty of care towards the environment” as prescribed in section 28 of the NEMA, 1998 which states that “Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.”

**n) Specific information required by the Competent Authority**

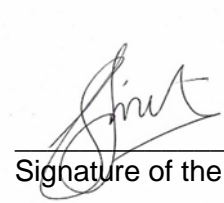
(Among others, confirm that the financial provision will be reviewed annually)

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

## 2. UNDERTAKING

The EAP herewith confirms

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



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Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

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Name of Company:

12 May 2022

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Date:

**-END-**



# APPENDIX A

## REGULATION 2(2) MINE MAP



# APPENDIX B

## LOCALITY MAP



# APPENDIX C

## SITE ACTIVITIES PLAN



# APPENDIX D

## LAND USE MAP



# APPENDIX E

## REHABILITATION MAP



**APPENDIX F1 & F2**  
**COMMENTS AND RESPONSE REPORT**  
**&**  
**PROOF OF PUBLIC PARTICIPATION**



**APPENDIX G**  
**SUPPORTING IMPACT ASSESSMENT**



## ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, herewith please receive an environmental impact statement that summarises the impact that the proposed activity may have on the environment after the management and mitigation of impacts have been considered, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

<b><u>ENVIRONMENTAL IMPACT STATEMENT</u></b>			
<b>SITE ALTERNATIVE 1</b>			
<b><u>TYPE OF IMPACT</u></b>	<b><u>DURATION</u></b>	<b><u>LIKELIHOOD</u></b>	<b><u>SIGNIFICANCE</u></b>
<p><u>Site Establishment:</u></p> <ul style="list-style-type: none"> <li>■ Alteration of the agricultural sense of place</li> <li>■ Loss of agricultural land for duration of mining</li> <li>■ Visual intrusion as a result of site establishment.</li> <li>■ Loss of topsoil and fertility during mining and stockpiling</li> <li>■ Infestation of the topsoil heaps and mining area with invader plant species.</li> <li>■ Potential impact on archaeological artefacts</li> <li>■ Potential impact on fauna within the footprint area.</li> <li>■ Potential impact on vegetation and listed and/or protected plant species</li> <li>■ Dust nuisance due to excavation and from loading and vehicles transporting the material</li> <li>■ Work opportunities to 4 local residents <b>(Positive Impact)</b></li> </ul>	<p><b>Duration of site establishment phase (&lt;1 month)</b></p>	<p>Possible</p> <p>Possible</p> <p>Possible</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Definite</p>	<p>Low Medium Concern</p> <p>Low Medium Concern</p> <p>Low Medium Concern</p> <p>Low Medium Concern</p> <p>Low Medium Concern</p> <p>Low Medium Concern</p> <p>Medium Concern</p> <p>Medium Concern</p> <p>Low Medium Concern</p> <p>Low Concern</p> <p>High (+)</p>
<p><u>Construction of site access road:</u></p> <ul style="list-style-type: none"> <li>■ Visual intrusion caused by construction of site access road</li> <li>■ Loss of stockpiled topsoil during construction of access road</li> <li>■ Dust nuisance as a result of the construction of access road</li> </ul>	<p><b>Duration of site establishment phase (&lt;1 month)</b></p>	<p>Possible</p> <p>Low Possibility</p> <p>Low Possibility</p>	<p>Low Medium Concern</p> <p>Low-Medium Concern</p> <p>Low-Medium Concern</p>



<ul style="list-style-type: none"> <li>■ Noise nuisance generated by earthmoving machinery.</li> <li>■ Potential erosion of denuded areas.</li> <li>■ Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages.</li> </ul>		<p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p>	<p><b>Low-Medium Concern</b></p> <p><b>Low-Medium Concern</b></p> <p><b>Low-Medium Concern</b></p>
<p><u>Mining of aggregate / gravel</u></p> <ul style="list-style-type: none"> <li>■ Soil contamination from hydrocarbon spills.</li> <li>■ Disturbance to fauna within the footprint area.</li> <li>■ Noise nuisance as a result of the mining activities.</li> <li>■ Potential impact on areas/infrastructure of heritage or cultural concern.</li> </ul>	<p><b>Duration of operational phase</b> <b>(5 years maximum)</b></p>	<p><b><u>LIKELIHOOD</u></b></p> <p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p>	<p><b><u>SIGNIFICANCE</u></b></p> <p><b>Low-Medium Concern</b></p> <p><b>Low-Medium Concern</b></p> <p><b>Low-Medium Concern</b></p> <p><b>Low-Medium Concern</b></p> <p><b>Low-Medium Concern</b></p> <p><b>Low-Medium Concern</b></p>
<p><u>Crushing, screening, stockpiling and transporting material from site:</u></p> <ul style="list-style-type: none"> <li>■ Loss of stockpiled material due to ineffective storm water control</li> <li>■ Dust nuisance as a result of the mining activities.</li> <li>■ Visual intrusion as a result of operation of the processing plant</li> <li>■ Noise nuisance as a result of the mining activities.</li> <li>■ Potential impact associated with littering and hydrocarbon spills.</li> <li>■ Infestation of denuded areas with invader plant species.</li> <li>■ Deterioration of the access road to the mining area.</li> <li>■ Overloading of trucks having an impact on the public roads.</li> </ul>	<p><b>Duration of operational phase</b> <b>(5 years maximum)</b></p>	<p><b><u>LIKELIHOOD</u></b></p> <p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p> <p><b>Possible</b></p>	<p><b><u>SIGNIFICANCE</u></b></p> <p><b>Medium Concern</b></p> <p><b>Low Medium Concern</b></p> <p><b>Low Medium Concern</b></p> <p><b>Low Medium Concern</b></p> <p><b>Low Medium Concern</b></p> <p><b>Low Medium Concern</b></p> <p><b>Medium Concern</b></p> <p><b>Medium Concern</b></p>
<p><u>Sloping and landscaping upon closure of the mining area:</u></p> <ul style="list-style-type: none"> <li>■ Erosion of returned topsoil after rehabilitation.</li> <li>■ Infestation of the reinstated area with invader plant species.</li> <li>■ Noise nuisance as a result of the decommissioning activities</li> <li>■ Potential impact associated with litter/hydrocarbon spills left at the mining area.</li> </ul>	<p><b>Duration of decommissioning phase</b> <b>(±2 months)</b></p>	<p><b><u>LIKELIHOOD</u></b></p> <p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p> <p><b>Low Possibility</b></p>	<p><b><u>SIGNIFICANCE</u></b></p> <p><b>Medium Concern</b></p> <p><b>Medium Concern</b></p> <p><b>Low Medium Concern</b></p>

<ul style="list-style-type: none"> <li>Return of the mining area to agricultural use by the landowner (<b>Positive Impact</b>).</li> </ul>		<p style="text-align: center;"><b>Low Possibility</b></p> <p style="text-align: center;"><b>Definite</b></p>	<p style="text-align: center;"><b>Medium Concern</b></p> <p style="text-align: center;"><b>Medium-High (+)</b></p>
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**ENVIRONMENTAL IMPACT STATEMENT**

**SITE ALTERNATIVE 2**

<b><u>TYPE OF IMPACT</u></b>	<b><u>DURATION</u></b>	<b><u>LIKELIHOOD</u></b>	<b><u>SIGNIFICANCE</u></b>
<p><u>Site Establishment:</u></p> <ul style="list-style-type: none"> <li>■ Alteration of the agricultural sense of place</li> <li>■ Loss of agricultural land for duration of mining</li> <li>■ Visual intrusion as a result of site establishment.</li> <li>■ Loss of topsoil and fertility during mining and stockpiling</li> <li>■ Infestation of the topsoil heaps and mining area with invader plant species.</li> <li>■ Potential impact on archaeological artefacts</li> <li>■ Potential impact on fauna within the footprint area.</li> <li>■ Potential impact on vegetation and listed and/or protected plant species</li> <li>■ Dust nuisance due to excavation and from loading and vehicles transporting the material</li> <li>■ Work opportunities to 4 local residents <b>(Positive Impact)</b></li> </ul>	<p align="center"><b>Duration of site establishment phase (&lt;1 month)</b></p>	<p align="center">Possible Possible Possible</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Definite</p>	<p align="center">Low Medium Concern Low Medium Concern Low Medium Concern</p> <p align="center">Low Medium Concern</p> <p align="center">Low Medium Concern</p> <p align="center">Low Medium Concern Low Medium Concern</p> <p align="center">Low Medium Concern</p> <p align="center">Low Medium Concern</p> <p align="center">Low Medium Concern</p> <p align="center">High (+)</p>
<p><u>Construction of site access road:</u></p> <ul style="list-style-type: none"> <li>■ Visual intrusion caused by construction of site access road</li> <li>■ Loss of stockpiled topsoil during construction of access road</li> <li>■ Dust nuisance as a result of the construction of access road</li> <li>■ Noise nuisance generated by earthmoving machinery.</li> <li>■ Potential erosion of denuded areas.</li> <li>■ Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages.</li> </ul>	<p align="center"><b>Duration of site establishment phase (&lt;1 month)</b></p>	<p align="center">Possible</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Definite</p>	<p align="center">Low Medium Concern</p> <p align="center">Low-Medium Concern</p> <p align="center">Low-Medium Concern</p> <p align="center">Low-Medium Concern</p> <p align="center">Low-Medium Concern</p> <p align="center">Low-Medium Concern</p>

<p><u>Mining of aggregate / gravel</u></p> <ul style="list-style-type: none"> <li>■ Soil contamination from hydrocarbon spills.</li> <li>■ Disturbance to fauna within the footprint area.</li> <li>■ Noise nuisance as a result of the mining activities.</li> <li>■ Potential impact on areas/infrastructure of heritage or cultural concern.</li> </ul>	<p><b>Duration of operational phase (5 years maximum)</b></p>	<p><b><u>LIKELIHOOD</u></b></p> <p>Low Possibility Low Possibility Low Possibility</p> <p>Possibility</p> <p>Low Possibility</p>	<p><b><u>SIGNIFICANCE</u></b></p> <p>Low-Medium Concern Low-Medium Concern</p> <p>Low-Medium Concern Low-Medium Concern Low-Medium Concern</p>
<p><u>Crushing, screening, stockpiling and transporting material from site:</u></p> <ul style="list-style-type: none"> <li>■ Loss of stockpiled material due to ineffective storm water control</li> <li>■ Dust nuisance as a result of the mining activities.</li> <li>■ Visual intrusion as a result of operation of the processing plant</li> <li>■ Noise nuisance as a result of the mining activities.</li> <li>■ Potential impact associated with littering and hydrocarbon spills.</li> <li>■ Infestation of denuded areas with invader plant species.</li> <li>■ Deterioration of the access road to the mining area.</li> <li>■ Overloading of trucks having an impact on the public roads.</li> </ul>	<p><b>Duration of operational phase (5 years maximum)</b></p>	<p><b><u>LIKELIHOOD</u></b></p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Possibility</p> <p>Low Possibility</p> <p>Possible</p>	<p><b><u>SIGNIFICANCE</u></b></p> <p>Medium Concern</p> <p>Low Medium Concern</p> <p>Low Medium Concern</p> <p>Low Medium Concern</p> <p>Low Medium Concern</p> <p>Medium Concern</p> <p>Medium Concern</p> <p>Medium Concern</p>
<p><u>Sloping and landscaping upon closure of the mining area:</u></p> <ul style="list-style-type: none"> <li>■ Erosion of returned topsoil after rehabilitation.</li> <li>■ Infestation of the reinstated area with invader plant species.</li> <li>■ Noise nuisance as a result of the decommissioning activities</li> <li>■ Potential impact associated with litter/hydrocarbon spills left at the mining area.</li> <li>■ Return of the mining area to agricultural use by the landowner (<b>Positive Impact</b>).</li> </ul>	<p><b>Duration of decommissioning phase (±2 months)</b></p>	<p><b><u>LIKELIHOOD</u></b></p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Definite</p>	<p><b><u>SIGNIFICANCE</u></b></p> <p>Medium Concern</p> <p>Low Medium Concern</p> <p>Low Medium Concern</p> <p>Medium Concern</p> <p>Medium-High (+)</p>

# APPENDIX H

## FINANCIAL AND TECHNICAL ABILITY



**APPENDIX I**  
**INVASIVE PLANT SPECIES**  
**MANAGEMENT PLAN**



**APPENDIX J**  
**PHOTOGRAPHS OF THE PROPOSED**  
**SITE**



**APPENDIX K**  
**CV AND PROOF OF EXPERIENCE OF**  
**THE EAP**





# APPENDIX L CLOSURE / REHABILITATION PLAN



# APPENDIX M

## WETLAND ASSESSMENT REPORT



# APPENDIX M1

## AIR QUALITY IMPACT STATEMENT



# APPENDIX M2

## NOISE IMPACT STATEMENT



# APPENDIX M3

## SOCIAL SCREENING ASSESSMENT



# APPENDIX M4

## ECONOMIC OPINION



**APPENDIX M5**  
**GEOHYDROLOGICAL IMPACT**  
**STATEMENT**



# APPENDIX M6 AGRICULTURAL COMPLIANCE STATEMENT





# APPENDIX N HERITAGE IMPACT ASSESSMENT REPORT



# APPENDIX N1 PALAEOLOGICAL IMPACT ASSESSMENT REPORT



# APPENDIX O

## SITE ALTERNATIVES MAP



# APPENDIX P SCREENING REPORT



# APPENDIX Q PUBLIC PARTICIPATION REPORT



# APPENDIX R

# SITE SENSITIVITY REPORT



# APPENDIX F3 LATE COMMENTS RECEIVED

