

FINAL Basic Assessment Report And Environmental Management Programme

Moopetsi Chrome Investments (Pty) Ltd

Portion of Portion 3 of Vogelstruisnek 173 JP

NW 30/5/1/3/3/2/1/10802 EM

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IMPORTANT NOTICE

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

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

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

It is therefore an instruction that the prescribed Reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or 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-

- 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;
- identify the alternatives considered, including the activity, location, and technology alternatives;
- describe the need and desirability of the proposed alternatives;
- 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:
 - the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - the degree to which these impacts—
 - can be reversed;
 - may cause irreplaceable loss of resources; and
 - can be managed, avoided or mitigated;
 - 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—
 - identify and motivate a preferred site, activity and technology alternative;
 - identify suitable measures to manage, avoid or mitigate identified impacts; and
 - identify residual risks that need to be managed and monitored.

EXECUTIVE SUMMARY

Introduction

Bateleur Environmental & Monitoring Services (Pty) Ltd (Bateleur) was requested by Moopetsi Chrome Investments (Pty) Ltd (Moopetsi), to compile and submit a Draft and Final Basic Assessment Report (FBAR), pursuant to an application for a mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA) to the North West Department of Mineral Resources and Energy (DMRE).

An initial Basic Assessment Report was previously compiled and submitted to the DMRE. This report was deemed to contain insufficient information and was noncompliant with regulations. The Public Participation Process conducted in conjunction with the Basic Assessment was also deemed insufficient. A new process was initiated and is included in this document.

The Project is situated on the farm Vogelstruisnek 173 JP, near the town of Witrandjie in the North West Province (Figure 1 - Local Setting).

The Mining Permit Application (MPA) has been accepted by the Regional Manager, North West Region, of the DMRE under Reference NW 30/5/1/3/3/2/1/10802 EM and Moopetsi has been instructed to prepare a BAR and conduct a Public Participation Process (PPP).

Project applicant

Details of the Project applicant are indicated in the table below:

Company name:	Moopetsi Chrome Investments (Pty) Ltd
Contact person:	Mr Goodman Mathevula
Postal address:	PO Box 3353 Dzanani, 0955
Tel nr:	083 755 7344
Cell nr:	083 755 7344
e-mail:	goodman@mukwacapital.co.za

Project overview

It is proposed that chrome will be mined at the operation. The proposed mining methodology to be employed is a very basic form of opencast mining, and a 5 hectare area will be demarcated for mining. Prior to mining, trenches will be excavated in order to delineate the outcrop. This will be followed by blasting and subsequent mining of the orebody utilising a truck and shovel operation. The mined ore will be crushed and screened using a mobile crushing and screening plant. A front-end loader will be used to load the material into haulage trucks. The ore will be processed off-site. The mine will operate for a two (2) year permit period with an option to renew for three (3) periods, each of which may not exceed one (1) year if the mining programme is not completed.

The project infrastructure and activities will include the following:

- Site clearance.
- Removal of topsoil and overburden and stockpiling.
- Site establishment, including the establishment of an access route, mobilisation of equipment and preparation of area for mining.

- Excavation of an open pit.
- Blasting.
- Loading zone.
- Loading and dust control.
- Crushing and screening of ore.
- Hauling and transporting of ore.
- Ablution facilities and waste storage area.
- Rehabilitation of site.

Purpose of this Report

The scope of work requires investigating all potential environmental and social impacts, for various activities, in terms of the National Environmental Management Act, Act 107 of 1998 (NEMA); and compiling a BAR and Environmental Management Programme Report (EMPR) in support of the Mining Permit application, in terms of the Mineral and Petroleum Resources Development Act, Act 28 of 2002 (MPRDA). This includes all relevant specialist studies required to identify the potential environmental impacts of the Project and its related activities. This document will be submitted to the North West DMRE in support of Moopetsi's Mining Permit Application (MPA).

The objectives of the BAR & EMPr for the Moopetsi Project are to:

- Comply with the legal requirements of the MPRDA and NEMA (Section 31, Regulation R543).
- Describe the proposed Project's environmental and socio-economic context.
- Develop a detailed understanding of the baseline environment at the sites proposed for development.
- Determine and assess the impacts to receptors and resources as a result of the project activities.
- Introduce stakeholders to the additional activities of the project and provide information about the proposed project in a transparent way.
- Identify and engage with stakeholders to ensure that feedback on the results of the study is provided and that the assessment and management of impacts is identified, and concerns considered.
- Develop environmental and social management measures to mitigate negative impacts and enhance positive impacts.
- Consider and assess Project alternatives in terms of environmental impacts; and
- Provide sufficient information to the authorities to inform the mining authorisation decision.

Environmental consultants

Bateleur was appointed by Moopetsi as the independent environmental consultant to facilitate the environmental authorisation application process for the proposed Moopetsi Project.

Particulars of the EAP undertaking the EIA process are supplied in the table below:

EAP Name:	Bateleur Environmental & Monitoring Services (Pty) Ltd
Contact person:	Gert Pretorius
Telephone nr:	082 338 6607
Fax nr:	086 619 3120
E-mail:	gertenes@lantic.net
Postal address:	PO Box 70706 Die Wilgers, 0041

Approach and methodology for the Public Participation Process

The Public Participation Process (PPP) undertaken for this application included the requirements of the MPRDA and was designed to provide sufficient and accessible information regarding the proposed project to stakeholders in an objective manner. The process also provided opportunities to stakeholders to contribute actively to the environmental assessment. Refer to Sections 2.7 and 2.8 for details regarding the PPP.

A phased approach to the PPP was undertaken and relevant objectives to each of the phases are set out below.

During the Announcement Phase:

- Provide information about the proposed project.
- Raise issues of concern and suggestions for enhanced benefits; and
- Contribute relevant local and traditional knowledge to the environmental assessment.

During the BAR Phase:

- Verify that their issues have been considered in the environmental assessment; and
- Comment on the findings of the environmental assessment

Project alternatives

The identification of alternatives is a key aspect of the success of the Basic Assessment process. All reasonable and feasible alternatives must be identified and screened to determine the most suitable alternatives to consider in this application. There are, however, some constraints that have to be taken into account when identifying alternatives for a project depending on the scope. Such constraints include financial, social and environment related constraints.

Alternatives can typically be identified according to:

- Activity alternatives.
- Location alternatives.
- Design or layout alternatives.
- Technology alternatives.
- Operational alternatives.
- No-Go alternative.

For any alternative to be considered feasible, such an alternative must meet the need and purpose of the development proposal without presenting significantly high associated impacts. The geology is the primary driver in determining the location for mining. Historical mining operations and current data collected within the application area indicate that chrome occurs in economically viable quantities. As such, no activity and location alternatives have been considered. Design, technology, operational as well as the No-Go alternatives have been considered and assessed in the report.

Environmental Impact Assessment

This Basic Assessment was undertaken in order to identify all of the potential risks and impacts associated with each phase of the project, namely (i) Pre-construction, (ii) Construction, (iii) Operation (iv) Closure and (v) Rehabilitation. Each of the identified risks and impacts were assessed following the impact methodology described in the body of this report. The assessment criteria include nature, extent, duration, magnitude/intensity, reversibility, probability, public response, cumulative impact, and irreplaceable loss of resources. Based on the impact assessment conducted by the Environmental Assessment Practitioner and the various specialists, the environmental impacts associated with this project are expected to be localised and of medium to low significance, provided all recommended mitigation measures are implemented correctly.

Environmental Management Programme Mitigation Measures

The Environmental Management Programme has identified appropriate mechanisms for avoidance and mitigation of negative impacts. These mitigation measures and monitoring programmes have been included as commitments in the Environmental Management Programme. It is anticipated that the implementation of the mitigation measures stipulated in the Environmental Management Programme will result in effective mitigation of the negative impacts. Conversely, the implementation of the mitigation measures is designed to maximise the positive aspects of the project and will result in a significant positive influence as a result of the mining operation.

Need and Desirability of the Project

Chrome represents an important commodity as it is an essential element for a wide variety of metal, chemical, and manufactured products. Chrome ore, and concentrates, are utilised primarily in metallurgical applications such as the production of ferrochrome, which is a major input in the production of stainless steel. Other applications include refractories, foundry sands and chromium chemicals.

In addition, the positive aspects of this proposed small-scale mining project will be the creation of employment and income generation in the area. Furthermore, if this application is granted, it will reduce unauthorised mining that is currently taking place on site from time to time.

Moopetsi will seek to sell its product to ferrochrome smelters, first within the local market and then on the export market, depending on market conditions. The proposed mining project is also expected to add value to the mineral resource by beneficiating the ore to higher grade, non-metallurgical products such as foundry sands and chemical grade fines.

Conclusions and recommendations

Mitigation and management measures have been recommended to prevent, avoid and reduce the significance of the potential impacts of the project. Conversely, enhancement measures will be implemented to increase the significance of the potential positive impacts for the project. Should the

mitigation and management measures be correctly implemented, the potential impacts will be reduced in their significance. The proposed activities requiring Environmental Authorisation are critical for the mining activities and the prevention of pollution of the environment, as well as to ensure the efficient and successful operation of the project. With the implementation of the recommended mitigation measures to manage potential impacts, it is recommended that the proposed project be granted an Environmental Authorisation.

PART A: SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1. Project Applicant

This section of the report provides an overview of the applicant, details the Environmental Assessment Practitioner (EAP), who will oversee and facilitate the environmental process and details of the competent authorities.

This section also provides details on the property on which the mining permit area is located as well as adjacent properties, including surface right holders and land claims.

1.1 Details of the applicant

Project applicant:	Moopetsi Chrome Investments (Pty) Ltd		
Trading name (if any):	Moopetsi Chrome Investments		
Contact person:	Mr Goodman Mathevula		
Physical address:	41 Hans van Rensburg street, Polokwane, 0699.		
Postal address:	P.O. Box 3353, Dzanani.		
Postal code:	0955	Cell:	083 755 7344
Telephone:	083 755 7344	Fax:	086 715 2735
E-mail:	goodman@mukwacapital.co.za		

Table 1: Details of applicant.

1.2 Details of the EAP

Bateleur was appointed by Moopetsi as the independent environmental consultant to facilitate the environmental authorisation application process for the proposed Moopetsi Project (Appendix 1).

Environmental Assessment Practitioner:	Gert HJ Pretorius Bateleur Environmental & Monitoring Services		
Contact person:	Gert Pretorius		
Postal address:	PO Box 70706, Die Wilgers		
Postal code:	0041	Cell:	082 338 6607
Telephone:	082 338 6607	Fax:	086 619 3120
E-mail:	gertenes@lantic.net ;		
Qualifications:	BSc Honours, Hydrology, Soil Science & Environmental Management. With 15 years' experience in the field.		

Professional affiliations (if any):	The EAP is currently registered with the South African Council for Natural Scientific Professions (SACNASP) as a Professional Natural Scientist in the field of Environmental Science (Reg. No.400312/07).
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Table 2: Details of the EAP.

1.3 Location of activity

The site is located 28km northwest of Sun City in the Moses Kotane District Municipality of North West Province. The project area spans approximately 5.0 hectares (Figure 1).

Photographs of the current site conditions are included in Appendix 2.

Farm Name:	Vogelstruisnek 173 JP
Application Area (Ha):	5.0 ha
District Municipality:	Moses Kotane
Distance and direction from nearest town:	Witpoortjie – 1.2 km south.
21-digit Surveyor General Code for each farm portion:	Portion 3: T0JP00173000000300000

Table 3: Details of location.



Figure 1: Locality map.

2. Description of the scope of the proposed overall activity

The method that will be employed is a very basic form of open pit mining, and a 5 ha area will be demarcated for mining activities. Blasting and subsequent mining of the orebody utilising a truck and shovel operation will be conducted. The mined ore will be crushed and screened utilising a mobile crushing and screening plant. A front-end loader will be utilised to load the material into haulage trucks. The ore will be processed off-site. The mine will operate for a two (2) year permit period with an option to renew for three (3) periods, each of which may not exceed one (1) year if the mining programme is not completed. Planned infrastructure is indicated in Figure 2.

The project infrastructure and activities will include the following:

- Site clearance.
- Removal of topsoil and overburden and stockpiling.
- Site establishment, including the establishment of an access route, mobilisation of equipment and preparation of area for mining.
- Excavation of an open pit.
- Blasting.
- Loading zone.
- Loading and dust control.
- Crushing and screening of ore.
- Hauling and transporting of ore.
- Ablution facilities and waste storage area.
- Rehabilitation of site.

2.1 Listed and specified activities

The legal requirement for Environmental Authorisation for a Mining Permit came into effect after the promulgation of the NEMA 2014 EIA Regulations on 8th December 2014. Prior to this, Mining Permits were subjected to the provisions of the MPRDA (2002). In this regard, a Mining Permit and Environmental Authorisation are required in terms of the MPRDA (2002) and NEMA 2014 EIA Regulations (as amended), respectively. The applicable NEMA listed activities anticipated to be triggered by this project are outlined below.

- *GN R983 (as amended by R327): Activity no. 21 in Listing notice 1.*

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-

- 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)

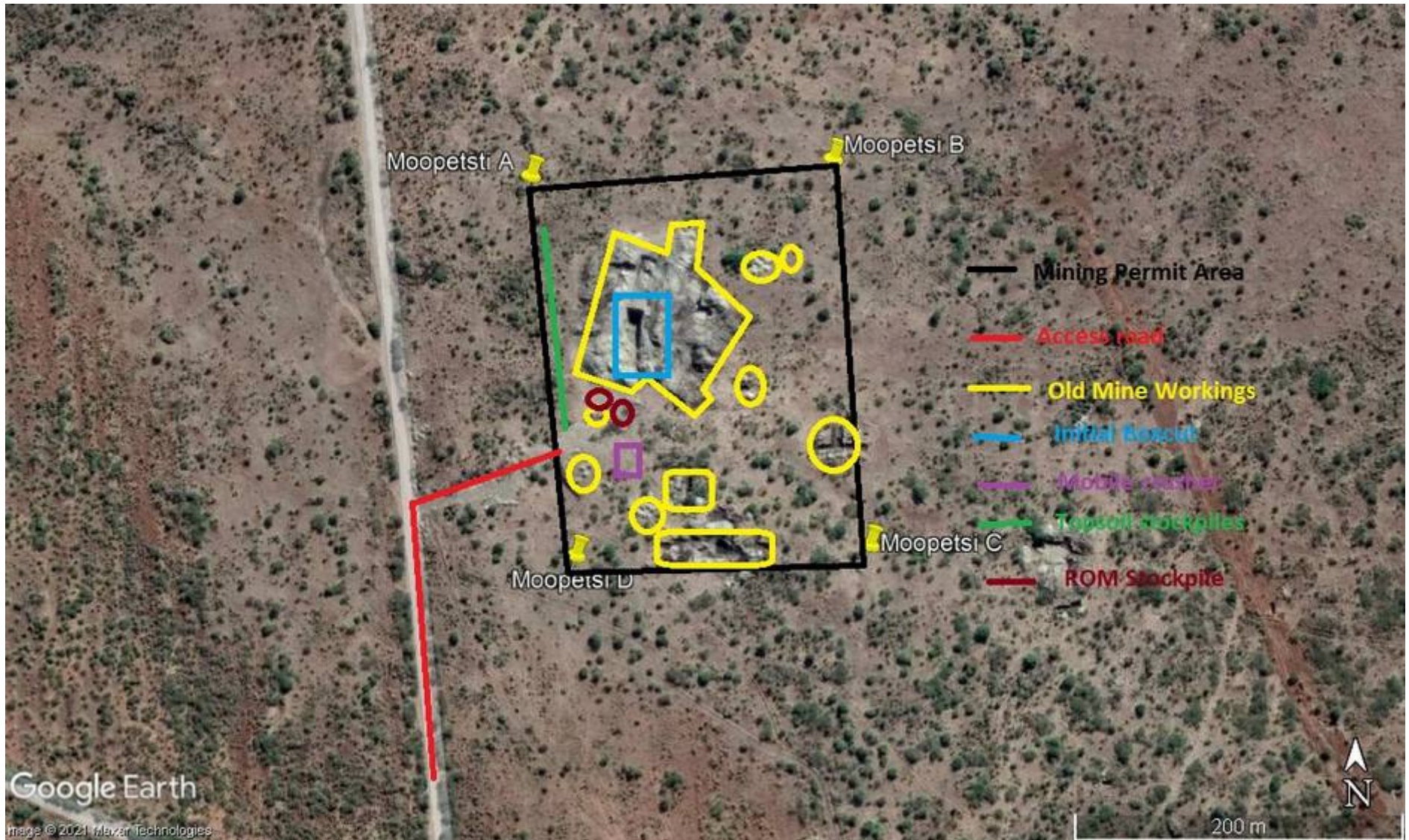


Figure 2: Planned infrastructure plan.

- b. the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing
- *GN R983 (as amended by R327): Activity no. 27 in Listing notice 1.*

The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-

- i. the undertaking of a linear activity or
- ii. maintenance purposes undertaken in accordance with a maintenance management plan

2.2 Description of the activities to be undertaken

The type of mineral to be mined is Chrome. The method that will be employed is a very basic form of open pit mining, and a 5 ha area will be demarcated for mining activities. The project infrastructure and activities will include site clearance, removal of topsoil and overburden and stockpiling, site establishment, including the establishment of an access route, mobilisation of equipment and preparation of area for mining, excavation of an open pit, blasting, loading zone, loading and dust control, crushing and screening of ore, hauling and transporting of ore, ablution facilities and waste storage area and rehabilitation of site.

Phase 1: Construction Phase

During the construction phase, the following activities, which may impact detrimentally on the health of people or the environment, will be conducted:

- Construction of mine infrastructure, i.e., haul roads, etc.
- Preparation of the topsoil area,
- Construction of the storm water diversion trenches;
- Excavation of initial box-cuts (existing box-cuts already exists on the property, these will be developed further).
- Formation of the topsoil stockpiles,

Construction of mine infrastructure:

Access roads already exist; however, internal haul roads will be constructed to transport chrome to the ROM stockpile. The haul roads will be 4 m wide and cover a distance of approximately 100 m. The topsoil stripped from the construction of these haul roads will be utilized to form berms alongside these roads. The haul roads will cover a total area of approximately 0.04 ha.

Construction of the Pollution control facilities.

Before a box-cut can be excavated the storm water berms and trenches must have been constructed.

Construction of the Storm water diversion trenches:

The Storm water diversion trench will have a horizontal width of 1,0m, to a maximum depth of 1,0m. The upslope side of the trench will be sloped at 1:4 and the downslope side at 1:1. All material excavated during the construction of the trench will be used to construct a 1,0m high berm on the downslope side of the trench. This trench will divert all surface water runoff around the pit, infrastructure area and stockpiling area. The dirty water trench will be constructed with a 1,0m base to a depth of 1,0m. The upslope side of the trench will be sloped to 1:4 and the down slope side at 1:1. Material excavated from the trench will be used to construct a 1,0m high berm along the down slope side of the trench. This trench will divert surface runoff away from the opencast workings.

Excavation of the box-cuts:

Several box-cuts exists on the proposed mining site, these will be further developed to access the chrome reserves.

Finally, all chrome will be removed from the mining area.

Formation of the topsoil stockpiles

The position of the topsoil stockpile is indicated on the Mining Layout Plan. Note that topsoil will be removed from all stockpiling areas prior to formation of soft and hard overburden stockpiles.

The construction phase is expected to be completed within one month from the granting of the Mining Permit.

Phase 2: Operational phase:

Blasting and subsequent mining of the orebody utilising a truck and shovel operation will be conducted. The mined ore will be crushed and screened utilising a mobile crushing and screening plant. A front-end loader will be utilised to load the material into haulage trucks. The ore will be processed off-site.

Phase 3: Rehabilitation phase:

During this phase, the mining area will be levelled and rehabilitated.

Description of Site Activities

Access Roads

Access roads exist on site. Any additional temporary roads created to gain access to site will be rehabilitated on completion of the Mining Permit operations, to the satisfaction of the relevant landowner.

Water Supply

It is anticipated that water will be brought to site. The water will be sourced from the Local Municipality and it will be trucked in. An on-site water storage tank will be required for potable water supply to employees and workers. Additional water will also be required for dust suppression in order to prevent dust pollution on the untarred temporary roads.

Ablution

Ablution facilities will be required on site. This may involve the installation of drum or tank type portable toilets. The toilets should be emptied twice every week through the services of a registered sewage waste service provider. The ablution facilities must be provided at a ratio of 15 : 1, i.e. 15 people per 1 toilet.

Temporary Office Area

A temporary site office area may be erected on site. The office must be established distant from the water drainage lines.

Accommodation

Accommodation for staff and workers will be provided off-site. However, 24 hour security staff may be stationed on-site. No fires will be allowed on-site.

Storage of Dangerous Goods

Limited quantities of diesel fuel, oil and lubricants may be stored on-site. A maximum amount of 60 m³ may be stored in above ground diesel storage tanks with elevated bunded walls.

Waste

Waste generated from the mining areas will include minimal construction and domestic waste, some hydrocarbon and explosive waste and sewage. These will be collected and disposed of as part of the waste management plan and/or will be managed by contractors. Waste will be recycled as far as possible. Portable toilets will be used at the mining areas.

Stockpiles

Various stockpiles will be required on site. Long-term stockpiles will include topsoil, subsoil, soft overburden and hard overburden stockpiles, all of which will be erected as close as possible to the final void to aid in infilling and rehabilitation of final voids. In addition, the mine will have product and RoM stockpiles which will be temporary in nature.

Explosives

During the mining operation blasting will be undertaken to break the hard overburden and the ore. Explosives for blasting will be kept safe on site.

2.3 Relevant policy and legislation

The Moopetsi Mining Permit application requires authorisation in terms of the following interlinked pieces of legislation:

- The Mineral and Petroleum Resources Development Act, 2002 (MPRDA, Act 28 of 2002), as amended.
- The National Environmental Management Act, 1998 (NEMA, Act 107 of 1998), as amended.

These pieces of core legislation stipulate the required studies, reports and legal processes to be conducted and the results thereof are to be submitted to the relevant authorities for approval prior to commencement. In addition to the above, there are various pieces of legislation which govern certain aspects of the mining operations, and these are summarised in Table 4, together with the main legislative requirements mentioned above.

Applicable legislation and guidelines used to compile the Report	Reference where applied.	How does this development comply with and respond to the policy and legislative context
The Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).	This entire report is prepared as part of the Mining Permit Application under the MPRDA.	In terms of the Mineral and Petroleum Resources Development Act a Mining Permit Application has been applied for.
The National Environmental Management Act, 1998 (Act No. 107 of 1998)	This entire report is prepared as part of the Application for Environmental Authorisation under the NEMA.	In terms of the National Environmental Management Act an Application for Environmental Authorisation subject to a Basic Assessment Process has been applied for.
National Environmental Management Waste Act (Act 26 of 2014)	A framework for management of waste is presented in this report.	This report has been drafted in with due consideration to this Act.
National Environmental Management Biodiversity Act (Act 10 of 2004)	A framework for management of alien invasive species is presented in this report.	The management of alien invasive species is governed under the NEMBA. This report includes a framework for the management of alien and invasive species. The holder of a

		right will be required to develop a detailed alien invasive species management plan.
National Water Act (Act 36 of 1998) Section 21	Due to the nature of the proposed mining activities, no Section 21 water uses will be triggered, therefore there is no requirement to apply for Water Use authorisation in terms of the NWA.	In terms of the National Water Act, no Water Use License has been applied for.
National Heritage Resources Act (Act 25 of 1999)	The framework for a Heritage Management Plan is provided in this EMPR.	specialist heritage impact study has been undertaken in support of this Mining Permit application.

Table 4: Relevant policies and legislation.

2.3.1 Environmental Authorisation Process

Mineral and Petroleum Development Act

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002), a Mining Permit must be issued prior to the commencement of any mining activities. As per Section 79(4)(a) and (b) of the MPRDA, the Applicant is required to conduct a Basic Assessment and submit an EMPR for approval as well as to notify in writing and consult with Interested and Affected Parties (I&APs) within 90 days of acceptance of the application. The MPRDA also requires adherence with related legislation, chief amongst them is the National Environmental Management Act (Act 107 of 1998, NEMA) and the National Water Act (Act 36 of 1998, NWA).

Several amendments have been made to the MPRDA. These include, but are not limited to, the amendment of Section 102, concerning amendment of rights, permits, programmes and plans, to requiring the written permission of the Minister for any amendment or alteration; and the Section 5A(c) requirement that landowners or land occupiers receive twenty-one (21) days' written notice prior to any activities taking place on their properties.

One of the most recent amendments requires all mining related activities to follow the full NEMA process as per the 2014 EIA Regulations (as amended), which came into effect on 8th December 2014.

A Mining Permit is exclusive, transferable, valid for two (2) years and may be renewed for three periods of which may not exceed one year.

National Environmental Management Act

The main aim of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) is to provide for co-operative governance by establishing decision-making principles on matters affecting the environment. In terms of the NEMA Environmental Impact Assessment (EIA) regulations, the proponent is required to appoint an environmental assessment practitioner (EAP) to undertake the EIA 9 as well as the public participation process. In South Africa, EIA became a legal requirement in 1997 with the promulgation of regulations under the Environmental Conservation Act (ECA). Subsequently, NEMA was passed in 1998. Section 24(2) of NEMA empowers the Minister and any MEC, with the concurrence of the Minister, to

identify activities which must be considered, investigated, assessed and reported on to the competent authority responsible for granting the relevant environmental authorisation. On 21 April 2006 the Minister of Environmental Affairs and Tourism promulgated regulations in terms of Chapter 5 of the NEMA.

The objective of the Regulations is to establish the procedures that must be followed in the consideration, investigation, assessment and reporting of the activities that have been identified. The purpose of these procedures is to provide the competent authority with adequate information to make decisions which ensure that activities which may impact negatively on the environment to an unacceptable degree are not authorized, and that activities which are authorized are undertaken in such a manner that the environmental impacts are managed to acceptable levels.

The aim of the EIA process is to identify and assess the potential impacts associated with the proposed project and to develop measures through which potential negative biophysical and socio-economic impacts can be mitigated and positive benefits can be enhanced. The EIA will ensure that all issues are integrated into the lifecycle of the mining operation and its infrastructure. This will occur during the planning, construction, operation and decommissioning and site closure phases.

The Basic Assessment Report and the associated EMPR will indicate how the identified impacts will be avoided, mitigated and/or managed by setting environmental objectives and goals. The EMPR will further outline the implementation programme for the environmental objectives and goals. The EMPR is a legal requirement of the MPRDA and all mines, existing or new, are required to possess an approved EMPR prior to initiating any mining operations. The EMPR is legally binding, and the proponent is required to meet the requirements specified in the document.

The written decision called an Environmental Authorisation, is a legal document setting out the conditions of the authorisation and the actions required to protect human health and the environment. Any affected party may appeal against the decision contained in an Environmental Authorisation. Appeals must be lodged with the Minister who considers appeals in terms of the relevant provisions of NEMA and the Environmental Regulations.

An important amendment to the NEMA (December 2014) Regulations is that the Department of Mineral Resources has been the responsible authority for approving and issuing of Environmental Authorisations under the NEMA for mining related activities. The Department of Environmental Affairs is the appeal authority for mining related Environmental Authorisations.

National Environmental Management: Waste Amendment Act

The Regulations pertaining to the NEMWA activities were published on 3rd July 2009 in Government Gazette 32368 under GN 718. These were amended in August 2013 in Government Notice Regulation 921. Regulations regarding the planning and management of residue stockpiles and residue deposits were published and commenced on 24 July 2015 in Government Notice Regulation 632 and the List of waste management activities that have or are likely to have a detrimental effect on the environment were amended on the same date by Government Notice Regulation 921. As per this list the following is of important to note:

- Category A: (15) The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining permit or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).
- Category B: (11) The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

On 2nd June 2014 the National Environmental Management: Waste Amendment Act came into force. Of importance for mining activities is that according to this amendment, waste resulting from exploration, mining, quarrying, and physical and chemical treatment of minerals is classified as Hazardous Waste. Waste is accordingly no longer governed by the MPRDA but is subject to all the provisions of the National Environmental Management: Waste Act, 2008 (NEMWA). Section 16 of the NEMWA must also be considered which states as follows:

“A holder of waste must, within the holders’ power, take all reasonable measures to:

- Avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated.
- Reduce, re-use, recycle and recover waste.
- Where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner.
- Manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour, or visual impacts.
- Prevent any employee or any person under his or her supervision from contravening the Act.
- Prevent the waste from being used for unauthorised purposes.

These general principles of responsible waste management are incorporated into the requirements in the EMPR to be implemented for this project.

Schedule 3: Defined Wastes have been broken down into two categories: Category A being hazardous wastes and category B being general wastes. Under Category A (hazardous wastes) the act makes allowance for “wastes resulting from exploration, mining, quarrying, and physical and chemical treatment of minerals”.

In order to attempt to understand the implications of this it is important to ensure that the definitions of all the relevant terminologies are defined:

- Hazardous waste: means “any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristic of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles.
- Residue deposits: means “any residue stockpile remaining at the termination, cancellation or expiry of a prospecting right, mining right, mining permit, exploration right or production right.
- Residue stockpile: means “any debris, discard, tailings, slimes, screening, slurry, waste rock, foundry sand, mineral processing plant waste, ash or any other product derived from or incidental to a mining operation and which is stockpiled, stored or accumulated within the mining area for potential re-use, or which is disposed of, by the holder of a mining right, mining permit or, production right or an old order right, including historic mines and dumps created before the implementation of this Act.

Various regulations have been drafted in support of the NEMWA, as discussed below:

- Proposed Regulations regarding the planning and management of waste from a prospecting, mining, exploration or production operations (2014):

- Chapter 2, Section 3 states the identification and assessment of any environmental impacts, including those on groundwater, arising from waste must be done as part of the Environmental Impact Assessment (EIA) conducted in terms of the National Environmental Management Act, 1998 (Act No.107 of 1998) (hereafter referred to as the NEMA). The pollution control barrier system shall be defined by the (a) Waste Classification and Management Regulations (2013); (b) National Norms and Standards for the Assessment of Wastes for Landfill Disposal (2013); and (c) National Norms and Standards for Disposal of Waste to Landfill (2013).
- Waste Characterisation must be done in terms of physical and chemical composition as well as content. The classification must be done in terms of the health and safety classification and the environmental classification.
- Proposed Regulations to exclude a waste stream or a portion of a waste stream from the definition of a waste (2014):
 - This regulation will give the holder of the right the opportunity to exclude a waste stream, or a portion of a waste stream from the definition of a waste. Chapter 2, Section 4 of this Regulation, Sub-section (1) states that any portion of a waste generated from a source listed in Category A of Schedule 2 of the NEMWA, may be excluded from being defined as hazardous on demonstration that such portion of waste is non-hazardous in accordance with the Waste Management and Classification Regulations of 2013.
 - The application process will be in the form of a prescribed process and application must be made to the Minister.
 - This Regulation is however not yet in force.
- National Norms and Standards for the assessment of waste for landfill disposal (23 August 2013):
 - These norms and standards prescribe the requirements for the assessment of waste prior to disposal to landfill.
 - The aim of the waste classification tests is to characterise the material to be deposited or stored in terms of the above-mentioned waste classification guidelines set by the Department of Environmental Affairs (DEA).
- The outcomes of the tests provide the necessary information in terms of:
 - Identification of chemical substances present in the waste.
 - Determination of the total concentrations (TC) and leachable concentrations (LC) of the elements and chemical substances that have been identified in the waste and that are specified in Section 6 of the above-mentioned Regulations. The obtained TC and LC values of the waste material will be compared to the threshold limits for total concentrations (TCT limits) and leachable concentrations (LCT limits) specified in Section 6 of the above-mentioned Regulations. Based on the TC and LC values of the elements and chemical substances in the waste exceeding the corresponding TCT and LCT limits respectively, the specific type of waste for disposal to landfill will be determined in terms of Section 7 of the Regulations.

The National Environmental Management: Biodiversity Act

The National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004, NEMBA), “provides for: the management and conservation of South Africa’s biodiversity within the framework of the NEMA; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute (SANBI); and for matters conducted therewith”.

- In terms of the Biodiversity Act, the applicant has a responsibility for: The conservation of endangered ecosystems and restriction of activities according to categorization of the area (not just by listed activity as specified in the EIA regulations):
 - Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all developments within the area are in line with ecological sustainable development and protection of biodiversity.
 - Limit further loss of biodiversity and conserve endangered ecosystems

Regulations published under the NEMBA also provide a list of protected species, according to the Act (GNR 151 dated 23 February 2007, as amended in GNR 1187 dated 14 December 2007). Section 57 of NEMBA identifies restricted activities involving threatened or protected species. Restricted activities include the gathering, collecting, cutting, uprooting, damaging or destroy a listed species.

The National Environmental Management: Protected Areas Act

The National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003) (NEMPAA) serves to: “provide for the protection and conservation of ecologically viable areas representative of South Africa’s biological biodiversity and its natural landscapes and seascape; for the establishment of a national register of all national, provincial and local protected areas; for the management of those areas in accordance with national norms and standards; for intergovernmental co-operation and public consultation in matters concerning protected areas; for the continued existence, governance and functions of South African National Parks; and for matters in connection therewith.

The objectives of this Act are –

- To provide, within the framework of the national legislation, including the National Environmental Management Act, for the declaration and management of protected areas.
- To provide for co-operation governance in the declaration and management of protected areas.
- To affect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity.
- To provide for a diverse and representative network of protected areas on state land, private land, communal land and marine water.
- To promote sustainable utilisation of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas.
- To promote participation of local communities in the management of protected areas, when appropriate

- To provide for the continued existence of South African National Parks.

National Water Act

The National Water Act, 1998 (Act 36 of 1998) (NWA) makes provision for two types of application for water use licences, namely individual applications and compulsory applications. The NWA also provides that the responsible authority may require an assessment by the Applicant of the likely effect of the proposed licence on the resource quality, and that such assessment be subject to the EIA regulations. A person may use water, if the use is-

- Permissible as a continuation of an existing lawful water use (ELWU).
- Permissible in terms of a general authorisation (GA).
- Permissible under Schedule 1.
- Authorised by a licence.

The NWA defines 11 water uses. A water use may only be undertaken if authorised. Water users are required to register certain water uses that actually took place on the date of registration, irrespective of whether the use was lawful or not.

Section 21 of the National Water Act 1998 lists the following 11 water uses which can only be legally undertaken through the water use authorisation issued by the Department of Water and Sanitation (DWS):

- a. Taking water from a water resource.
- b. Storing water.
- c. Impeding or diverting the flow of water in a watercourse.
- d. Engaging in a stream flow reduction activity contemplated in Section 36.
- e. Engaging in a controlled activity identified as such in Section 37(1) or declared under Section 38(1).
- f. Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduits.
- g. Disposing of waste in a manner which may detrimentally impact on a water resource.
- h. Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process.
- i. Altering the bed, banks, course or characteristics of a watercourse.
- j. Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.
- k. Using water for recreational purposes.

In terms of the National Water Act, no Water Use Licence has been applied for this project.

National Heritage Resources Act

The National Heritage Resources Act, 1999 (NHRA) stipulates that cultural heritage resources may not be disturbed without authorisation from the relevant heritage authority. Section 34(1) of the NHRA states that, "no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority..." The NHRA is utilised as the basis for the identification, evaluation and management of heritage resources and in the case of CRM those resources specifically impacted on by development as stipulated in Section 38 of NHRA, and those

developments administered through NEMA, MPRDA and the DFA legislation. In the latter cases the feedback from the relevant heritage resources authority is required by the State and Provincial Departments managing these Acts before any authorisations are granted for development. The last few years have seen a significant change towards the inclusion of heritage assessments as a major component of Environmental Impacts processes required by NEMA and MPRDA. This change requires us to evaluate the Section of these Acts relevant to heritage (Fourie, 2008b).

The NEMA 23(2)(b) states that an integrated environmental management plan should, "...identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage". A study of subsections (23)(2)(d), (29)(1)(d), (32)(2)(d) and (34)(b) and their requirements reveals the compulsory inclusion of the identification of cultural resources, the evaluation of the impacts of the proposed activity on these resources, the identification of alternatives and the management procedures for such cultural resources for each of the documents noted in the Environmental Regulations. A further important aspect to be taken account of in the Regulations under NEMA is the Specialist Report requirements laid down in Section 33 (Fourie, 2008b).

MPRDA defines 'environment' as it is in the NEMA and therefore acknowledges cultural resources as part of the environment. Section 39(3)(b) of this Act specifically refers to the evaluation, assessment and identification of impacts on all heritage resources as identified in Section 3(2) of the National Heritage Resources Act that are to be impacted on by activities governed by the MPRDA. Section 40 of the same Act requires the consultation with any State Department administering any law that has relevance on such an application through Section 39 of the MPRDA. This implies the evaluation of Heritage Assessment Reports in Environmental Management Plans or Programmes by the relevant heritage authorities (Fourie, 2008b).

The NHRA identifies 5 activities that require a Heritage Impact Assessment (HIA). An HIA is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment (AIA) only looks at archaeological resources.

An HIA must be done under the following circumstances:

1. The construction of a linear development (road, wall, power line, canal etc.) exceeding 300 m in length.
2. The construction of a bridge or similar structure exceeding 50 m in length.
3. Any development or other activity that will change the character of a site and exceed 5 000 m² or involve three or more existing erven or subdivisions thereof.
4. Re-zoning of a site exceeding 10 000 m².
5. Any other category provided for in the regulations of SAHRA or a provincial heritage authority.

In accordance with the legislative requirements and EIA rating criteria, the regulations of the South African Heritage Resources Agency (SAHRA) and Association of Southern African Professional Archaeologists (ASAPA), an onsite heritage assessment has been included in this project.

2.4 Need and desirability of project

Chrome represents an important commodity as it is an essential element for a wide variety of metal, chemical, and manufactured products. Chrome ore, and concentrates, are utilised primarily in metallurgical applications such as the production of ferrochrome, which is a major input during the production of stainless steel. Other applications include refractories, foundry sands and chromium chemicals.

In addition, the positive aspects of this proposed small-scale mining project will be the creation of employment and income generation in the area. Furthermore, if this application is granted, it will reduce unauthorised mining that is currently taking place on site from time to time.

Moopetsi will seek to sell its product to ferrochrome smelters, first within the local market and then on the export market, depending on market conditions. The proposed mining project is also expected to add value to the mineral resource by beneficiating the ore to higher grade, non-metallurgical products such as foundry sands and chemical grade fines.

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

The identification of alternatives is a key aspect of the success of the Basic Assessment process. All reasonable and feasible alternatives must be identified and screened to determine the most suitable alternatives to consider in this application. There are, however, some constraints that have to be taken into account when identifying alternatives for a project depending on the scope. Such constraints include financial, social and environment related constraints. Alternatives can typically be identified according to:

- Activity alternatives.
- Location alternatives.
- Design or layout alternatives.
- Technology alternatives.
- Operational alternatives.
- No-Go alternative.

For any alternative to be considered feasible, such an alternative must meet the need and purpose of the development proposal without presenting significantly high associated impacts. Alternatives are typically distinguished into discrete or incremental alternatives. Discrete alternatives are overall development options, which are typically identified during the pre-feasibility, feasibility and/or Basic Assessment process. Incremental alternatives typically arise during the Basic Assessment process and are usually suggested as a means of addressing/mitigating identified impacts (drilling and trenching in low sensitivity areas). These alternatives are closely linked to the identification of mitigation measures and are therefore not specifically identified as distinct alternatives.

For the purpose of this project, the need and justification for alternatives was specifically guided by the relatively low sensitivity of the receiving socio-economic and biophysical environment as well as the geology. The types of alternatives considered are presented below.

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

The proposed Project is located on a portion of Portion 3 Vogelstruisnek 173 JP and the surrounding area is currently used for small scale mining.

2.6.1 Details of the development footprint alternatives considered

the property on which or location where it is proposed to undertake the activity.

The application area has been selected based on historical and active mining operations in the immediate surroundings of the application area along with historical and current data that indicate the economic viability of the chrome mineral to occur.

the type of activity to be undertaken.

No alternatives to the mining of chrome have been considered.

the design or layout of the activity.

The site layout in terms of the position of the haul road, product dump and topsoil stockpile were determined by considering both spatial and practical mining operation aspects. These options would have been considered during the planning phase to derive an optimal layout.

the technology to be used in the activity.

No alternative in terms of the technology to be used have been considered.

the operational aspects of the activity.

The method that will be employed is a very basic form of open pit mining, and a 5 ha area will be demarcated for mining activities. Blasting and subsequent mining of the orebody utilising a truck and shovel operation will be conducted. The mined ore will be crushed and screened utilising a mobile crushing and screening plant. A front-end loader will be utilised to load the material into haulage trucks. The ore will be processed off-site. Should the proposed mining activities change, this will be indicated in the form of a Section 102 Amendment Application of the MPRDA.

the option of not implementing the activity.

Mining contributes greatly to local economic stimulation through direct employment, business opportunities, royalties and tax revenues. If the chromite ore reserves on the property are not mined, South Africa and the local communities will forego the benefits of the associated employment, business opportunities, royalties and tax revenues.

2.7 Details of the public participation process followed

The Public Participation Process (PPP) undertaken was designed to allow for provisioning of information about the proposed Project in a manner that will enable stakeholders to provide comments or to request further details. Full details of the PPP are set out in the Consultation Report included hereto as Appendix 3. Below is a summary of the key PPP activities.

2.7.1 Stakeholder identification

Stakeholders for the proposed project were identified by means of Windeed searches, utilisation of an existing database used for the previous BAR submission and informal stakeholder networking. Relevant sectors of society were identified who would be affected by or interested in the proposed project.

The I&AP database was compiled containing the following categories of stakeholders:

- National, provincial and local government.
- Agricultural sector.
- Organised business.
- Host and adjacent communities.
- Land claimants.
- Other organisations, clubs, communities, and unions.
- Non-Government Organisations (NGOs).

The identification and notification of potential stakeholders will be an ongoing process throughout the PPP, as more information is gathered and contact with people is established.

The identified Interested and Affected Parties are listed in Table 5 below.

LANDOW NERS					
Portion nr	Owner	Contact person	Contact detail		
0	National Government of South Africa		Private Bag x250, Pretoria, 0001	queries@dalrrd.gov.za info@dalrrd.gov.za	012 312 8911
1	Communally owned				
2	Maleka Salome	Maleka Salome	No contact detail available		
3	Thutse Mining (Pty) Ltd	PJ Cox	Po Box 3172, Rivonia, Sandton, 2128	contact@warmbadih.com	
4	Republic of Bobhuthatswana		Private Bag x250, Pretoria, 0001	queries@dalrrd.gov.za info@dalrrd.gov.za	012 312 8911
5	Maleka John	Maleka John	No contact detail available		
6	Republic of Bobhuthatswana		Private Bag x250, Pretoria, 0001	queries@dalrrd.gov.za info@dalrrd.gov.za	012 312 8911
16	North West Parks & Tourism Board	Mr Pieter Nel	Po Box 4488 Mafikeng 2735	info@nwpb.org.za, hpnel@mweb.co.za	018 397 1500
LOCAL, REGIONAL & NATIONAL GOVERNMENT DEPARTMENTS					
Department	Contact Person	Contact detail			
Department of Mineral Resources and Energy	Ms Pinky Chuene	Private Bag A1 Klerksdorp, 2570	Pinky.Chuene@dmre.gov.za		
	Mr SS Mabasa		surprise.mabasa@dmre.gov.za		
Department of Water and Sanitation	Mr Chadwick Lobakeng	Private Bag 357, Hartbeespoort, 0216	lobakeng@dws.gov.za		
	Selby Matsheka		matshekas@dws.gov.za		
	Mampho Ramafoko		ramafokom@dws.gov.za		
	Ms Lethabo Ramashala		ramashalal@dws.gov.za		
	Elize Ferris		ferries@dws.gov.za		
	Pako Mokati		mokati@dws.gov.za		
Department of Agriculture, Land Reform and Rural Development. Land Claims Commissioner	Ms Nomfundo Ntloko-Gobodo	Private Bag X833 Pretoria Gauteng 000	landclaims@dalrrd.gov.za		
North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT)	Ms. Khumoetsile Molatlhegi	Private Bag X 2039, Mmabatho, 2735	kmolatlhegi@nwpg.gov.za		
	Jeff Motsumi		gmotsumi@nwpg.gov.za		
North West Department of Rural , Environment and Agricultural Development	Rural Development		Tel (018) 389 5432 Fax (018) 384 4571		
	Bojanala Platinum District		Tel (014) 592 8272/8261/2 Fax (014) 592 2116 / 086 525 7226		
Northwest Provincial Heritage Resources Authority	Mr Mosiane Mothlabane	1 st Floor Gaabomotho Building 760 Dr.James Moroka Drive Mmabatho	mosianem@nwpg.gov.za		
North West Parks and Tourism Board	Mr Pieter Nel	Po Box 4488 Mafikeng 2735	info@nwpb.org.za, hpnel@mweb.co.za		
South African Heritage Resources Agency		111 Harrington str Cape Town	info@sahra.org.za		
Bojanala Platinum District Municipality		P.O. Box 1993, Rustenburg, 0300	Info@bojanala.gov.za		
Moses Kotane Local Municipality	Mrs GR Madikela, Mr MS Makgoba	Stand No. 933, Station Road, Unit 3, Mogwase Shopping Complex	gmadikele@moseskotane.gov.za, mmakgoba@moseskotane.gov.za		

COMMUNITY REPRESENTATIVES			
Name	Contact Detail		
Jacob Lantswe Malemela	076 138 5295		
Christina Malemela	065 691 8556		
Gladys Selomane	082 363 5314		
Lefa Malemela	078 075 4859		
Nthabiseng Malemela	073 655 9549		
REGISTERED INTERESTED AND AFFECTED PARTIES			
Name	Contact Detail		
Tsholofelo Motlhaga		078 514 3026	motlhaga.tsholofelo4@gmail.com
Rustenburg Minerals Development Company (Pty) Ltd	Peter Wheeler	011 770 6800	peterwheeler@assore.com , enquiries@assore.com

Table 5: List of identified Interested and Affected Parties.

2.7.2 Project announcement

The proposed project was announced to the entire stakeholder database by means of a Background Information Document (BID), formal letter with registration and comment sheet, and placement of an advertisement (Rustenburg Herald, 5 November 2021) and site notices. The content of the announcement material predominantly included a project description, the applicable environmental legislation, details of the environmental regulatory and public participation process and information of the independent Environmental Assessment Practitioner (EAP). The draft BAR was also made available for comment.

It must be noted that this BAR was compiled, and the PPP conducted after an initial PPP was undertaken during the initial basic assessment phase. Stakeholders have been identified and notified by the previous consultant. Due to time constraints and unreliable nature of the Postal Services it was decided to reach as many I&AP's via e-mail, phone calls, site notices and a newspaper notice.

2.7.3 Stakeholder comments

Comments received from any I&AP are included in Table 6 of this document.

2.8 Summary of issues raised by I&APs

Limited comments were received from stakeholders. Table 6 is populated with the most prominent comments received from stakeholders.

Interested and Affected Parties		Date of 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 responses were incorporated.
Name of individual	Consulted				
Malemela Lentswe Jacob Community	Yes	6 July 2020 5 November 2021	Resolution made by the Malemela Lentswe Jacob community representatives in support of the Mining Permit application.	Noted and documented in the BAR/EMPR.	Documented in the report on results of Public Participation Process in Appendix 3.
Tsholofelo Motlhaga	Yes	4 November 2021	No issues raised, requested to be registered as I&AP.	BID sent to party; no response was received.	
Gabonewe Ridah Madikela HOD: Local Economic Development, Moses Kotane Local Municipality	Yes	8 November 2021	Requested ownership information via email.	Requested information was sent to Ms Madikela. No response thereafter.	Documented in the report on results of Public Participation Process in Appendix 3.
NO OTHER COMMENTS RECEIVED FROM INTERESTED AND AFFECTED PARTIES.					

Table 6: Comments raised by I&AP's.

2.9 Environmental attributes and associated alternatives

This section describes the baseline receiving environment of the Mining Permit application area. Information in this section is based on specialist studies undertaken in support of this application, desktop studies and a site visit by the EAP as well as input from the public through the I&AP questionnaire. As such, the descriptions below of environmental features represent a consolidation of relevant information to the application area.

2.9.1 Baseline receiving environment

2.9.1.1 Socio economic

The application area is situated in the North West Province of South Africa, approximately 28 km northwest of Sun City. It can be found in Ward 30 of the Moses Kotane Local Municipality which forms part of the Bojanala District Municipality. The application area is located approximately 4 kilometres west of the Pilanesberg Game Reserve. The main economic sectors in Moses Kotane Local Municipality include tourism, manufacturing, agriculture and mining. According to the 2016 census data, the Moses Kotane Local Municipality has a population of 243 648.

2.9.1.2 Climate

The climatic regime of the application area experiences summer rainfall, and it is characterised by afternoon thunderstorms. According to the Köppen-Geiger climate classification, the area is classified as hot semi-arid. January is the hottest month at an average temperature of 24.5 °C and June is the coldest month at an average temperature of 12.2 °C. The Mean Annual Precipitation at the Mining Permit area is 604 mm per year.

2.9.1.3 Noise

The main sources of noise pollution currently experienced within and surrounding the proposed mining area include traffic noise from mine vehicles to and from the existing mine, traffic from the D94 gravel road, domestic noise from nearby residential area, and operational noise (including blasting) from the neighbouring mine.

2.9.1.4 Fauna

A desktop baseline assessment was conducted to establish whether any potentially sensitive species might occur on site. The South African National Biodiversity Institute's (SANBI) online biodiversity tool was used to query a species list for the 2526BD quarter degree square grid cell (QDS).

Mammals

In terms of the baseline investigation conducted, a few red data listed species were recorded, specifically in terms of mammals and birds as the Pilanesberg Nature Reserve is a known Protected Area as well as an Important Bird Area (IBA). Table 7 summarises mammals of interest (Red listed) that may occur on-site.

Family	Scientific name	Common name	Category	Probability
Felidae	<i>Panthera pardus</i>	Leopard	Vulnerable (2016)	Not likely, but possible
Hyaenidae	<i>Hyaena brunnea</i>	Brown hyaena	Near threatened	Not likely, but possible
Manidae	<i>Smutsia temminckii</i>	Ground pangolin	Vulnerable (2016)	Possible

Table 7: Mammals of interest.

The *Panthera pardus* (Leopard) and the *Hyaena brunnea* (Brown Hyena) are not generally expected on-site. However, due to the fact that the application area is located in close proximity to the Pilanesberg Game Reserve, the movement of predatory species may or may not include the application area. The *Smutsia temminckii* (Ground Pangolin) may occur on-site.

Amphibians and Reptiles

No amphibians or reptiles with red listed status were recorded for the quarter degree square and suitable habitat for these species is associated closer to the nature reserve and not the footprint.

Avi-fauna

There are several sensitive birds recorded in the baseline study that enjoys conservation status in the IUCN Red List. Species such as Cape Vulture (VU) *Gyps coprotheres*, White-backed Vulture, (EN) *Gyps africanus* are listed in the ToPS listing (2013). Species as listed and protected under the ToPS list (2013) are thereby enforceable under the National Environmental Management: Biodiversity Act, 2004. These may be expected especially due to the fact that the Pilanesberg Game Reserve is an Important Birding and Biodiversity Area, which signals the occurrence of Red Listed avi-fauna

Fauna Sensitive Habitat

The koppies, associated with the Pilanesberg Nature Reserve and beyond are regarded as most sensitive. These areas represent specialised niches and habitat for certain insects, reptiles and bird species and should be protected as far as possible during all stages of the developments. No impacts of the opencast footprint will be close to the nature reserve itself. The fact that the Pilanesberg Nature Reserve is a formal protected area with wildlife indicates that the site may be used as a natural buffer and corridor facilitating movement into and around the Reserve.

Due to the current land use activities in the area, most of the naturally occurring animals have fled the area. Smaller rodent and mammal species might occur.

2.9.1.5 Flora

A desktop baseline assessment was conducted to establish whether any potentially sensitive species/receptors might occur on site. The South African National Biodiversity Institute's (SANBI) online biodiversity tool was used to query a species list for the 2526BD quarter degree grid cell. This was supplemented by researching available literature and websites. The importance of a baseline study is to provide a reference condition to determine the current state of the environment and to draw comparisons between the potential of the area and current degradation from surrounding land uses. This will be conducted in terms of the future changes due to the proposed development by the client.

A field investigation was conducted on 2nd November 2021. The field survey was undertaken to supplement and confirm several findings indicated during the desktop analysis. This served as a fatal flaw analysis to determine whether there are any major ecological concerns with regards to the site selected for the proposed development. Specific aspects that were investigated during the field survey were the areas of natural vegetation to be cleared for the implementation of the project and the status of the current natural environment within the study area, indicating indigenous nature and habitat integrity.

Desktop Study

Mucina and Rutherford (2006) describe the project area as a Savanna Biome. The Savanna Biome is the largest Biome in Southern Africa, occupying 46% of its area, and over one-third the area of South Africa. It is well developed over the Lowveld and Kalahari regions of South Africa and is also the dominant vegetation in neighbouring Botswana, Namibia and Zimbabwe. It is characterised by a grassy ground layer and a distinct upper layer of woody plants. Where this upper layer is near the ground vegetation, it may be referred to as Shrubveld. Where the vegetation is characterised by dense trees, it may be referred to as Bushveld. Most of the Savanna vegetation types are used for grazing, mainly by cattle or game. In the southernmost Savanna types, goats are a major stock. In some areas crops and subtropical fruit are cultivated. These mainly include the Clay Thorn Bushveld, parts of Mixed Bushveld, and Sweet Lowveld Bushveld. The Mining Permit application area falls within the Zeerust Thornveld (SVcb 3) (Figure 3).

Zeerust Thornveld (SVcb 3)

Zeerust Thornveld is found in the North-West Province at an altitude of 1 000 –1 250 MAMSL. Zeerust Thornveld extends along the plains from the Lobatsi River in the west via Zeerust, Groot Marico and Mabaalstad to the flats between the Pilanesberg and western end of the Magaliesberg in the east (including the valley of the lower Selons River). Zeerust Thornveld is dominated by Acacia species with a herbaceous layer of mainly grasses on deep, high base-status and some clay soils on plains and lowlands.

Important taxa include:

- Tall Trees: *Acacia burkei* (d), *A. erioloba* (d)
- Small Trees: *Acacia mellifera* subsp. *detinens* (d), *A. nilotica* (d), *A. tortilis* subsp. *heteracantha* (d), *Rhus lancea* (d), *Acacia fleckii*, *Peltophorum africanum*, *Terminalia sericea*
- Tall Shrubs: *Diospyros lycioides* subsp. *lycioides*, *Grewia flava*, *Mystroxydon aethiopicum* subsp. *burkeanum*

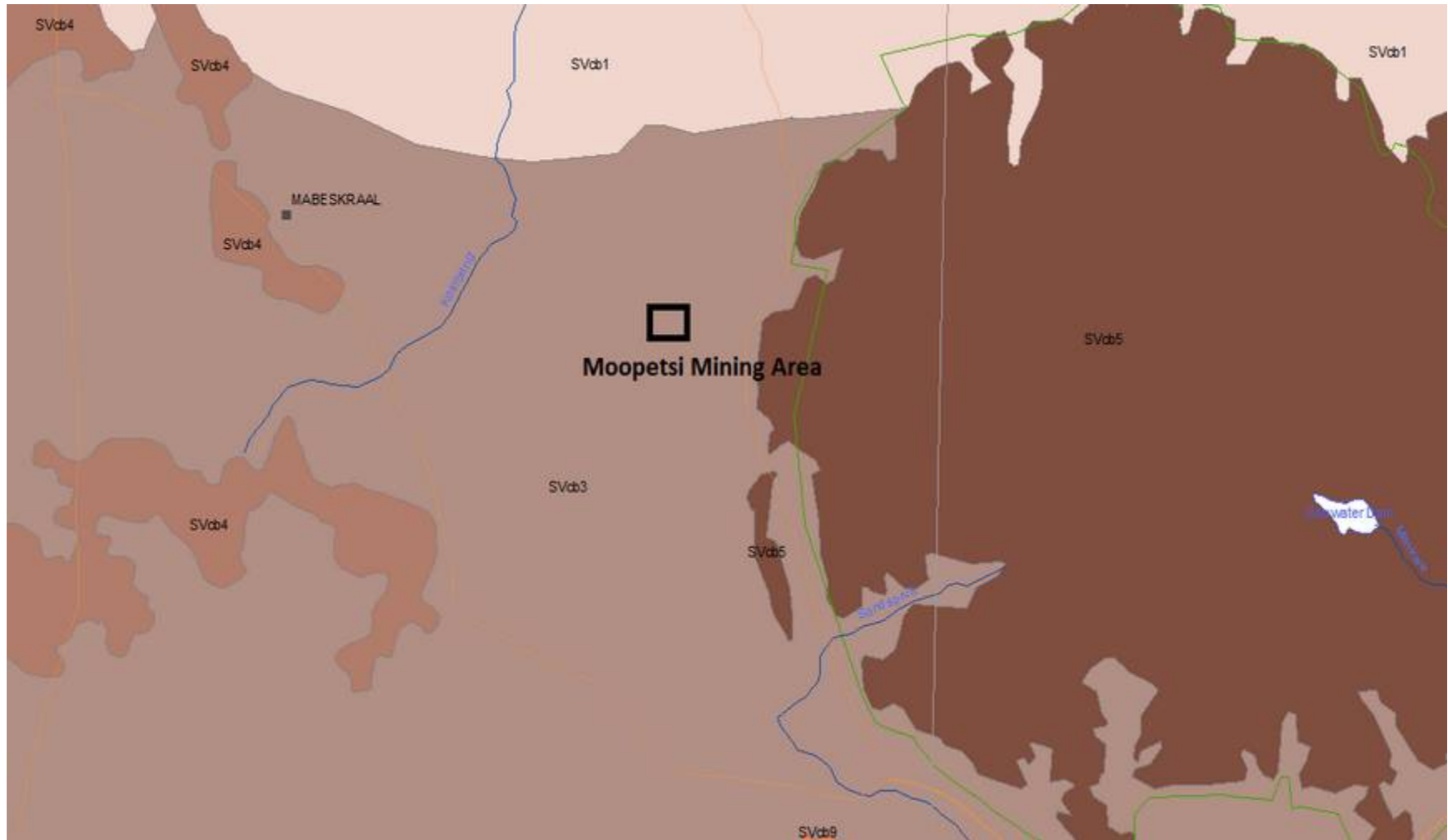


Figure 3: Vegetation biome.

- Low Shrubs: *Agathisanthemum bojeri*, *Chaetacanthus costatus*, *Clerodendrum ternatum*, *Indigofera filipes*, *Rhus grandidens*, *Sida chrysantha*, *Stylosanthes fruticosa*
- Graminoids: *Eragrostis lehmanniana* (d), *Panicum maximum* (d), *Aristida congesta*, *Cymbopogon pospischilii*.
- Herbs: *Blepharis integrifolia*, *Chamaecrista absus*, *C. mimosoides*, *Cleome maculata*, *Dicoma anomala*, *Kyphocarpa angustifolia*, *Limeum viscosum*, *Lophiocarpus tenuissimus*
- Endemic Taxon Low Shrub: *Rhus maricoana*

Terrestrial Threatened Ecosystem

The South African National Biodiversity Institute (SANBI), in conjunction with the Department of Environmental Affairs (DEA), released a draft report in 2009 entitled “Threatened Ecosystems in South Africa: Descriptions and Maps”, to provide background information on the List of Threatened Ecosystems (SANBI, 2009). The purpose of this report was to present a detailed description of each of South Africa’s ecosystems and to determine their status using a credible and practical set of criteria.

Zeerust Thornveld is considered Least Threatened, with 19% target for conservation and less than 4% is statutorily conserved and spread between four reserves. 16% of this vegetation type has been transformed mainly by cultivation, with some urban or built-up as well as mining within the immediate surroundings of the Mining Permit application area.

Critical Biodiversity

In terms of the North West Biodiversity Sector Plan (BSP) and Protected Areas of the North West BSP, the project area is situated on an area classified as a Critical Biodiversity Area 2 (CBA2) (Figure 4). Critical Biodiversity Areas (CBA’s) are terrestrial and aquatic features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services (SANBI, 2007). These form the key output of a systematic conservation assessment and are the biodiversity sector inputs into multi-sectoral planning and decision-making tools.

The primary purpose of CBA’s is to inform land-use planning and the land-use guidelines attached to CBA’s aim to promote sustainable development by avoiding loss or degradation of important natural habitat and landscapes in these areas and the landscape as a whole. CBA’s can also be used to inform protected area expansion and development plans. The use of CBA’s follows the definition laid out in the guideline for publishing bioregional plans (Anon, 2008):

- “Critical Biodiversity Areas (CBA’s) are areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near-natural state then biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity-compatible land uses and resource uses”.
- “Ecological Support Areas (ESA’s) are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon

sequestration. The degree of restriction on land use and resource use in these areas may be lower than that recommended for critical biodiversity areas.”

Site Survey

The study area was investigated under the prevailing conditions at the time of the site survey. The proposed project site is characterised by a well-developed and diverse grass layer combined with small to medium trees and shrubs. The site exhibited moderate biodiversity in terms of floral species diversity.

The project site has large disturbed areas, where historical and recent unauthorised mining activities have taken place from time to time. Some of these disturbed areas have since naturally rehabilitated. However, some are more recently disturbed and have been cleared of vegetation. During the site visit it was also noted that the area is currently utilised for cattle grazing.

Conservation Status

The nearest protected area to the project site is the Pilanesberg Game Reserve which is situated approximately 4.0 km to the east of the site. The project area does not fall in an area demarcated by the National Protected Areas Expansion Strategy. No wetlands were observed to occur on site and no National Freshwater Ecosystem Priority Areas (NFEPA) are indicated to occur in the area. The Sandsruit flows 8.5km to the south and the Kolobengspruit 6.5km west of the site. The Sandsruit drain into the Elandsriver and the Kolobengspruit in the Pilanesberg river.

2.9.1.6 Topography

The general topography of the surrounding area is flat. The surface elevation across the mining area is 1 430 meters above mean sea level. The general slope is towards the west.

2.9.1.7 Soils

The assessment of the present (pre-mining) soil environment is an integral part of the compilation of an Environmental Management Programme Report (EMP) for the development of mining activities.

Hydromorphic soils are found in the proposed mining site. These soil forms range from extremely structured Rensburg and Bonheim to Sepane, Kroonstad and Katspruit forms. The soils range from poor to very poor quality agricultural materials (low arable land capability rating) with extremely low economic potential, (comprising shallow, structured and poor quality soils) that are at best useful as wilderness lands and which will require high levels of management if they are going to be affected, to moderately poor arable soils that are best used for low intensity grazing.

The structure of the soils varies from apedal and moderate crumbly on the sandy loams to moderate blocky and massive structure, where the soils are either colluvially derived or associated with the more basic intrusive parent materials. The soils range from silty clay loams to sandy clay loams.

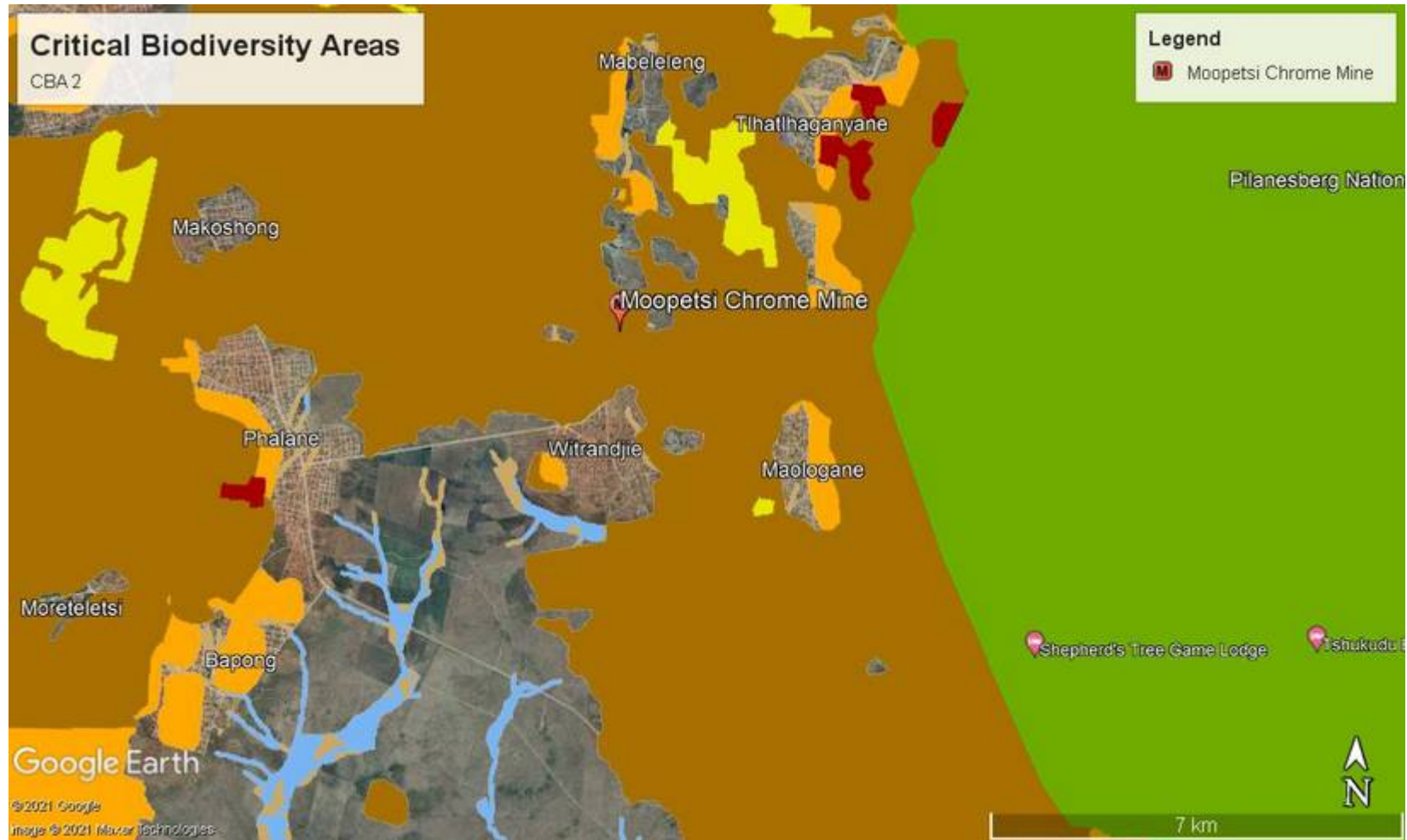


Figure 4: Critical Biodiversity Areas.

2.9.1.8 Land capability and use

The area surrounding the Moopetsi mining area is used predominantly for mining, grazing and rural residential purposes. A large portion of the local area has already been transformed for industrial (mining) and residential use. The current land cover in the region indicates that extensive transformation and land degradation have occurred. There is widespread evidence of poor soil conservation practices, which have resulted in rapid soil erosion in some areas.

2.9.1.9 Surface water

The Mining Permit application area falls within the Crocodile West catchment of the Limpopo Water Management Area. The water resources of the Crocodile West catchment support major economic activities and a population of approximately five million people. It is the second most populous catchment area in the country with the largest proportionate contribution to the national economy, generating almost a third of the country's Gross Domestic Product. The area is highly altered by catchment development. Economic activity is dominated by urban areas and industrial complexes in the north, with platinum and chrome mining in the northeast. Extensive irrigation activities occur along the major rivers, with game and livestock farming occurring in other parts of the catchment. Development and utilisation of surface water occurring naturally in the water management area has reached its full potential.

The Limpopo WMA comprises seven (7) tertiary catchment areas, and the application area is specifically situated in the A22D Quaternary Catchment (Figure 5). The mining permit area is traversed by the Sandspruit, flowing to the south in the A22F quaternary catchment and draining into the Elandsriver and the Kolobengspruit flowing to the north into the Pilanesberg River. Due to the ephemeral nature of the spruits it could potentially be used for animal watering and domestic use water is available. There are no surface water resources within 100 m and a 500 m radius from the proposed Mining Permit area.

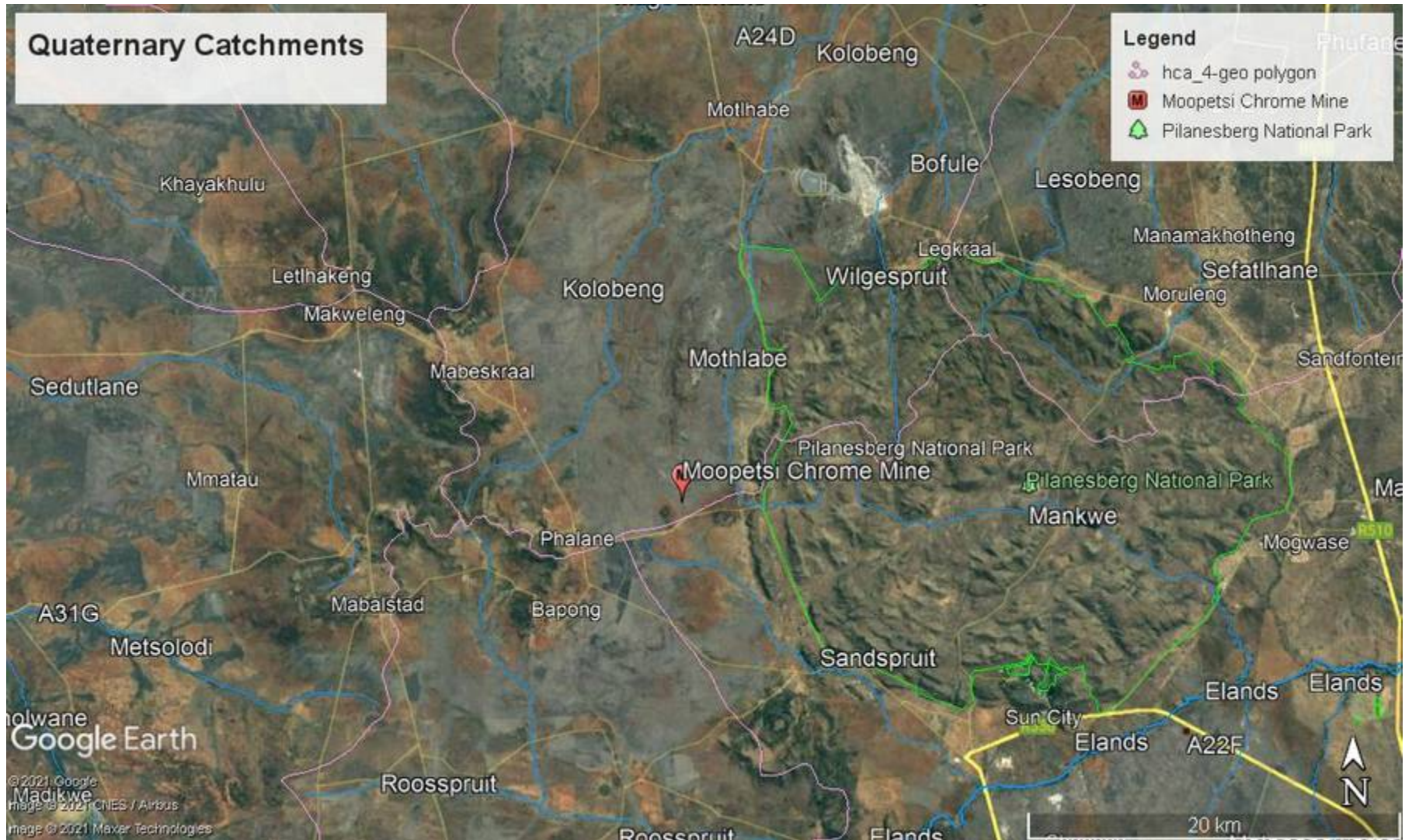


Figure 5: Quaternary catchments.

2.9.1.10 Groundwater

Groundwater Levels

The water table in the proposed mining area is unknown. The expected groundwater flow is expected to be in a northern direction mimicking the surface water flow.

Borehole Yields

No borehole yields are known.

Groundwater Use

Groundwater is expected to be used for domestic and livestock drinking purposes.

Groundwater quality

The groundwater quality of the area is not known.

2.9.1.11 Socioeconomic

The application area is situated in the North West Province of South Africa, approximately 25 km northwest of Suncity. It can be found in Ward 30 of the Moses Kotane Local Municipality which forms part of the Bojanala District Municipality (Figure 1). The application area is located approximately 4.0 kilometres west of the Pilanesberg Game Reserve. The main economic sectors in Moses Kotane Local Municipality include tourism, manufacturing, agriculture and mining. According to the 2016 census data, the Moses Kotane Local Municipality has a population of 243 648.

2.9.1.12 Heritage

The study area has been extensively disturbed by past mining activities and as a result, the natural vegetation and topography has been changed. Some patches of natural vegetation (bushveld/thornveld) inside and around the area still exist, while rocky outcrops and ridges around the area are also present. Remnants of recent mining related structures are also found in the area.

No evidence of sites of cultural or historical importance was discovered on site.

2.9.2 Environmental Aspects Which May Require Protection and/or Remediation

The entire application area is identified as a Critical Biodiversity Area (CBA2) according to the North West Conservation Plan (CPLAN). The proposed area is regarded to have medium sensitivity. The application area does not fall within a Threatened Ecosystem as described in NEMBA (2011). However, it falls within the 5 km bufferzone of the Protected and Important Birding and Biodiversity Area, the Pilanesberg Game Reserve.

These environmental aspects, both within the application and surrounding area, may require protection or remediation. The environmental aspects have been included in the action plan and technical management measures contained in this report.

3. Methodology used in determining and ranking the nature, significance, consequence, extent, duration and probability of potential environmental impacts and risks

This part of this BAR describes and evaluates the potential impact of the proposed Moopetsi mining activity on the surrounding environment. It is the purpose of this part of the document to indicate the impacts on the various aspects of the environment that are anticipated to be associated with the proposed activity.

3.1 Methodology for assessing impact significance

The impact assessment has been compiled in terms of the following life cycle phases of the project:

Phase	Activity	Impact
1. Construction phase	This Phase starts when the surface of the site is disturbed (including removal of vegetation) for the first time for the construction of infrastructure.	BAR and EMPr
2. Operational phase	This Phase comprises the longest period associated with the project and starts when the first load of chrome is removed from the site, until the last load of chrome is removed.	BAR and EMPr
3. Decommissioning phase.	This phase starts when the last load of chrome is removed and consists mostly of decommissioning and rehabilitation activities. Decommissioning includes the complete removal of all infrastructure, levelling, filling in and shaping of the landscape and the rehabilitation of the landscape to resemble the pre-construction environment.	BAR and EMPr

Table 7: Phases of the activity

The evaluation of impacts was conducted in terms of the following criteria.

Magnitude		
Minor	1	Environment remains unaffected.
Low	2	Environment might be negligibly affected.
Moderate	3	Environment might be notably affected.
High	4	Environment might be considerably affected.
Very High	5	Environment might be severely and irreversibly affected.
Extent		
Site only	1	Effect limited to the site and its immediate surroundings.
Local	2	Effect limited to within 3 – 5 km of the site.
Regional	3	Activity will have an impact on a regional scale.
National	4	Activity will have an impact on a national scale.
International	5	Activity will have an impact on an international scale.

Duration of impact		
Immediate	1	Effect occurs periodically throughout the life of the activity and is short lived.
Short term	2	Effect lasts for up to a year.
Medium term	3	Effect continues for a period between 1 and 5 years.
Long term	4	Effect will cease after the operational life of the activity either because of natural process or by human intervention.
Permanent	5	Effect is permanent and will last even after the decommissioning.
Probability of occurrence		
Improbable	1	Less than 25% chance of occurring.
Low	2	Between 25 and 50% chance of occurring.
Medium	3	Between 50 and 75% chance of occurring.
High	4	Greater than 75% chance of occurring.
Definite	5	Will occur regardless of any preventative measures.

The significance of the impacts was determined using the following formula:

Significance = (Magnitude + Duration + Extent) x Probability

Significance of predicted impact		
Low	0 – 25	Where the impact will have a relatively small effect on the environment and will require minimum or no mitigation.
Medium	26– 50	Where the impact can have an influence on the environment and should be mitigated.
High	51 - 75	Where the impact will definitely influence the environment and must be mitigated, where possible.

Table 8: Criteria for EIA assessment.

4. Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts

The potential impacts are discussed according to each Phase of the proposed Project: The Construction, Operational and Decommissioning Phase.

This section also rates the significance of the potential impacts pre-mitigation and post mitigation. The impacts below are a result of both, the environment in which the activity takes place, as well activity itself. The impacts associated with the proposed Project include the NEMA EIA Regulations Listed Activities, as well as the mining activities to take place at the Moopetsi mining operation. The methodology utilised to assess the significance of the potential impacts is described in Section 3.

Since the mining of chrome reserves (legally and illegally) has already taken place on the application area and that the area is largely transformed due to these practices, the impacts for the Construction and Operational phases will be considered together for this document.

4.1 Impact on Topography

Topography refers to the surface shape and features of an area. Opencast operations will remove surface material to access and mine an orebody and this can alter the natural topography of the site. Resultant changes to the topography can in turn impact on groundwater, surface water drainage, visual character and the safety of both people and animals if not properly mitigated. If mining extraction techniques are not carried out correctly, lack of support from underlying layers could cause the surface soil profile to vertically subside to a greater or lesser degree. This could result in limitations to the viability of potential post mining land uses.

4.2 Impacts on Soil

Mining operations have the potential to damage soil resources through physical loss of soil and/or the contamination of soils, thereby impacting on the soils ability to sustain natural vegetation and altering land capability. Due to the increased activity of trucks and heavy machinery the possibility of soil contamination by leaking oils and fuels is increased. The contamination of soils may contribute to the contamination of surface and groundwater resources. Increased soil erosion can be caused by a loss in vegetative cover resulting in increased water runoff. This is especially likely to occur on sloping terrain. Impacts on soil structure can result in changes to soil drainage, increasing runoff and erosion, and may also result in further potential knock on effects impacting on surface and underground water resources. Loss of the topsoil resource reduces chances of successful rehabilitation and restoration.

4.3 Impacts on Land Use

The predominant land use in the surrounding area is Shrubland. Mining activities have the potential to affect land uses within the application area and in the surrounding areas. This can be caused by physical transformation of land through direct or indirect impacts. Impacts may be related to factors such as loss of soil, loss of biodiversity, pollution of water, dewatering, air pollution, noise pollution, and damage/destruction from blasting. The nature of opencast mining is such that it is unlikely that mining and other land uses can coexist. This means that any area utilised for opencast mining will be unavailable for other land uses.

4.4 Impacts on Fauna and Flora

The mining activities and the establishment of the supporting infrastructure have the potential to result in loss of vegetation, habitat disruption, loss of ecosystem functionality, habitat transformation, spread of alien invasive species, a reduction in overall biodiversity, increased hunting of animals, the introduction of new species to the site and disruption of migration routes.

Mining and associated activities may result in the removal and destruction of primary vegetation communities. These communities may be in threat categories according to NEMBA or important according to the North West C-Plan. According to the flora specialist two protected trees occur within the application area.

Disturbances to the site may result in an increase of invasive species on site and on downstream and adjacent properties. Increased erosion may alter the drivers that affect wetland vegetation. Several pollutants associated with mining activities including oil, concrete and dust have the potential to inhibit plant growth and germination and could potentially result in plant mortality. Mining alters the movement of water through the landscape, potentially affecting the hydrological flow regime which is the main driver of natural vegetation.

Threatened animal species are affected primarily by the overall loss of habitat, as direct mining impacts on individuals can often be avoided due to movement of individuals from the area of disturbance. Direct impacts during mining activities are unlikely to have an impact on individual animals of concern, as most are highly mobile and will move out of the area. During operation, birds could potentially suffer mortality due to collisions with vertical infrastructure, especially infrastructure with low visibility, such as powerlines.

4.5 Impacts on Surface Water Resources

Mining activities have the potential to alter surface water features through actual mining methods employed as well as the placement of infrastructure. Hydrocarbon spills from diesel machinery also pose threats to local water resources. Surface infrastructure can result in the diversion of surface runoff to storm water dams resulting in a decrease in the quantity of water entering local resources. Should surface water become contaminated it could have impacts on downstream users, resulting in affected livelihoods and supply problems.

4.6 Pollution of Groundwater

Mining activities have the potential to impact on groundwater resources through potential pollution and/or contamination as a result of activities such as the actual mining method employed and resultant geological exposure of oxidising materials, seepage, spillages and both mineralised and non-mineralised waste streams.

4.7 Impacts of Environmental Pollution

Environmental pollution refers to any contamination of the environment resulting from mining activities. The types of impacts related to environmental pollution include hydrocarbon spills, sewage spills, and decant from underground workings. Environmental pollution can affect surface water, groundwater, wetlands, soil resources, and air quality. Poorly designed wash bays, accidental spillages, related water facilities on site, hydrocarbon spills from heavy machinery and vehicles onsite, the removal or capping of waste products from the site, the intentional washing and rinsing of equipment, storage and use of

hydrocarbons and other hazardous materials including cement, and improper waste handling, storage and disposal can all be sources of environmental pollution.

4.8 Social Impacts

It is important to understand the difference between a social change process and a social impact. Social change processes are set in motion by project activities or policies. Social change processes can be measured objectively, independent of the local context. Examples of a social change process are increase in the population, relocation or presence of temporary workers. Under certain circumstances these processes may result in social impacts, but if managed properly these changes may not create impacts. Whether impacts are caused will depend on the characteristics and history of the host community, and the extent of mitigation measures that are put in place. A social impact is something that is experienced or felt by humans. It can be positive or negative. Social impacts can be experienced in a physical or perceptual sense. Social impacts can be either objective or subjective. Objective social impacts can be quantified and verified by independent observers in the local context, such as changes in employment patterns, in standard of living or in health and safety. Subjective social impacts occur “in the heads” or emotions of people, such as negative public attitudes, psychological stress or reduced quality of life. It is very likely that a number of social changes processes will be set in motion by the project. Whether these processes result in social impacts will depend on the successful implementation of the suggested mitigation measures.

4.9 Impacts on Health and Safety

It is important to recognise that mining activities, equipment, and infrastructure can increase community exposure to risks and impacts. The mining activities can result in a possible increase in crime due to increased number of strangers in the community. Hazardous structures and excavations may pose a threat to community safety if not correctly located, properly designed and correctly managed. By way of example, excavations may pose a risk to animals and people if not properly managed to prevent unauthorised access. The use of hazardous materials on the mine may result in a community health and safety risk if these materials are not stored, handled and disposed of in an appropriate manner. For example, the storage and use of explosives may represent a safety risk if appropriate controls and procedures are not followed.

Fly rock in particular may pose a risk to people, animals and infrastructure within close proximity to the mine. The use of public roads for hauling chrome will result in increased safety risks for members of the community and public utilising these roads. Mining activities have the potential to increase the risk of accidental fires. Impacts on ecosystem services can impact on communities, particularly where these communities rely on these ecosystem services (e.g. water from watercourses) for their livelihoods. The contamination or degradation of natural resources, such as adverse impacts on the quality, quantity, and availability of freshwater, may result in health-related risks and impacts. Land use changes may result in the loss of natural buffer areas such as wetlands, and impacts to natural vegetation areas that mitigate the effects of natural hazards such as flooding, landslides, and fire, may result in increased vulnerability and community safety-related risks and impacts. An influx of people to the mining area seeking employment may increase the risk for community exposure to waterborne, water based, water-related, and vector borne and communicable diseases.

4.10 Impacts on Transportation, Infrastructure and Traffic

In terms of potential impacts, the mine will result in increased use of the local road network which may result in the deterioration of road surfacing, damage to bridges and culverts in the area, and safety risks to surrounding communities. This will be predominantly due to the increase in transport of heavy machinery, and vehicles carrying Chrome and labour for mining activities. Increased traffic may have repercussions on safety for other road users, predominantly by increasing the potential for road accidents in nearby communities.

4.11 Visual Impact

Considering the rural setting of the application area and the mountain backdrop, it is anticipated that the introduction of mining structures and related activities would create strong contrast with the existing landscape characteristics. During mining, it is expected that there will be haul trucks and other mine vehicles on the roads. This, along with the removal of vegetation, dust generation and preparation of opencast mining areas will result in a negative impact on the visual aspect. Operational areas may require lighting at night for safety reasons. It must however be kept in mind that there are already a significant amount of mining activities taking place in the area which will negate the potential impact.

4.12 Impacts on Air Quality

Existing sources of emissions in the region and the characterisation of existing ambient pollution concentrations is fundamental to the assessment of cumulative air impacts. A change in the ambient air quality can result in a variety of impacts which in turn may cause a disturbance to and/or health impacts on nearby receptors. Sensitive receptor sites include residential areas, communities, and natural environments. Mining activities have the potential to result in increased levels of atmospheric dust, increased concentrations of PM₁₀ (Particulate Matter with an aerodynamic diameter of less than 10µm) and increased concentrations of PM_{2.5} (Particulate Matter with an aerodynamic diameter of less than 2.5µm). Historical evidence indicates that the pollutant of concern associated with open-cast mining operations is particulate matter creating a dust source and resulting in human health concerns and nuisance.

4.13 Noise Impact

Certain noise generating activities associated with mining operations can cause an increase in ambient noise levels in and around the site. Significant noise is associated with opencast and plant (including workshops) activities. A source of noise during the operational phase will be traffic to and from the site, traffic around the facility, RoM and product transport and activities associated with waste management. In some cases, mining and related activities may result in an increase in noise levels above the allowable thresholds. Whilst studies show that the response differs greatly between species, noise typically disturbs animals and results in them moving away from the source of noise or becoming adapted to the noise. Some of the typical effects that disturbing noise may have on sensitive receptors include interference with daily activities (work, leisure and sleeping), hindered speech communication, impeded thinking process and interference with concentration. Mine workers in very close proximity to noisy activities would be at risk to hearing damage if the proper precautions (e.g. use of personal protective equipment) are not taken.

4.14 Blasting and Vibration

The application of explosives for breaking rock will always have an effect on the surrounding environment. These effects can manifest in the form of ground vibration, air blast, fumes, fly rock and noxious fumes. These short duration events may be noticeable by communities and individuals living in the immediate environment. These events tend to cause nuisance and elicit an emotive response because of resonance because they are easily recognised as being related to blasting.

Potential Impact		Potential Impact Rating					Mitigation	Mitigated Impact Rating				
		Magnitude	Extent	Duration	Probability	Significance		Magnitude	Extent	Duration	Probability	Significance
Soil	Removal of vegetation will expose soils to erosion forces such as wind and water.	3	1	3	4	28	The extent of the soil disturbance will be limited to the areas indicated on the project plan and will be rehabilitated. Excising access roads will be used.	2	1	2	4	20
	Potential soil pollution due to Hydrocarbon spillage from vehicles or equipment.	3	2	3	4	32	Vehicles will be maintained in good working order. Hydrocarbon spillage will be treated according to the EMPr.	2	1	2	2	10
	Physical degradation such as compaction, surface crusting and hard setting of soils may occur due to movement of vehicles and removal of vegetation.	3	1	3	4	28	Prevent compaction of soils by limiting movement of vehicles to designated roads and areas. Ripping and rehabilitation according to EMPr.	2	1	2	3	15
	Loss of topsoil	3	1	5	4	36	Topsoil will be stored on site and used later for backfilling.	2	1	2	2	10
Land use	Degradation of land due to litter	3	1	5	4	36	Bins will be provided, and rubbish removed on a daily basis by contractors. Hazardous waste will be removed by the contractor and disposed of at a registered hazardous waste site.	2	1	1	1	4
	Degradation of land due to fire	5	2	3	5	50	No open fires will be allowed.	1	2	1	1	4

Potential Impact		Potential Impact Rating					Mitigation	Mitigated Impact Rating				
		Magnitude	Extent	Duration	Probability	Significance		Magnitude	Extent	Duration	Probability	Significance
Topography	Alteration of topography	3	1	5	4	36	Control through site planning and design. Control through proper soil management procedures. Avoidance through mine design and planning (depth of mining, safety factors, overburden and rock qualities).	2	1	2	2	10
	Altered drainage patterns	3	1	5	4	36		2	1	2	2	10
Flora	Removal of vegetation will cause a loss in biodiversity and habitat for animal life currently occupying the site.	3	1	4	4	32	Areas to be disturbed will be limited to the areas indicated on the project plan. Sensitive areas will be avoided, i.e. wetlands, river beds etc. Any endangered species will be avoided or	2	1	3	3	18
Fauna	Increased human presence in the area will cause a disturbance to animal life occurring on the site.	3	1	4	4	32	No mitigation is possible against the increased presence of humans in the areas. It is anticipated that these animals will migrate to adjacent habitats due to lack of suitable habitat and nesting sites. Fauna encountered that could be moved will be relocated to an appropriate new habitat on the farm.	2	1	3	3	18
Air quality	Dust and emissions associated with the movement of vehicles will increase along the access routes and on site.	3	2	1	5	30	Dust suppression will be conducted regularly on site. The frequency of dust suppression will depend on on-site conditions to avoid excessive runoff. Vehicles will be maintained in good working order to minimize emissions.	2	1	1	3	12

Potential Impact		Potential Impact Rating					Mitigation	Mitigated Impact Rating				
		Magnitude	Extent	Duration	Probability	Significance		Magnitude	Extent	Duration	Probability	Significance
Surface water	Potential pollution of water resources resulting from contaminated runoff due to incorrect handling or disposal of waste materials or oil leaks from vehicles or equipment.	3	2	3	3	24	Waste to be treated according to the EMPr Hydrocarbon spillage will be treated according to the EMPr.	2	1	1	1	4
	Ponding of clean surface water due to excavation of sumps.	3	1	4	3	24	Backfilling, surface rehabilitation and monitoring of sumps. Follow up if needed.	2	1	3	2	12
Noise	The movement of vehicles, blasting and drilling activities will create noise that could cause a nuisance to people living close to the transport routes and the site.	4	2	1	5	35	Vehicles and equipment will be maintained in a good working to minimize noise. Operations will be limited to daylight hours on weekdays to minimize the impact on surrounding areas.	2	2	1	3	15
Visual	The mining activities will result in a visual impact on the surrounding landscape.	3	2	1	5	30	A berm will be placed along the boundaries of the mining area to shield the operations from nearby homesteads and roads.	2	2	1	3	15
Socio-Economic	Disruption to farming activities.	4	1	1	3	18	The impact will be minimised and managed by: <ul style="list-style-type: none"> ▪ Conduct dust suppression on a regular basis. ▪ The excavator used will be in good working order. ▪ Excavation will be conducted in normal 	2	1	1	1	4
Environmental pollution	General environmental pollution	4	2	2	3	24	Avoid through implementation of suitable progressive rehabilitation and soil management. Control/remedy through interception of decant and treatment of polluted water where required.	2	2	1	3	15

Potential Impact		Potential Impact Rating					Mitigation	Mitigated Impact Rating				
		Magnitude	Extent	Duration	Probability	Significance		Magnitude	Extent	Duration	Probability	Significance
	Hydrocarbon spills/contamination	3	2	2	3	21	Avoid and control through implementation of EMPR mitigation measures (e.g. spill prevention, hydrocarbon storage).	2	2	1	2	10
	Sewage spills/contamination	2	1	1	1	4	Avoid through preventative measures (e.g. bunding, spill kits). Remedy through clean-up and waste disposal. Modify through soil treatment if required. Avoid and control through implementation of preventative measures (e.g. location of toilets, spill prevention, waste management).	1	1	1	1	3
Social impacts	Crime and violence	3	3	2	3	24		2	2	1	2	10
	Influx of migrant workers	2	3	3	3	24	Avoidance and control through preventative measures (e.g. site security, code of conduct). Avoidance and control through mitigation measures (e.g. recruitment procedure, grievance mechanism, code of conduct).	2	1	2	2	10
	Loss of sense of place	2	2	3	2	14		1	1	2	1	4

Potential Impact		Potential Impact Rating					Mitigation	Mitigated Impact Rating				
		Magnitude	Extent	Duration	Probability	Significance		Magnitude	Extent	Duration	Probability	Significance
Health and safety	Fire and explosion hazard	3	2	2	3	21	Avoidance and control through preventative measures (e.g. HIV/AIDS awareness). Remedy through application of mitigation measures in EMPR.	2	1	1	1	4
	Fly rock	3	1	2	2	12	Avoid and control through implementation of preventative measures (e.g. fire breaks, blasting procedures, hazardous substances management). Avoid and control through implementation of preventative measures (e.g. blast procedures, monitoring, communication with landowners, emergency response procedures).	2	1	1	1	4
	Health impacts	3	3	2	3	24	Avoid and control through implementation of preventative measures (e.g. blast procedures, monitoring, communication with landowners, emergency response procedures).	2	1	1	2	8
Blasting and vibration	Air blast	3	2	1	4	28	Avoid and control through implementation of preventative measures (e.g. blast procedures, monitoring, communication with landowners, emergency response procedures).	2	1	1	2	8
	Air blast and human perception	3	2	1	4	28	Avoid and control through implementation of preventative measures (e.g. blast procedures, monitoring, communication with landowners, emergency response procedures).	2	1	1	2	8

Potential Impact		Potential Impact Rating					Mitigation	Mitigated Impact Rating				
		Magnitude	Extent	Duration	Probability	Significance		Magnitude	Extent	Duration	Probability	Significance
	Impacts on infrastructure (roads, communications infrastructure, services, houses, boreholes)	3	2	1	4	28		2	1	1	2	8
	Noxious fumes	3	2	1	4			2	1	1	2	8

Table 9: Potential impacts and mitigation measures associated with the operational phase.

5. 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

For the reasons provided above, no alternatives have been considered for this Project

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

The identification of risks and the mitigation measures that could be applied have been discussed above in Section 4.

7. Motivation where no alternatives sites were considered

No property alternatives have been considered as the envisaged mining operations will occur on properties already utilised for the mining operations and where Moopetsi has negotiated surface rights.

8. Statement motivating the alternative development location within the overall site

For the reasons discussed in this document, no alternative development locations have been considered for this Project.

9. 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.

As the site layout was informed by environmental and technical input, as well as the location of the chrome reserves, the initial layout has not changed during the PPP or impact ranking. The impacts and risks identified in Section 4 are therefore applicable to the final site layout plan.

10. Assessment of each identified potentially significant impact and risk.

Since the mining of chrome reserves has already taken place on the application area (legally or illegally) and will progress gradually from the existing boxcut area, the impacts for the Construction and Operational phases will be considered together for this document.

Activity	Potential Impact	Aspects Affected	Phase	Significance Pre-Mitigation	Mitigation Type	Significance Post-Mitigation
Operational Phase						
Employment of workers	Population influx - Pressure on resources	Socio-economic	Construction Phase Operational Phase	Minor negative	Very small operation.	Minor negative
	Population Influx – Social Pathologies	Socio-economic	Construction Phase Operational Phase	Minor Negative	Very small operation.	Minor Negative
	Health and Safety	Socio-economic	Construction Phase Operational Phase	Moderate Negative	Prevent through: Awareness Campaigns and Maintenance Programme Grievance Mechanism.	Minor Negative
	Job Creation and Skills Training	Socio-economic	Socio-economic	Minor Positive	Enhance through: Employment Strategy and recruitment policy.	Moderate Positive
	Job Creation (Multiplier Effect) and Population Influx	Socio-economic	Socio-economic	Minor Positive	Enhance through: Development Plan & SMME register.	Moderate Positive
Storage of fuel and lubricants in temporary facilities.	Hydrocarbon contamination	Soils	LoM	Moderate negative	Remedy and manage through: Emergency	Minor negative

					Response Plan, Stormwater Management Plan, Aquatic Monitoring Programme	
		Wetlands and aquatic ecology	LoM	Minor Negative		Negligible negative
		Surface water	LoM	Minor Negative		Negligible negative
		Groundwater	LoM	Minor Negative		Negligible negative
Topsoil removal and stockpiling; and extraction and transportation of chrome. Vehicular activity on haul roads; and operation of mining equipment. Screening of chrome in mobile plant	Fugitive dust generation.	Air Quality	Operational Phase	Minor Negative	Monitor and manage through: Dust Management Plan & Dust Monitoring Programme.	Minor Negative
	Alteration in the topography and visual environment.	Topography and Visual Environment	Operational Phase	Moderate Negative	Avoid and minimise through: Mine Plan	Moderate Negative
	Contamination of water resources and alteration of drainage patterns.	Surface Water	Operational Phase	Minor Negative	Prevent through: Stormwater Management Plan	Minor Negative
	Noise generation	Noise	Construction Phase Operational Phase	Negligible Negative	Control through: Quality control procedures.	Negligible Negative
	Fugitive dust generation	Air quality	Operational Phase	Minor Negative	Monitor and manage through: Dust Management Plan & Dust Monitoring Programme.	Minor Negative

		Visual environment	Operational Phase	Minor Negative	Monitor and manage through: Dust Management Plan & Dust Monitoring Programme.	Minor Negative
	Hydrocarbon contamination	Soils	LoM	Moderate negative	Remedy through: Emergency response plan.	Minor Negative
	Sedimentation and siltation of water resources	Surface water	Operational phase	Minor negative	Prevent through: Stormwater management plan.	Negligible negative
	Noise generation	Noise	Construction Phase Operational Phase	Negligible Negative	Prevent and manage through: Vehicle Maintenance Plan.	Negligible Negative
Stockpiling material	Fugitive dust generation.	Air Quality	Operational Phase	Moderate Negative	Monitor and manage through: Dust Management Plan & Dust Monitoring Programme.	Minor Negative
	Alteration to the topography and visual environment.	Topography and Visual Environment	Operational Phase	Moderate Negative	Minimise through: Mine Plan & Vegetation Monitoring	Minor Negative
	Loss of topsoil resources due to erosion.	Soils	Operational Phase	Moderate Negative	Manage and prevent through: Stormwater Management Plan	Negligible Negative

Water management	Contamination of water resources	Surface water	Operational Phase	Minor Negative	Prevent through: Stormwater management plan.	Negligible Negative
		Groundwater	Operational Phase	Negligible Negative	Prevent through: Stormwater management plan.	Negligible Negative
Waste generation and disposal	Waste material contamination	Soils	Operational phase	Moderate negative	Prevent and avoid through: Emergency response plan.	Minor negative
		Surface water	Operational phase	Moderate negative	Prevent and avoid through: Emergency response plan.	Minor negative
	Contamination of water resources	Surface water	Operational phase	Minor negative	Prevent and manage through: Stormwater management plan.	Negligible Negative
		Groundwater	Operational phase	Minor negative	Prevent and manage through: Stormwater management plan.	Negligible Negative
Decommissioning Phase						
Demolition / removal of portable and related infrastructure	Fugitive dust generation	Air quality	Decommissioning Phase	Minor negative	Monitor and manage through: Dust Management Plan & Dust Monitoring Programme.	Negligible Negative
	Alteration of the topography and visual environment	Topography and Visual Environment	Decommissioning Phase	Minor negative	Remedy through: Rehabilitation Plan & Closure Plan	N/A

	Hydrocarbon and waste material contamination	Soils	Decommissioning Phase	Moderate negative	Manage through: Emergency Responses Plan	Minor negative
	Alien Invasive Vegetation establishment	Fauna and Flora	Decommissioning Phase	Negligible Negative	Manage through: Alien Invasive Management Programme	Negligible Negative
	Sedimentation and contamination of water resources	Surface water	Decommissioning Phase	Minor negative	Monitor and remedy through: Emergency Response Plan	Negligible Negative
	Noise generation	Noise	Decommissioning Phase	Negligible Negative	Monitor and remedy through: Emergency Response Plan	Negligible Negative
Vehicular activity: removal of mobile plant / equipment and vehicles	Hydrocarbon contamination	Soils	Decommissioning Phase	Moderate negligible	Monitor and remedy through: Emergency Response Plan	Minor negative
		Surface water	Decommissioning Phase	Minor negative	Monitor and remedy through: Emergency Response Plan	Negligible Negative
		Groundwater	Decommissioning Phase	Negligible Negative	Monitor and remedy through: Emergency Response Plan	Negligible Negative
Rehabilitation of the site	Fugitive dust generation	Air quality	Decommissioning Phase	Minor negative	Monitor and manage through: Dust Management Plan & Dust Monitoring Programme.	Minor Negative
	Alteration of the topography and visual environment	Topography and Visual Environment	Decommissioning Phase	Minor negative	Remedy through: Rehabilitation Plan & Closure Plan	N/A

	Hydrocarbon contamination	Soils	Decommissioning Phase	Moderate negligible	Monitor and remedy through: Emergency Response Plan.	Minor negative
	Reduction in land capability	Soils	Decommissioning Phase Post Closure	Moderate Negative	Prevent through: Rehabilitation Plan, Closure Plan, Vegetation Monitoring.	Minor Negative
	Vegetation and habitat establishment	Fauna and Flora	Operational Phase Decommissioning Phase	Negligible Negative	Remedy and enhance through: Rehabilitation Plan, Vegetation Monitoring & Alien Invasive Management Programme.	Minor Positive
	Noise generation	Noise	Operational Phase Decommissioning Phase	Negligible Negative	Manage and prevent through: Vehicle Maintenance Plan.	Negligible Negative

11. Summary of specialist reports.

Due to the relatively small scale of the planned operations and the fact that mining operations has already taken place on the site it was deemed not necessary to conduct any specialist studies.

12. Environmental impact statement.

In accordance with the EIA Regulations GN R543 31 (2) (n), the EAP must provide an opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation must be stated.

An impact assessment has been undertaken, which has incorporated extensive consultation with and participation of I&APs. It is the EAP's opinion that due process has been followed. Where impacts have been found to be potentially significant, various mitigation measures to manage and monitor the impacts of the Project have been proposed.

In Bateleur's professional opinion, there are no anticipated impacts that constitute a fatal flaw for the proposed project. Nevertheless, the recommended mitigation measures must be implemented to minimise the impacts and ensuring compliance with current legislative requirements.

It is recommended that the proposed project be allowed to proceed on the assumption that the environmental and social management commitments are adhered to, the project description remains as per the description provided in this document and considering the positive social impacts associated with the project.

12.1 Summary of key findings

The Environmental Impact Statement is utilised to summarise all the potential environmental impacts identified during each phase of the proposed project.

Air quality

- Fugitive dust generation from augmenting existing roads;
- Fugitive dust generation from transport of construction material, mobile plant and equipment to site;
- Evaporation of diesel fuel and heavy fuel from temporary tanks and possible spills during loading of fuel from tanks on site that are used for re-fuelling of heavy machinery and trucks;
- Fugitive dust generation from Site clearing and topsoil removal and construction;
- Fugitive dust generation from preparing for portable plant, infrastructure and stock piling;
- Fugitive dust generation from topsoil removal and stockpiling; and extraction and transportation of materials; vehicular activity on haul roads; and operation of mining equipment; and crushing and screening of ore in mobile plant;
- Fugitive dust generation from the operation and maintenance of the stockpiles, including waste and ROM stockpiles;

- Fugitive dust generation from the demolition of infrastructure;
- Fugitive dust generation from site rehabilitation.

Biodiversity

- Loss of suitable habitats from the removal of vegetation; the disturbance of the soil; and vehicle operation;
- Loss of fauna and flora species from the removal of vegetation; increased human presence; machinery and vehicle operation;
- Loss of suitable habitats through the establishment of alien plant species in disturbed areas as well as roadkill from increased vehicle movement.

Surface water

- Sedimentation and contamination of surface water resources;
- Construction of infrastructure exposes the surface water to the following impacts: stockpiles may cause sedimentation; concrete and other impervious surfaces prevent surface water from infiltrating the soil and will increase runoff;
- Potential spillages during transport of construction material, hazardous substances and hydrocarbon containing fuels and lubricants to site;
- Mobilization of leaked/spilled contaminants (hazardous and hydrocarbon containing material) from surface to the surrounding surface water resources;
- Siltation of the surrounding surface water resources through erosion;
- Contamination of surface water resources resulting from temporary storage of waste material before collection for disposal may result in leakages;
- Rehabilitation will have a positive impact on the water quantity and quality of the disturbed site.

Soils, Land Capability and Land Use

- Loss of topsoil resources as a resource;
- Soil erosion and degradation;
- Hydrocarbon pollution;
- Loss of land capability.

Noise

Noise generation through mining machinery and vehicles may increase ambient noise levels at surrounding urban and rural noise sensitive receptors.

Visual

- Alteration of visual environment through vehicular activity and the resulting dust;
- Alteration of visual environment through the temporary storage of material / diesel;
- Alteration of visual environment through the removal of vegetation and topsoil for site clearing;

- Alteration of visual environment through the erection of surface infrastructure;
- Alteration of visual environment through the stockpiling topsoil and extraction of material and
- Alteration of visual environment through the vehicular activity on the haul roads.

Positive impacts

- Chrome supply for the market.
- Economic growth.
- Employment opportunities.

13. Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR

The EMP seeks to achieve a required end state and describes how activities that have, or could have, an adverse impact on the environment will be mitigated, controlled and monitored.

This EMP addresses the environmental impacts during the Operational, Decommissioning and Post-Closure Phases of the project. Due regard must be given to environmental protection during the entire project. Several environmental recommendations are therefore made to achieve environmental protection. The environmental and social objectives are set to allow the mining of the chrome in an environmental and socially responsible fashion while ensuring that sustainable closure can be achieved. To achieve closure the correct decisions, need to be taken during the planning phase of the project.

13.1 Environmental Objectives and Goals

Topography

The following objectives should be attained during the planning, construction, operation, and decommissioning phases of the mining operations:

- Maintain the integrity of the landscape as far as possible by reinstating the topography to match the surroundings.
- Reinstatement of vegetation cover to match the surroundings.
- Monitor the reinstated areas to ensure that erosion does not occur.
- Ensure drainage lines are not disturbed as far as possible.
- Create pollution control structures to ensure pollution on site is minimised.

Soils

The following objectives should be attained during the planning, construction, operation, and decommissioning phases of the mining operations:

- Only clear areas needed and keep footprints as small as possible.

- Vegetate topsoil stockpiles as soon as possible. Implement storm water management infrastructures
- Keep active pit area as small as possible and implement continual rehabilitation.
- Conduct waste classification of overburden material. Backfill opencast as soon as possible to reduce volume of overburden stored on site.

Land Use

The following objective should be attained during the construction, operation, and decommissioning phases of the mining operations:

- Preserve soil so that land capability class can be re-established post mining (as far as this is possible).

Surface Water

The following objective should be attained during the construction, operation, and decommissioning phases of the mining operations:

- Ensure minimal impact to the surface water resources.
- Ensure that the construction activities are carried out so as to aid rehabilitation during decommissioning.

Groundwater

The following objective should be attained during the construction, operation, and decommissioning phases of the mining operations:

- Prevent construction material becoming a source for pollution to the local aquifers.
- Ensure effective management of any accidental spills.

Flora

The following objective should be attained during the construction, operation, and decommissioning phases of the mining operations:

- Ensure awareness amongst all staff, contractors and visitors to site to not needlessly damage flora.
- A management plan for the control of invasive alien species needs to be implemented. Specialist advice should be used in this regard. This plan should include pre-treatment, initial treatment and follow-up treatment and should be planned and budgeted for in advance. The cleared areas after removal should be re-vegetated with indigenous naturally occurring species to decrease large patches of bare soil. The best mitigation measure in this regard is avoiding invasive and/or exotic species from being established. It is vital that the control of alien invasive species is ongoing.
- No foraging, food and wood collecting within the veld should be allowed.

- Eliminate alien invasive and exotic plants.
- Minimise and limit the destruction or disturbance of vegetation of the proposed mining areas and mine infrastructure. The vegetation removal should be controlled and should be very specific.
- Prevent the destruction of natural and/or pasture vegetation of the surrounding areas that will not be mined.
- Prevent heavy machinery and light vehicles driving through natural vegetation that will not be disturbed by the proposed activities.
- Prevent the destruction of vegetation in areas prone to soil erosion.
- Remove and relocate any rare and endangered species within the areas where the natural vegetation will be destroyed.
- Prevent any pollution of natural vegetation, wetlands and red data species.

Fauna

The following objective should be attained during the construction, operation, and decommissioning phases of the mining operations:

- Fauna (wildlife and domestic animals) may under no circumstances be handled, removed, killed or interfered with by the Contractor, his employees, his Sub-Contractors or his Sub-Contractors' employees. Activities on site must comply with the regulations of the Animal Protection Act, 1962 (Act 71 of 1962). Workers should also be advised on the penalties associated with the needless destruction of wildlife, as set out in this act.
- Appoint an ECO to oversee the activities and ensure that ecological aspects are kept in mind.
- Priority species, specifically nests if encountered, should be identified first and a management plan should be established for each of the priority species.
- Continuous rehabilitation and clean-up of the area should be implemented during the operational phase.
- Limit activities (transport etc.) to the smallest area possible. This is to prevent fragmentation that may have irreversible changes to faunal communities. It also increases the invasion of alien/foreign species.
- A management plan for the control of invasive and exotic plant species needs to be implemented (if required).
- Restrict movement to the proposed footprint of the activities. Control of access should be implemented for all other natural areas to prevent unnecessary destruction of habitats or disturbance of species. Human and vehicles movement should stay out of the natural areas associated with the proximity of the Pilanesberg Game Reserve. It is also vital that no additional fragmentation occur and that all roads are clearly demarcated and kept to a minimum without any exceptions. No vehicles or personnel are permitted outside of these demarcated roads.
- No camping activities or other contractor camps should be allowed on the mining area and this practice will be a good investment in preventing more impacts, noise and waste or possibly the spread of fires to the Pilanesberg Game Reserve.

Air Quality

The following objective should be attained during the construction, operation, and decommissioning phases of the mining operations:

- Implement dust suppression in and around site as needed.
- Vehicles must be regularly serviced.
- Vehicles utilising public gravel roads must adhere to the speed limits.
- By minimising the removal of vegetation and topsoil in affected area, this will minimise the potential for dusty conditions.

Noise

The following objective should be attained during the construction, operation, and decommissioning phases of the mining operations:

- All vehicles and machinery must be maintained in good working order.
- When working or traveling past noise sensitive receptors, no unnecessary hooting or noise should occur.

Visual

The following objective should be attained during the construction, operation, and decommissioning phases of the mining operations:

- To limit the visual impact of mining and related infrastructure as far as possible during mining.
- To enhance the visual aspect and maintain the aesthetics of the region post mining.

Health and Safety

The following objective should be attained during the construction, operation, and decommissioning phases of the mining operations:

- Undertake mining and ancillary activities in safe and responsible manner so as to protect the safety of people and the environment.
- Manage hazardous materials and explosives in a safe and responsible manner so as to protect the safety of people and the environment.

Environmental Pollution

The following objective should be attained during the construction, operation, and decommissioning phases of the mining operations:

- Any excess or waste material or chemicals must be removed from the site and must preferably be recycled (e.g. oil and other hydrocarbon waste products).
- Any waste materials or chemicals that cannot be recycled must be disposed of at a suitably licensed waste facility.
- All permanent facilities must be removed from site upon closure. This will include the associated equipment, material and waste on site.
- Under no circumstances is any form of waste to be disposed of on site.

13.2 Socio-economic Objectives and Goals

The following socio-economic objectives should be attained during the construction, operation, and decommissioning phases of the Moopetsi mining operations:

- Always adhere to an open and transparent communication procedure with stakeholders.
- Ensure that accurate and regular information is communicated to I&APs in a manner which is understandable and accessible.
- Mitigate negative impacts.
- Enhance project benefits and minimise negative impacts through intensive consultation with stakeholders.
- Assemble adequate, accurate, appropriate, and relevant socio-economic information relating to the context of the operation.
- Ensure that recruitment strategies for the mine, prioritise the sourcing of local labour, and share in gender equality.
- Ensure an atmosphere of equality and non-discrimination among the workforce.
- Contribute to the development of functional literacy and numeracy among employees.
- Empower the workforce to develop skills that will equip them to obtain employment in other sectors of the economy.
- Contribute to the development of a self-reliant (not dependent on the mine) community surrounding the area of operation.
- Ensure that decommissioning and retrenchments take place in a legally compliant and humane manner.

13.3 Historical and Cultural Aspects

No sites of cultural or historic importance exist in close proximity to the mining area.

14. Aspects for inclusion as conditions of authorisation

The authorisation should be subject to the following conditions:

- The project should remain in full compliance with the requirements of the EMP and with all regulatory requirements.
- The EMP should be implemented by one or more senior and qualified environmental practitioners who have competence and credibility to interpret the requirements of the BAR and the EMP, and who must be issued with a written mandate by Moopetsi to provide guidance and instructions to the contractors.
- Stakeholder engagement must be maintained during the construction, operational and closure/rehabilitation phases of the project, with the emphasis on on-going provision of information pertaining to the project, and with the goal of maintaining constructive and mutually respectful stakeholder relations.
- A detailed record of all activities related to environmental and social management, as well as stakeholder engagement, should be retained for review and audit by independent parties for all phases of the project. The audit findings should be made available to the relevant environmental and local authorities; and
- Any substantive changes to the project configuration should be the subject of environmental assessments and should result in amendments to the EMP. Information related to any such changes should be made available to the authorities as well as for public review in the spirit of full disclosure.

15. Description of any assumptions, uncertainties and gaps in knowledge

Certain assumptions, limitations, and uncertainties are associated with the BAR. These are detailed for each aspect below:

15.1 Air quality

Although there are existing mining and industrial activities taking place in the vicinity of the Moopetsi project, fall-out dust monitoring is not being effectively undertaken at the moment. Since these pollutants are regulated, air quality monitoring is deemed essential as best practice to establish background concentrations prior to mining. Monitoring will need to continue during mining as the day-to-day activities from the proposed Moopetsi operation will inevitably result in some level of impacts on the ambient air quality of the area.

15.2 Heritage

Although all efforts were made to locate, identify and record all possible cultural heritage sites and features (including archaeological remains) there is always a possibility that some might have been missed as a result of grass cover and other factors. The subterranean nature of these resources (including low stone-packed or unmarked graves) should also be taken into consideration. Should any previously unknown or invisible sites, features or material be uncovered during any development actions then an expert should be

contacted to investigate and provide recommendations on the way forward. From a cultural heritage point of view the development can therefore continue, taking cognisance of the recommendations.

15.3 Fauna

In terms of the baseline investigation conducted, a few red listed species were recorded, specifically in terms of mammals and birds as the Pilanesberg Game Reserve is a known Protected Area as well as an Important Bird Area (IBA). Three Mammals of interest (Red listed) possibly will occur on-site. No amphibians or reptiles with red listed status were recorded for the quarter degree square and suitable habitat for these species is associated closer to the nature reserve and not the footprint. There are several sensitive birds recorded in the baseline study that enjoys conservation status in the IUCN Red List. It should be kept in mind that the area is in close proximity to the Pilanesberg Game Reserve and in effect a buffer and corridor for the Protected Area, therefore destructive and long-term impacts on the environment will have to be thoroughly assessed for following stages of the project.

16. Reasoned opinion as to whether the proposed activity should or should not be authorised

16.1 Reasons why the activity should be authorised or not

This BAR and EMPR has assessed the potential impacts associated with the proposed mining activities and mitigation measures have been developed to address the impacts identified. Furthermore, this BAR and EMPR has been compiled in accordance with the most recent guidelines and legislation. The draft BAR and EMPR was also be made available to I&APs review and comments, and appropriate changes have been made to this final BAR and EMPR as a result of the I&APs consultation process. Appropriate measures are included in the BAR and EMPR wherever possible, to ensure I&APs concerns are addressed. As such, the EAP is of the opinion that the activity should be authorised.

16.2 Conditions that must be included in the authorisation

These conditions have been listed in Section 14 above.

17. Period for which the environmental authorisation is required

The mining permit is required for a period of 2 years.

18. Undertaking

The undertaking required to meet the requirements of this section is provided at the end of the EMP Report in Part B, Section 12.

19. Financial Provision

The Regulations pertaining to the Financial Provision for Prospecting, Mining and Production Operations promulgated under Section 44(A) (e), (f), (g), (h) read with sections 24(5)(b)(ix), 24(5)(d), 24N, 24P and 24R of the National Environmental Management Act, 1998 (Act 107 of 1998) (20 November 2015) have been considered and this is anticipated to result in an increase in the rehabilitation costs estimated using the above-mentioned quantum. The amount that is required to both manage and rehabilitate the environment in respect of rehabilitation is reflected in the quantum of financial provision in Section 35 (Part B) of the report.

20. Specific Information required by the competent Authority

20.1 Impact on the socio-economic conditions of any directly affected person

A summary of potential impacts is tabled below:

Cause of Impact	Aspects	Impact
Effects on the local economy	Positive impacts	Sustained employment during construction and operation.
		Short-term growth of the local economy.
Effects from impacts to the physical environment	Negative impacts	Dependency on the mine to provide extensive local economic development.
		Improvements to local infrastructure.
Effects of Population influx	Negative impacts	Physical Intrusion impacts.
		Land acquisition and loss of grazing land.
Effects of Population influx	Negative impacts	Community opposition – arising from unmanaged expectations.
		Increased social pathologies.
		Increased pressure on local services/ resources.

Table 10: Impact on socio-economic conditions.

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

No sites of cultural significance have been identified in or around the mining site.

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

There are no other matters required in terms of Section 24(4)(A) and (B) of the Act.

PART B: ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

This Environmental Management Plan contains guidelines, operating procedures and rehabilitation/ pollution control requirements which will be binding on the holder of the mining permit/ prospecting permission/ reconnaissance permission after approval of the Environmental Management Plan. It is essential that this portion be carefully studied, understood, implemented and adhered to at all times.

1. Details of the EAP

The requirement for the provision of the details and expertise of the EAP are included in PART A of this document.

2. Description of the aspects of the activity

The requirement to describe the aspects of the activity that are covered by the draft environmental management programme is included in PART A of this document.

3. Composite Map

The composite plan can be found in Part A of this document.

4. Environmental Management Principles

It is extremely important for effective environmental management that the Applicant be aware of the general principles upon which sound environmental management is based and that these principles are considered in all aspects of the mining operation. NEMA has established a general framework for environmental law, in part by prescribing national environmental management principles that must be applied when making decisions that may have a significant impact on the environment. These principles are briefly summarised in the sections that follow.

4.1 Holistic Principle

The Holistic principle, as defined by NEMA (Section 2(4)(b) requires that environmental management must be integrated, acknowledging that all elements of the environment are linked and inter-related and it must take into account the effect of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option (defined below). Holistic evaluation does not mean that a project must be looked at as a whole. It rather means that it must be accepted that there is a whole into which a project introduced. If the indications are that the project could have major adverse effects, the project must be reconsidered and where appropriate re-planned or relocated to avoid an adverse impact or to ensure a beneficial impact.

4.2 Best Practicable Environmental Option

When it is necessary to undertake any action with environmental impacts, the different options that could be considered for the purpose must be identified and defined. The Best Practicable Environmental Option (BPEO) is defined in NEMA as “the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.” Other guidelines typically used for environmental management in terms of other legislation include: BPM which is the Best Practicable Means and BAT which is the Best Available Technology.

4.3 Sustainable Development

The concept of sustainable development was introduced in the 1980's with the aim to ensure that the use of natural resources is such that our present needs are provided without compromising the ability of future generations to meet their own needs. The constitution of South Africa is built around the fact that everyone has the right to have the environment protected through reasonable legislative and other measures that secure ecologically sustainable development. The National Environmental Principles included in the NEMA require development to be socially, environmentally and economically sustainable.

4.4 Preventative Principles

The preventative principle is fundamental to sustainable development and requires that the disturbance to ecosystems and the pollution, degradation of the environment and negative impacts on the environment be avoided, or, where they cannot be altogether avoided, are minimised and remedied.

4.5 The Precautionary Principles

The precautionary principle requires that where there is uncertainty, based on available information, that an impact will be harmful to the environment, it is assumed, as a matter of precaution, that said impact will be harmful to the environment until such time that it can be proven otherwise. The precautionary principle requires that decisions by the private sector, governments, institutions and individuals need to allow for and recognise conditions of uncertainty, particularly with respect to the possible environmental consequences of those decisions. In South Africa, the DWA (then DWAF, now DWS) adopted a BPEO guideline in 1991 for water quality management and in 1994 in the Minimum Requirements document for waste management. In terms of DWAF Minimum Requirements for the Handling and Disposal of Hazardous Waste, 1994, the precautionary principle is defined as, "Where a risk is unknown; the assumption of the worst case situation and the making of provision for such a situation." Here the precautionary principle assumes that a waste or an identified contaminant of a waste is "both highly hazardous and toxic until proven otherwise."

In the context of the EIA process in South Africa, the precautionary principle also translates to a requirement to provide sound, scientifically based, information that is sufficient to provide the decision making authority with reasonable grounds to understand the potential impacts on the environment, the extent thereof and how impacts could be mitigated. If such information is not adequate for this purpose, the relevant authority cannot be satisfied as is required and then the authority should require that further information be collected and provided.

4.6 Duty of Care and Cradle to Grave Principle

In terms of the NEMA Section 28, "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."

By way of example, the principle of "duty of care" in terms of waste management emphasises the responsibility to make sure that waste is correctly stored and correctly transported, as it passes through the chain of custody to final point of disposal. This means that waste must always be stored safely and securely.

The company removing and disposing of waste also holds the responsibility to hold the relevant licenses, and that waste is transported alongside the necessary paperwork.

“Cradle to Grave” refers to the responsibility a company takes for the entire life cycle of a product, service or program, from design to disposal or termination. In terms of the DWAF Minimum Requirements for the Handling and Disposal of Hazardous Waste, 1994, “any person who generates, transports, treats or disposes of waste must ensure that there is no unauthorised transfer or escape of waste from his control. Such a person must retain documentation describing both the waste and any related transactions. In this way, he retains responsibility for the waste generated or handled.” This places responsibility for a waste on the Generator and is supported by the “Cradle to Grave” principle, according to which a “manifest” accompanies each load of Hazardous Waste until it is responsibly and legally disposed. This manifest is transferred from one transporter to the next along with the load, should more than one transporter be involved. Once the waste is properly disposed of at a suitable, permitted facility, a copy of the manifest must be returned to the point of origin.” Duty of Care offers one strategy to implement sustainable development.

4.7 Polluter Pays Principle

The “polluter pays principle” entails that the person or organisation causing pollution is liable for any costs involved in cleaning it up or rehabilitating its effects. It is noted that the polluter will not always necessarily be the generator, as it is possible for responsibility for the safe handling, treatment or disposal of waste to pass from one competent contracting party to another. The polluter may therefore not be the generator but could be a disposal site operator or a transporter. Through the ‘duty of care’ principle, however, the generator will always be one of the parties held accountable for the pollution caused by the waste. Accordingly, the generator must be able to prove that the transferral of management of the waste was a responsible action. The polluter pays principle acceding to NEMA dictates that “the cost of remedying pollution, environmental degradation and consequent adverse effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.”

4.8 Duty of Care Responsibilities

The principle of duty of care is especially important to understand when it comes to pollution that arises as a result of mining. Notwithstanding any licences or permits that may exist, the mine still has a responsibility to take suitable measures should pollution arise as a result of the mining activities.

Training and awareness should be fostered in all staff working to ensure that they can perform their duties. Failure to comply with the provisions in the EMPR and NEMA would be a contravention of the Act. The relevant sections of NEMA are provided below, to outline the duty of care and responsibility that the applicant and all employees have towards the environment. The National Environmental Management Act (Act 107 of 1998) (NEMA) Section 28 makes provision for Duty of care and remediation of environmental damage. The binding principals are described below:

- 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.

- Without limiting the generality of the duty in subsection (1), the persons on whom subsection (1) imposes an obligation to take reasonable measures, include an owner of land or premises, a person in control of land or premises or a person who has a right to use the land or premises on which or in which-
 - any activity or process is or was performed or undertaken or
 - any other situation exists, which causes, has caused or is likely to cause significant pollution or degradation of the environment
- The measures required in terms of subsection (1) may include measures to-
 - investigate, assess and evaluate the impact on the environment
 - inform and educate employees about the environmental risks of their work and the manner in which their tasks must be performed in order to avoid causing significant pollution or degradation of the environment
 - cease, modify or control any act, activity or process causing the pollution or degradation;
 - contain or prevent the movement of pollutants or the cause of degradation
 - eliminate any source of the pollution or degradation or
 - remedy the effects of the pollution or degradation
- No person may-
 - unlawfully and intentionally or negligently commit any act or omission which causes significant or is likely to cause significant pollution or degradation of the environment
 - unlawfully and intentionally or negligently commit any act or omission which detrimentally affects or is likely to affect the environment in such manner or
 - refuse to comply with a directive issued under this section

Any person who contravenes or fails to comply with subsection (14) is guilty of an offence and liable on conviction to a fine not exceeding R1million or to imprisonment for a period not exceeding 1 year or to both such a fine and such imprisonment.

4.9 Failure to Comply with Environmental Considerations

Within the provisions of the relevant environmental legislation, there are a number of penalties for non-compliance or offences. Below a few extracts are presented for information purposes, however these must not be read in isolation and the reader is reminded that there are other acts that may be applicable to the relevant project:

- NEMA Section 24F(2): It is an offence for any person to fail to comply with or to contravene the conditions applicable to any environmental authorization granted for that listed activity. 24F(4) A person convicted for an offence under subsection 2 is liable to a fine not exceeding 5 million rand or to imprisonment not exceeding 10 years or to both such a fine and imprisonment
- NEMA Section 34(6): Whenever any manager, agent or employee does or omits to do an act which it had been his or her task to do, or to refrain from doing on behalf of the employer and which would be an offence under any provision listed in Schedule 3 (relates to all environmental related acts) for the employer to do or omit to do, he or she shall be liable to be convicted and sentenced in respect thereof as if he or she were the employer

- NWA Section 151 (1): “No person may fail to comply with any condition attached to a permitted water use (Water Use License)”
- NWA Section 151 (2): “Any person who contravenes any provision of subsection 1 is guilty of an offence and liable, on the first conviction, to a fine or imprisonment for a period not exceeding 5 years or to both a fine and such imprisonment (10 years for second conviction)”
- In addition, if anyone is convicted of an offence under the act which has resulted in harm, loss or damage to any other person, the court may award damages to be paid by the accused or convicted
- NWA Section 154: Makes provision that it’s not only the applicant that may be liable but also an employee or agent acting on their behalf
- In terms of the MPRDA, Section 98, any person is guilty of an offence if he or she fails to comply with the requirements of the issued mining permit
- MPRDA Section 99 (1a): any person convicted of an offence in terms of the MPRDA is liable to a fine not exceeding R100, 000 or to imprisonment to a period not exceeding 2 years or to both such fine and imprisonment.

It is recommended that a procedure for non-compliances (i.e. incentives or disincentives for conformance and non-conformance with the EMPR requirements) must be employed to ensure that the EMPR is adequately implemented. The system to be used must be determined before mining commences, included in the tender documents and contracts, and made clear to all project workers. The system may include that the independent ECO can be authorised to impose spot fines on the Contractor and/or his subcontractors for any of the transgressions detailed below:

- Littering on site
- Lighting of illegal fires on site
- Persistent or un-repaired oil leaks
- Any persons, vehicles or equipment related to the Contractor’s operations found within the designated “No - Go” areas
- Any vehicles being driven in excess of designated speed limits
- Removal and/or damage to fauna, flora or heritage objects on site
- Legal contraventions

Such fines should be issued in addition to any remedial costs incurred as a result of non-compliance with the Environmental Specifications and or legal obligations.

5. Description of Impact management objectives including management statements

5.1 Determination of closure objectives

The following list serves to guide the setting of environmental objectives for mine closure:

- The majority of the Project area has gentle slopes of between 0° and 3°.
- The Project area is characterised by a very low plant diversity and endemism.
- The predominant soil type in the mining permit area is of a clayey nature.

- Existing mining and industrial operations in close proximity¹
- Existing residential and related infrastructure in close proximity.

Measures required containing or remedying any causes of pollution or degradation or migration of pollutants, both for closure of the mine and post-closure are listed below:

- Implement a waste management procedure for general and hazardous waste on site.
- Ensure immediate clean-up of any spills as per the emergency response procedures.
- Establish and maintain dirty stormwater control measures in line with regulatory requirements, until such time as potentially polluting areas are rehabilitated
- Contain pollutants at source by storing and handling potentially polluting substances on impermeable substrates, within bunded areas and with the capacity to contain spills.
- Control dust emissions through the implementation of the air quality management plan; and
- Rehabilitate the site in line with a detailed closure plan to be developed prior to decommissioning.

5.2 Volumes and rate of water use required for the operation

Approximately 1 000 litres of water per day will be required for the ablutions and use on site. Additional quantities of water will be required for dust suppression.

5.3 Has a water use licence has been applied for?

No mining activities will occur within identified watercourses. No water use license has been applied for as part of this Mining Permit application. Water required for dust suppression will be trucked in.

5.4 Impacts to be mitigated in their respective phases

The proposed mitigation measures and its compliance with the relevant standards are presented in Table 11 below.

Note that no mitigation measures will be discussed for the Construction phase as mining has already taken place on the site, being legally or illegally.

Project Activities	Aspects Affected	Phase	Size and Scale of Disturbance	Mitigation Measure	Compliance with Standards	Time Period for Implementation
Construction and Operational Phase						
Storage of fuel and lubricants in temporary facilities.	Soils, Land Capability and Land Use.	LoM	Very limited	<ul style="list-style-type: none"> All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; All vehicles and machinery to be serviced in a hard park area or at an off-site location; Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); Hydrocarbon storage facilities must be in a hard park bunded facility; and Vehicles with leaks must have drip trays in place. 	<ul style="list-style-type: none"> Emergency Response Plan; and Vehicle Maintenance Plan. 	As required through the LoM.
Topsoil removal and stockpiling; and extraction and transportation of ore.	Air Quality	Construction Phase	Local	<ul style="list-style-type: none"> The area of disturbance must be restricted to the required footprint size; Ensure that only vegetation within the designated areas is removed; 	<ul style="list-style-type: none"> Dust Management Plan; and Dust Monitoring Programme 	Ongoing and daily during Operational Phase.

<p>Vehicular activity on haul roads; and operation of mining equipment. Crushing and screening of ore in mobile plant</p>				<ul style="list-style-type: none"> • The drop heights used during the loading of the cleared soils into trucks should be minimised as far as possible; and • Ensure that dust suppressants are applied exposed surfaces and unpaved roads. 		
	<p>Bio-diversity</p>	<p>Operational</p>	<p>Municipal</p>	<ul style="list-style-type: none"> • Ensure site clearing is restricted to the footprint of the designated areas to limit the degradation and destruction of natural habitats; • Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation; • Topsoil that will be used for rehabilitation within one year must be stockpiled according to the Rehabilitation Plan. Compaction of stockpiled topsoil must be avoided to ensure the seed bank is viable; and • Alien invasive vegetation to be identified and removed throughout the LoM. 	<p>Conservation Management Plan and Alien Invasive Management Plan</p>	<p>Ongoing and daily during Operational Phase.</p>

	Surface water	Operational	Local	<ul style="list-style-type: none"> • Ensure site clearing is limited to the designated areas, and • Implement Stormwater Management designs to prevent erosion. 	Stormwater Management Plan and Rehabilitation Plan	Ongoing and daily during Operational Phase.
	Soils, Land Capability and Land Use	Operational	Local	<ul style="list-style-type: none"> • Ensure soils are stripped using an excavator bucket and dump trucks; • Minimise topsoil stockpile heights as far as possible; • Ensure soils are stripped when unsaturated to prevent and avoid soil compaction; • Ensure soils are stripped in accordance with the Rehabilitation Soil Management Plan. It is recommended that the topsoil (upper 0.3 m) and subsoil (0.7 m to 0.9 m in thickness) of the soil profile should be stripped and stockpiled separately; • Ensure soils are stripped and stockpiled prior to the excavation of infrastructure foundations; and • Implement Stormwater Management designs to prevent erosion. 	Soil Rehabilitation Plan and Stormwater Management Plan	Ongoing and daily during Operational Phase.

	Noise	LoM	Project area	<ul style="list-style-type: none"> • Ensure site clearing activities are only undertaken during daylight hours; • Mining related machines and vehicles should be serviced on a regular basis to ensure noise suppression mechanisms are effective (e.g. installed exhaust mufflers); and • Ensure equipment and machinery is switched off when not in use. 	Regular Vehicle Inspections	Ongoing and daily during Operational Phase.
Stockpiling material	Air quality	Operational	Municipal	Monitor the establishment of vegetation.	Dust Management Plan	Monthly during operational phase.
	Surface water	Operational	Local	Ensure a Stormwater Management Plan is implemented.	Stormwater management plan.	Ongoing and daily during Operational Phase.
	Soils, Land Capability and Land Use	Operational	Local	<ul style="list-style-type: none"> • Ensure stockpiles are maintained in a fertile and erosion free state by sampling and analysing for macro nutrients and pH on an annual basis; • Ensure topsoil stockpiles are vegetated to prevent erosion; • Ensure access to the stockpiles is restricted to prevent unauthorised use and borrowing of topsoil; • Ensure topsoil stockpiles are clearly demarcated; and 	Stormwater management plan.	Ongoing and daily during Operational Phase.

				<ul style="list-style-type: none"> • Implement Stormwater Management designs to prevent erosion. 		
Waste generation and disposal	Surface water	Operational	Local	<ul style="list-style-type: none"> • Waste must be separated at source and stored in appropriately designated areas for disposal at a licensed facility or by a reputable contractor; • Waste must be separated at source and stored in demarcated areas; • Reputable and accredited contractors will be used for the transport and disposal of wastes and demolished material off-site. 	Waste management	Weekly through LoM
	Soils, Land Capability and Land Use	Operational	Very limited	Ensure wastes are separated at source and disposed of by a reputable contractor.	Waste management	Weekly through LoM
	Visual	Operational	Limited	<ul style="list-style-type: none"> • Limit the footprint area of the waste management facilities; • Waste must be stored away from surface water and drainage lines; and • General and hazardous waste must be removed and disposed of frequently at a registered disposal site. 	Waste management	Weekly through LoM

Decommission Phase

Vehicular activity: removal of mobile plant/equipment and vehicles. Demolition/removal of portable and related infrastructure	Air quality	Decommissioning	Local	<ul style="list-style-type: none"> • The area of disturbance must be restricted to the required footprint size. • Demolition activities should be undertaken judiciously during windy periods (winds greater than 5.4 m per second); and • The area of disturbance must be minimised to limit the area exposed to wind erosion. 	Dust management and monitoring plan.	Ongoing during decommissioning phase.
	Bio-diversity	Decommissioning	Limited	<ul style="list-style-type: none"> • Restrict vehicles and machinery to existing roads and designated areas to prevent vegetation destruction; • Alien invasive vegetation to be identified and removed throughout the LoM; and • Establish and implement an Alien Invasive Management Programme. 	Stormwater Management Plan, Conservation Management Plan and Alien Invasive Management Plan	Ongoing during decommissioning phase.
	Surface water	Decommissioning	Local	<ul style="list-style-type: none"> • Reputable and accredited contractors will be used for the transport and disposal of wastes and demolished material off-site; All potential hydrocarbon spillages and leaks to be cleaned up immediately and the soils remediated; • Spillage control kits will be readily available on site to 	Emergency Response Plan and Vehicle Maintenance Plan	Ongoing during decommissioning phase.

				<p>contain the mobilisation of contaminants and clean up spills; and</p> <ul style="list-style-type: none"> • Vehicles with leaks must have drip trays in place. 		
	Soils, Land Capability and Land Use	Decommissioning	Very limited	<ul style="list-style-type: none"> • Ensure that demolished infrastructure is removed off-site and disposed of by a reputable contractor; • All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; • Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; • All vehicles and machinery to be serviced in a hard park area or at an off-site location; and • Vehicles with leaks must have drip trays in place. 	Emergency Response Plan and Vehicle Maintenance Plan	Ongoing during decommissioning phase.
	Noise	Decommissioning	Project area	<ul style="list-style-type: none"> • Ensure demolition activities only take place during daylight hours; • Demolition related machines and vehicles should be serviced on a regular basis to ensure noise suppression mechanisms are effective (e.g. 	Regular vehicle inspections.	Daily throughout the decommissioning phase.

				<p>installed exhaust mufflers); and</p> <ul style="list-style-type: none"> • Ensure equipment and machinery is switched off when not in use. 		
	Visual	Decommissioning	Limited	<ul style="list-style-type: none"> • Demolish all unnecessary infrastructure; • Ensure that all demolished infrastructure is removed from site's surface; and • Ensure that rehabilitated areas are rehabilitated and vegetated. 	Rehabilitation and Closure plan.	Ongoing during decommissioning phase.
Rehabilitation of the site.	Air quality	Decommissioning	Local	<ul style="list-style-type: none"> • Replacement of overburden and topsoil should be undertaken judiciously during windy days (winds speeds greater than 5.4 m per second); • Ensure the rehabilitated areas are vegetated to prevent erosion and surface exposure to winds; and • Monitor the establishment of vegetation. 	Rehabilitation plan.	Ongoing during decommissioning phase.
	Bio-diversity	Decommissioning	Limited	<ul style="list-style-type: none"> • Vegetate disturbed and rehabilitated area with indigenous vegetation; • Monitor vegetation establishment and implement erosion control measures, if required; 	Rehabilitation Plan and Alien Invasive Management Plan.	Ongoing during decommissioning phase.

				<ul style="list-style-type: none"> • Alien invasive vegetation to be identified and removed throughout the LoM; and • Establish and implement an Alien Invasive Management Programme. 		
	Surface water	Decommissioning	Local	<ul style="list-style-type: none"> • Rehabilitation activities must be monitored to ensure that the pre-mining drainage pattern is emulated, and that vegetation establishment is successful; • The backfilled areas should be vegetated as soon as possible to prevent dust and siltation of the water bodies; • Where rehabilitation (grass seeding of topsoil cover) is not effective, the associated soil erosion must be mitigated by installing silt traps in affected areas. 	Rehabilitation plan.	Ongoing during decommissioning phase.
	Soils, Land Capability and Land Use	Decommissioning	Very limited	<ul style="list-style-type: none"> • Ensure that the topography of rehabilitated areas takes the pre-mining landscape into consideration and that the topography is free draining; • Ensure that the soil layers are backfilled in reverse order of the stripping and the subsoil must underlie the topsoil; 	Emergency Response Plan and Vehicle Maintenance Plan.	Ongoing during decommissioning phase.

				<ul style="list-style-type: none"> • All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; • Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; • All vehicles and machinery to be serviced in a hard park area or at an off-site location; • Storage of hydrocarbons and explosives must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); • Vehicles with leaks must have drip trays in place; • Investigate soil quality prior to establishment of vegetation on rehabilitated areas through representative sampling and laboratory analysis. Soil fertility and acidity must be corrected prior to vegetation establishment, if required; and • Monitor vegetation establishment 		
	Noise	Decommissioning	Project area	<ul style="list-style-type: none"> • Rehabilitation related machines and vehicles should be serviced on a regular basis 	Regular vehicle inspections.	Ongoing during decommissioning phase.

				<p>to ensure noise suppression mechanisms are effective (e.g. installed exhaust mufflers); and</p> <ul style="list-style-type: none"> • Ensure equipment and machinery is switched off when not in use. 		
	Visual	Decommissioning	Limited	<ul style="list-style-type: none"> • The open cut must be backfilled as much as possible; • The rehabilitated area must be contoured and profiled to create a free-draining topography emulating the pre-mining topography; and • Topsoil must be backfilled over the rehabilitated area and vegetated. 	Rehabilitation and Closure plan.	Ongoing during decommissioning phase.

Table 11: Impacts to be mitigated in their respective phases.

6. Impact management outcomes

A description of impact management outcomes, identifying the standard of impact management required for the various environmental aspects are discussed throughout this document and will not be elaborated on further in this section.

7. Impact Management Actions

The recommended action plans for impact management are set out throughout this document and will not be elaborated on further in this section.

8. Financial Provision

The requirement for final rehabilitation, decommissioning and closure stems primarily from the legislative requirements of the MPRDA and NEMA. On 20th November 2015 the Minister promulgated the Financial Provisioning Regulations under the NEMA. The Regulations aim to regulate the determination of financial provision as contemplated in the NEMA for the costs associated with the undertaking of management, rehabilitation and remediation of environmental impacts from prospecting, mining or production operations through the lifespan of such operations and latent or residual environmental impacts that may become known in the future. These regulations provide for, inter alia:

- Determination of financial provision: An Applicant or holder of a right or permit must determine and make financial provision to guarantee the availability of sufficient funds to undertake rehabilitation and remediation of the adverse environmental impacts of prospecting, mining or production operations, as contemplated in the Act and to the satisfaction of the Minister responsible for mineral resources.
- Scope of the financial provision: Rehabilitation and remediation; decommissioning and closure activities at the end of operations; and remediation and management of latent or residual impacts.
- Regulation 6: Method for determining financial provision – An applicant must determine the financial provision through a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for:
 - Annual rehabilitation – annual rehabilitation plan.
 - Final rehabilitation, decommission and closure at end of life of operations – rehabilitation, decommissioning and closure plan.
 - Remediation of latent defects.
- Regulation 10: An applicant must-
 - ensure that a determination is made of the financial provision and the plans contemplated in regulation 6 are submitted as part of the information submitted for consideration by the Minister responsible for mineral resources of an application for environmental authorisation, the associated environmental management programme and the associated right or permit in terms of the Mineral and Petroleum Resources Development Act, 2002.
 - Provide proof of payment or arrangements to provide the financial provision prior to commencing with any prospecting, mining or production operations.

- Regulation 11: Requires annual review, assessment and adjustment of the financial provision. The review of the adequacy of the financial provision including the proof of payment must be independently audited (annually) and included in the audit of the EMPR as required by the EIA Regulations.

Appendix 4 of the Financial Provisioning Regulations provides the minimum content of a final rehabilitation, decommissioning and closure plan (FRDCP).

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

In order to align rehabilitation initiatives with the closure objectives it is imperative to firstly define the closure objectives. Closure objectives are defined as follow:

- The holder of a mining permit must, as far as it is reasonably practicable, rehabilitate the environment affected by the mining operations to its natural or predetermined state, or to a land use which conforms to the generally accepted principle of sustainable development, through restoration, remediation, rehabilitation, and stabilisation.
- Correct allocation of closure funds according to the closure plan and ensure adequate financial provision.
- Monitoring will continue until such a time that it can be proven that there are no more negative impacts on the environment and site closure can be achieved.

In line with the above objectives, rehabilitation will include:

- All evidence of impacts associated with or resultant to mining should be rehabilitated.
- The open pit will be filled with clean building rubble.
- Soil removed by the mining activity will be replaced and shaped and the affected areas will then be rehabilitated.
- Soil/surface rehabilitation must be conducted in such a way as to ensure that the site is left stable with no further impacts relating to soil erosion.
- The topography of the disturbed area should as far as possible, be reinstated to its former natural state.
- All new tracks will be rehabilitated.
- Monitoring on the success of rehabilitation i.e. vegetation establishment, should be conducted regularly to ensure that the sites have been rehabilitated successfully; and
- Should rehabilitation prove not to have been successful additional a fertilisation and seeding programme must be followed by a qualified ecologist.

Closure will include some form of rehabilitation. Rehabilitation can be divided into two different streams, namely concurrent rehabilitation and final rehabilitation. Concurrent rehabilitation must be carried out along with the operations and will decrease the final liability that the mine will carry at the time of closure. This concurrent rehabilitation will be carried out within the context of the EMP. Final rehabilitation will be carried

out once the mine goes into its closure phase. This final rehabilitation will be carried out within the context of the closure plan.

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

Landowners and I&APs were consulted and provided an opportunity to comment on the draft Basic Assessment Report, EMPR including all decommissioning, closure and rehabilitation plans. Their comments have been included in this final BAR and EMPR for consideration by the DMR as part of their decision-making.

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

11.1 Integrated Rehabilitation and Closure Plan

The main aim in developing this rehabilitation plan is to mitigate the impacts caused by the mining activities and to restore land back to a satisfactory standard. It is best practice to develop the rehabilitation plan as early as possible so as to ensure the optimal management of rehabilitation issues that may arise. It is important that the project's closure plan is defined and understood before starting the process and is complementary to the rehabilitation goals. Rehabilitation and closure objectives need to be tailored to the project and be aligned with the EMPR.

The overall rehabilitation objectives for this project are as follows:

- Maintain and minimise impacts to the ecosystem within the study area.
- Re-establishment of the pre-developed land capability to allow for a suitable post-mining land use.
- Prevent soil, surface water and groundwater contamination.
- Comply with the relevant local and national regulatory requirements.
- Maintain and monitor the rehabilitated areas.

Successful rehabilitation must be sustainable, requires an understanding of the basic baseline environment and project management to ensure that the rehabilitation program is a success.

It is noted that an application for environmental authorisation must be submitted for closure in accordance with Listing Notice 1 Activity 22:

The decommissioning of any activity requiring –

- I A closure certificate in terms of Section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) or
- II A prospecting right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure.

11.2 Phase 1: Making Safe

The Mining activity will result in an open pit. The purpose of rehabilitation will be to ensure the site becomes safe for humans and animals. The open pit will be filled with overburden. The overburden will be loaded, trucked and placed into the pit, and the topography in the area adjacent to the pit shaped to ensure that a free draining topography results.

Once the pit has been backfilled, 300mm thick topsoil or soft overburden in place of soil will be spread on rehabilitated areas. Once placed, the “growth medium” should then be fertilised, ripped and revegetated. A small topsoil stockpile should be left for remedial work.

The following actions are required to meet the objectives of this phase:

- Remove all the facilities and equipment from the site.
- Inert waste with a salvage value to individuals such as scrap metal, building materials, etc. will be removed and disposed of at a proper facility.
- The company contracted to supply fuel will be requested to remove all fuel storage and reticulation facilities.
- Those sections of haul road where a lot of Chrome spillage has occurred, will be picked up and the waste material taken back to the discard dump.
- Remove or control residual hazardous materials. Identify any potential toxic overburden or exposed strata and manage them so as to prevent environmental damage.
- Access roads around the site should be ripped for all areas except those needed to access the facilities for inspection after closure. Roads that can and will be used by other users post closure should, however, be left provided this is agreed upon by all parties concerned. For the rehabilitation of roads, a cost has been allocated to rip the area, add 300 mm topsoil and vegetate.
- Negotiations will take place with land owners to establish which sections of haul road they will require. The extra portions not required will be left and the remainder ripped. This would normally mean that the edges or verges are ripped and the centre portion remains. They will be responsible for maintaining the roads after closure.

11.3 Phase 2: Landform Design, Erosion Control and Revegetation

Landform, erosion control and re-vegetation are important parts of the rehabilitation process. Landform and land use are closely interrelated, and the landform should be returned as closely as possible to the original landform. Community expectations, compatibility with local land use practices and regional infrastructure, or the need to replace natural ecosystems and faunal habitats all support returning the land as closely as possible to its original appearance and productive capacity.

This requires the following:

- Deep rip compacted surfaces to encourage infiltration, allow plant root growth and key the topsoil to the subsoil, unless subsurface conditions dictate otherwise.
- Reinstate natural drainage patterns disrupted by mining wherever possible.
- Characterise the topsoil and retain it for use in rehabilitation. It is preferable to reuse the topsoil immediately rather than storing it in stockpiles. Only discard if it is physically or chemically undesirable, or if it contains high levels of weed seeds or plant pathogens.

- If topsoil is unsuitable or absent, identify and test alternatives substrates, e.g. overburden that may be a suitable substitute after addition of soil improving substances.
- Lime and superphosphate are applied to the surface.
- These ameliorants are then incorporated by deep ripping, which penetrates 100 mm through the soil into the underlying overburden material.
- Fertilizer is applied as part of seedbed preparation.
- Consider spreading the cleared vegetation on disturbed areas.
- Re-vegetate the area with plant species consistent with the post mining land use.
- The site is then mulched together with an indigenous grass seed mix. This is to stimulate the long term establishment of indigenous vegetation and to reduce erosion during early plant growth.

11.4 Phase 3: Monitoring and Maintenance

The post-operational monitoring and management period following decommissioning of mining activities must be implemented by a suitable qualified independent party for a minimum of one (1) year unless otherwise specified by the Competent Authority.

Maintenance will specifically focus on annual fertilising the rehabilitated area (where required), control of all other alien plants and general maintenance, including rehabilitation of cracks, subsidence and erosion gullies. Continuous erosion monitoring of rehabilitated areas and slopes should be undertaken and zones with excessive erosion should be identified. The cause of the erosion should be identified, and rectified. Zones with erosion will need to be repaired with topsoil.

The monitoring activities during this period will include but not be limited to:

- Biodiversity monitoring.
- Re-vegetation of disturbed areas where required.

Provision must be made to monitor any unforeseen impact that may arise as a result of the proposed mining activities and incorporated into post closure monitoring and management. The small-scale mine shall continue to monitor and manage rehabilitation areas until the vegetation is self-sustaining and meets the requirements of the landowner or land manager, until their management can be integrated into the management of the surrounding area.

11.5 Post-Closure Monitoring and Maintenance

Prior to decommissioning and rehabilitation activities, a monitoring programme shall be developed and submitted to the relevant authority for approval, as a part of the Final Rehabilitation Plan. The programme is to include proposed monitoring during and after the closure of the trench site and related activities.

It is recommended that the post-closure monitoring include the following:

- Confirmation that any waste, wastewater or other pollutants that is generated as a result of decommissioning will be managed appropriately, as per the detailed requirements set out in the Final Rehabilitation Plan.
- Confirmation that all de-contaminated sites are free of residual pollution after decommissioning.

- Confirmation that acceptable cover has been achieved in areas where natural vegetation is being re-established. 'Acceptable cover' means re-establishment of pioneer grass communities over the disturbed areas at a density similar to surrounding undisturbed areas, non-eroding and free of invasive alien plants.
- Confirmation that the Mining Permit site is safe and is not resulting in a pollution hazard.

Annual environmental reports will be submitted to the Designated Authority and other relevant Departments for at least one year post-decommissioning. The frequency and duration of this reporting period may be increased to include longer term monitoring, at intervals to be agreed with the Designated Authority.

The monitoring reports shall include a list of any remedial action necessary to ensure that infrastructure that has not been removed remains safe and pollution free and that rehabilitation of project sites are in a stable, weed and free condition.

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

The closure objectives are regarded as guidelines for what the rehabilitation plan should entail. The rehabilitation plan will detail how rehabilitation will need to be undertaken and will include management of soil resources and placement of soil once mining is completed. In addition to this the rehabilitation plan also contains information associated with re-shaping of the landforms, operational and post-closure water management, replacement of soils, re-vegetation of the landscape; and monitoring and maintenance. The successful rehabilitation of the site will ensure the rehabilitated area is free draining, erosion free and produce sustainable vegetation as per the closure objectives stated above.

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

The financial provision was calculated by means of the DMRE's standard method for assessment of mine closure. The closure liability only focused on the proposed mining activities and the cost for rehabilitation and closure of the proposed site according to the DMRE Guideline format is R 1 279 684. A summary of the calculated closure liability costs is presented in Table 12.

Final Basic Assessment Report for Moopetsi Chrome Investments (Pty) Ltd. Mining Permit Application

MOOPETSI CHROME INVESTMENTS (PTY) LTD							
NW 30/5/1/3/2/10802 EM.							
FINANCIAL PROVISION FOR 2021.							
No	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	MasterRate	Multiplication factor	Weighting factor	Amount- SAR
1	Dismantling of processing plant and related structure (including overland conveyor and powerlines)	m ³	0	0	1	1.1	R 0
2(A)	Demolition of steel buildings and structures	m ²	0	0	1	1.1	R 0
2(B)	Demolition of concrete buildings and structures	m ²	0	0	0	0	R 0
3	Rehabilitation of access roads	m ²	500	40.13	1	1.2	R 24,078
4(A)	Demolition and rehabilitation of electric railway lines	m	0	0	0	0	R 0
4(B)	Demolition and rehabilitation of non-electric railway lines	m	0	0	0	0	R 0
5	Demolition of housing and/or administrative facilities	m ²	0	0	1	1.1	R 0
6	Open cast rehabilitation including final voids and ramps	ha	3	228325.8	0.5	1.1	R 376,738
7	Sealing of shafts, adits and inclines	m ³	0	0	0	0	R 0
8(A)	Rehabilitation of overburden and spoils	ha	0.5	156785.29	1	1.2	R 94,071
8(B)	Rehabilitation of processing waste deposit and evaporation ponds (basic salt-producing waste)	ha	0	0	1	1.1	R 0
8(C)	Rehabilitation of processing waste deposit and evaporation ponds (acidic metal-rich waste)	ha	0	0	0	0	R 0
9	Rehabilitation of subsided areas	ha	0	0	0	0	R 0
10	General surface rehabilitation	ha	3	124197.9	1	1.1	R 409,851
11	River Diversions	ha	0	0	0	0	R 0
12	Fencing	m	0	0	0	0	R 0
13	Water Management	ha	0	0	1	1.1	R 0
14	2 to 3 years maintenance and aftercare	ha	3	16528.24	1	1.1	R 54,543
15	Specialist studies	Sum					R 0
					Sub Total 1		R 959,288
1	Primary and General	6.0% if SubTotal1 > 100000000					
		12.0% if SubTotal1 < 100000000					R 57,557
7	Contingency	10.0% of SubTotal1					R 95,928
					Sub Total 2		R 1,112,768
					Add 15% VAT		R 166,919
					GRAND TOTAL		R 1,279,684

Table 12: Financial Provision.

14. Confirm that the financial provision will be provided as determined

Moopetsi will update its financial provision annually and will contribute to a trust fund or other form of financial guarantee for rehabilitation provision, as required in terms of Section 24P of NEMA, as amended. Contributions to the fund will be made in accordance with the requirements of tax legislation and policy and this will be made up in a manner acceptable to the Department of Mineral Resources and Energy (DMRE).

15. Monitoring compliance with and performance assessment

15.1 Monitoring of impact management actions

On-going monitoring and management measures need to be implemented to provide the early warning systems necessary to avoid environmental emergencies. The relevant weekly, monthly and quarterly monitoring programmes of respective environmental aspects will indicate whether mitigation or intervention is required. Should circumstances lead to unacceptable risks, emergency systems and procedures have been designed and will be implemented in the case of an emergency to prevent or minimise the consequential environmental damage.

The most crucial aspect of the emergency system is the identification and communication of the emergency to the appropriate persons. Consequently, the names of the appropriate contact person, together with their contact numbers will be prominently displayed around the facility. The contact details will be updated on a regular basis. First-party employees, such as security, safety superintendents, mine overseers and environmental officers, will be trained to respond to the responsible personnel in the event of an emergency.

Management activities which will be conducted to control the Project actions, activities or processes which have the potential to pollute or result in environmental degradation are detailed below:

15.1.1 Air quality

Dust Monitoring Programme

The monitoring of dust deposition rates will commence once the Mining Permit is granted. It is advised that such monitoring be continued during the project life to establish historical repository of data needed to fully understand/address fugitive and airborne dust emissions from the proposed Moopetsi operation. If sources of fugitive dust are managed effectively, there will be overall reduction in exposure concentrations, associated ailments, reduced risk of damage to property, improved visibility, and fewer disturbances to existing flora and fauna habitats.

15.1.2 Soil management

Considering the importance of and formation timeframes associated with soil properties, it is evident that managing soil stockpiles adequately must have a high priority for the Moopetsi Project. The topsoil and subsoil must be stored separately, and the topsoil stockpile must be limited in height to prevent compaction.

Progressive monitoring of the stripping, stockpiling, shaping of rehabilitated areas and the replacement of topsoil will ensure the successful post-mining land and soil rehabilitation. Monitoring should take place on at least a six monthly basis and should involve the following:

- Inspection of stripping depths and the separation of topsoil and subsoil;
- Inspection of the stockpiles to manage degradation, erosion and pollution;
- Inspection of the rehabilitated areas to ensure that the pre-mining drainage lines are emulated; and
- Random inspections of soil thickness on rehabilitated areas.

In light of the above, the following recommendations for the stripping and stockpiling of soils are suggested:

- Soil stockpiles must not exceed a height of 2-3 m (practical tipping height for dump trucks) to prevent compaction;
- Stockpiles should be re-vegetated as quickly as possible to reduce or prevent erosion;
- Limit the slopes on the stockpiles to 1:3 to reduce erosion losses, or place a smaller berm around the edge of each stockpile to contain any erosion;
- The major concern for this area is the potential for erosion due to the steep slopes. Stockpiles and reshaped land must be re-vegetated as quickly as possible to reduce the erosion hazards.

15.2 Monitoring and Reporting frequency

Table 13 discusses the monitoring and reporting frequency.

15.3 Responsible persons

Moopetsi will establish and appoint an environmental consultant, who will be provided with all necessary resources to carry out the management of all environmental aspects of the site as a primary function, for example:

- Compliance with environmental legislation and EMP commitments;
- Developing environmental emergency response procedures and coordinating personnel during incidents;
- Manage routine environmental monitoring and data interpretation;
- Environmental troubleshooting and implementation of remediation strategies; and
- Closure planning.

Table 13 sets out roles and responsibilities with respecting to the monitoring programme.

15.4 Time period for implementing impact management actions

Table 13 captures the time period for implementing impact management actions.

16. Mechanism for monitoring compliance

16.1 Performance Assessments

Performance assessments will be conducted by professional independent consultants on an annual basis throughout the life of mine, to monitor the EMP process and the rehabilitation process and advice on any mitigation measures which need to be added to the existing programmes.

A Report will be submitted to mine management annually covering all aspects investigated during the audit and providing suggestions and recommendations as to how the rehabilitation programme is progressing, what the general environmental performance of the Project is, and any improvements which could be made.

An assessment of compliance to applicable legislation will be included in the assessment and will take into consideration the management principals and strategies stated in the Environmental Management Programme and assess whether this strategy is providing the required results. Any flaws found in the rehabilitation process will be included in the Report along with the recommended mitigation measures.

A Report will be compiled on an annual basis to mine management, who may then decide the appropriate actions to be taken, along with an updated financial provision.

The following are identified impacts which require monitoring programmes:

- Hydrocarbon spillages;
- Ablution facilities;
- Domestic waste; and
- Fires.

The functional requirements for the above monitoring programmes are described below:

- Removal of vegetation: Only the necessary vegetation, required for the establishment of the site, will be cleared and indigenous trees will be avoided;
- Soil erosion: All topsoil removed will be stored in a stockpile and protected from erosion for use during the rehabilitation. Weekly site inspection by the site manager will take place to ensure that all soil erosion mitigation measures are in place and implemented;
- Dust and noise: Roads should be sprayed with water to suppress dust;
- Machinery: Cleaning of machinery and equipment will be performed in a dedicated area to avoid the spread of alien invasive floral species to other areas and will take place before leaving the mining site;

- Access roads: Machinery operators and drivers should be made aware of the possible safety hazards that they could pose;
- Use of hydrocarbons: During mining, a spill tray will be placed under the machinery to collect any hydrocarbon leaks and spillages. Should spillages occur, the soil will be removed and treated as hazardous waste using bioremediation techniques. Should the soil not be adequately treated on-site, the soil should be removed from the site and disposed of at a waste handling facility;
- Ablution facilities: The contents of chemical toilets should be emptied on a regular basis, at least weekly, to prevent spillages (as an alternative french drains may be used);
- Domestic waste: Bins will be placed at the site to collect the domestic waste and will be disposed of at a registered waste handling facility. The waste in the rubbish bins will be removed daily by the contractor;
- No open fires are permitted in the Project area.

Table 13 sets out the method of monitoring the implementation of the impact management actions, the frequency of monitoring the implementation of the impact management actions, an indication of the persons who will be responsible for the implementation of the impact management actions, the time periods within which the impact management actions must be implemented and the mechanism for monitoring compliance with the identified impact management actions.

Activities	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
	Dust generation	The monitoring of dust deposition rates will commence once the Permit is granted.	Environmental Control Officer Mine management	Dust monitoring will take place. Dust buckets will then have to be monitored every month, with a Report compiled every quarter. Should the Reports indicate that the NEM: AQA NDCR are exceeded, additional mitigation measures must be implemented.
	Loss of soil resources and land capability	<ul style="list-style-type: none"> • Inspection of stripping depths and separation of topsoil and subsoil during stockpiling; • Inspection of stockpiles to manage and prevent erosion; • Inspection of rehabilitated areas to ensure that the surface is free-draining; • Random inspections of soil thickness on rehabilitated areas; and • Fertility and acidic analysis and amelioration procedures prior to vegetation establishment. 	Mine Manager Environmental Control Officer	<p>Inspection of stripping depths must be ongoing during site clearance activities and stockpiling to ensure that soils are stored separately. Stockpiles should be monitored on a monthly basis to manage potential soil erosion. The testing and analysis for macro nutrients and pH must be sampled on an annual basis and results kept to plan for rehabilitation.</p> <p>The rehabilitation activities must be monitored, and random samples selected for to test for soil thickness. The land must be shaped and sampled and remediation techniques implemented, if necessary, prior to vegetation establishment.</p>

Table 13: Monitoring and Management of Environmental Impacts.

16.2 Indicate the frequency of the submission of the performance assessment/environmental audit Report

In accordance with mining regulation R527, an independent professional will conduct an EMP performance assessment every two years. The site's compliance with the provisions of the EMP and the adequacy of the EMP Report relative to the on-site activities will be assessed in the performance assessment.

As a minimum, the following documents will be submitted to the relevant authorities from the start of construction until mine closure:

- EMP performance assessment, submitted every two years to DMR;
- Updated closure and rehabilitation cost estimate, submitted annually to the DMR;
- Air monitoring reports, submitted annually to the DMR and GDARD.

17. Environmental awareness plan

General environmental awareness will be fostered among everyone working on this Project (including consultants and contractors) to encourage the implementation of environmentally sound practices throughout its duration. This will ensure that environmental incidents are minimised and environmental compliance maximised.

The purpose of an Environmental Awareness Plan is to outline the methodology that will be used to inform the mine's employees of any environmental risks which may result from their work and the manner in which the risks must be dealt with in order to avoid contamination or the degradation of the environment. The awareness plan is primarily a tool to introduce and describe the requirements of the range of environmental and social plans for the Project during the Life of the Project.

The environmental awareness plan ensures that training needs are identified and appropriate training is provided. The environmental awareness plan should communicate:

- Importance of conformance with the environmental policy, procedures and other requirements of good environmental management;
- The significant environmental impacts and risks of an individual's work activities and the environmental benefits of improved performance;
- Individual's roles and responsibilities in achieving the aims and objectives of the environmental policy; and
- The potential consequences of not complying with environmental procedures.

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

For the environmental awareness policy to be effective, the issues raised through it need to be communicated through meetings, consultations and progress reviews. The following are the minimum steps that will be taken to ensure communication is effective:

- The agendas of all company board meetings will have an item where issues environmental Projects are discussed, and feedback is given;
- Provide progress Reports on the achievement of policy objectives and level of compliance with the approved EMPR, to the DMR;
- Ensure environmental issues are realised at monthly mine management executive committee meetings and at all relevant, mine wide meetings, at all levels; and
- Ensure environmental issues are discussed at all general liaison meetings with local communities and other I&APs.

17.2 Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment

17.2.1 Environmental response plan

In the event of an emergency, an emergency response plan must be consulted. This plan will be drawn up and placed around the mine where it will be easily viewed. The plan will contain evacuation routes and a list of emergency numbers. It is advisable that the mine tests the emergency response plan by running training and simulations, to identify any weaknesses.

Emergencies that have been listed here include accidents, fires, hydrocarbon spillages and flooding.

If the emergency has potential to affect surrounding communities, they will be alerted via alarm signals or contacted in person. The surrounding community will be informed prior to mining taking place, of the potential dangers and emergencies that exist, and the actions to be taken in such emergencies.

Communication is vital in an emergency and thus communication devices, such as mobile phones, radios, pagers or telephones, must be available around the mine. A checklist of emergency response participants must be consulted, and the relevant units notified. In this case, many of the emergency services will be sourced from Rustenburg or Sun City Village the nearest centres.

The checklist includes:

- Fire department.
- Police.
- Emergency health services such as ambulances, paramedic teams, poisons centres.
- Hospitals, both local and for evacuation for specialist care.
- Public health authorities.
- Environmental agencies, especially those responsible for air, water and waste issues.
- Other industrial facilities in the locality with emergency response facilities.
- Public works and highway departments, port and airport authorities; and

- Public information authorities and media organisations.

Emergency situations

The following is a list of potential emergencies that could occur:

1. Accidents

In the case of a medical accident or problem, a first aid kit will be available on the mine.

A checklist of emergency response participants must be consulted, and the relevant units notified. In this case, many of the emergency services will be sourced from the nearest main town, Johannesburg.

2. Fire

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

Procedure:

- The alarm will be activated to alert occupants of the mine in the event of a fire.
- In the event of a small fire the fire extinguishers placed around the mine should be used to contain and extinguish the fire.
- In the event of a large fire, the local area council's fire department will be consulted; and
- All staff will receive training in response to a fire emergency on site.

3. Hydrocarbon spillage

Hydrocarbons such as diesel, petrol, and oil will be kept on site as fuel for the mine machinery. In the event of a spillage, procedures must be put into place to ensure that there are minimal impacts to the surrounding environment.

Procedure:

- In the event of a small spillage, the soil will be excavated and treated.
- In the event of a large spillage, adequate emergency equipment for spill containment or collection such as additional supplies of booms and absorbent materials will be available and if required, a specialised clean-up crew will be called in to decontaminate the area; and
- After a major spill water quality samples of any water sources utilised within 500m from the spill will be monitored for hydrocarbons for the next three months on a monthly basis, and further remediation recommended based on the results thereof.

4. Flooding

There is potential for flooding during the rainy season, but particularly November to January when severe thunderstorms can occur. This could result in a large volume of water flowing downstream and could cause major damage to equipment and endanger the lives of employees on site. Heavy rainfall could also cause the pollution control dam to overflow and could flood mine workings. If this water leaves the sites it will enter water resources on site and cause contamination. Procedures must be put in place to ensure that there is a quick response to these events and damage is kept to a minimum.

Procedure:

- DWS's flood warning system should be reviewed annually;
- The use of emergency pumps will occur if the water floods the pits, where it may be exposed to contamination; and

Mine management should be made aware of any such event so they can take appropriate action to ensure production losses are kept to a minimum.


18. Specific information required by the Competent Authority

The financial provision for the environmental rehabilitation and closure requirements of mining operations is governed by Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) and National Environmental Management Act, 1998, Act 107 of 1998), as amended, (NEMA) which provides in Section 24P that the holder of a mining right must make financial provision for rehabilitation of negative environmental impacts. The financial provision will be reviewed annually.

19. Undertaking

The EAP herewith confirms:

- the correctness of the information provided in the Reports
- the inclusion of comments and inputs from stakeholders and I&APs;
- the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed.

Signature of the Environmental Assessment Practitioner:	
Name of company:	Bateleur Environmental & Monitoring Services (Pty) Ltd
Date:	7 December 2021

APPENDIX 1: EAP CV

GERT PRETORIUS

<https://www.linkedin.com/in/gert-pretorius-799ba914/>

PROFESSIONAL PROFILE

Senior Accomplished Environmental Management Specialist with over 23 years' consulting and functional experience in integrated environmental management. Obtained a proven track record through managing several projects in the public and the private entities across mining, industrial and infrastructural sectors.

Prowess in strategic planning, Environmental Impact Assessment (EIA) and post-EIA ecological planning for environmental impact mitigation. Advocate and promote the concept of sustainable development of natural/physical resources for the best environmental outcome in projects. Champion environmental planning, monitoring and control towards excellence in environmental performances.

Key Expertise:

- Specialized experience in Integrated Environmental Management planning to secure legal and statutory clearances for new business/operations, while orchestrating pre-feasibility environmental documentation for submission to permitting authorities.
- Environmental consulting experience largely includes Water use licensing, Mining right and permit applications, Environmental authorization applications, Waste management applications, Environmental monitoring, Performance assessment, Pre-feasibility reporting, financial provisioning etc.
- Credible working experience as EIA Practitioner, Environmental Project Manager, and Environmental Control Officer.
- Adept at management of specialist consultants, legal/statutory compliances, environmental database & environmental audits.
- Proven ability to engage and manage multiple stakeholders (client, consultants, contractors, authorities, community etc.) and manage stakeholders' relationships towards achieving environmental goals.
- Skilled in risk assessment & mitigation planning, rehabilitation planning & monitoring, mine water management, water audits, land management planning in consistent with mines' water & environmental management plans etc.
- Excellent leadership and mentoring qualities, analytical, confident, communicative, adaptable, and committed to integrity.

WORK EXPERIENCE

ENVIRONMENTAL CONSULTANT & PROJECT MANAGER

Bateleur Environmental & Monitoring Services – Pretoria, SA
July 2007 - Current

Bateleur Environmental and Monitoring Services is self-founded independent environmental consulting company established in 2007 to provide professional environmental consultancy services to both private & public sectors, dedicated to promoting development in an environmentally sustainable manner.

Functions & Responsibilities:

- Responsible for providing specialist technical direction, advice, support and assistance on environmental matters to projects and their teams. This supports the effective implementation of the EMS to enable identification, management, and mitigation of environmental risks to any proposed on-ground changes.
- Developing, producing, and maintaining the required EMS documentation (e.g. risk screenings, assessments and Environment Management Plans.
- Facilitating environmental activities including hazard identification and risk management workshops; and ensuring environmental risk management databases are maintained for each Project.

CONTACT

Menlopark, Pretoria, SA
+27823386607
gertenes@lantic.net

QUALIFICATIONS

BSc. (Soil Science, Geography & Environmental Management)
North West University – 1996

BSc. Hons. (Environmental Management)
North West University - 1996

Professional Membership:

Member of South African Council for Natural Scientific Professions.

Member of International Association for Impact Assessment of South Africa.

EAPASA – Application in process.

Professional Development:

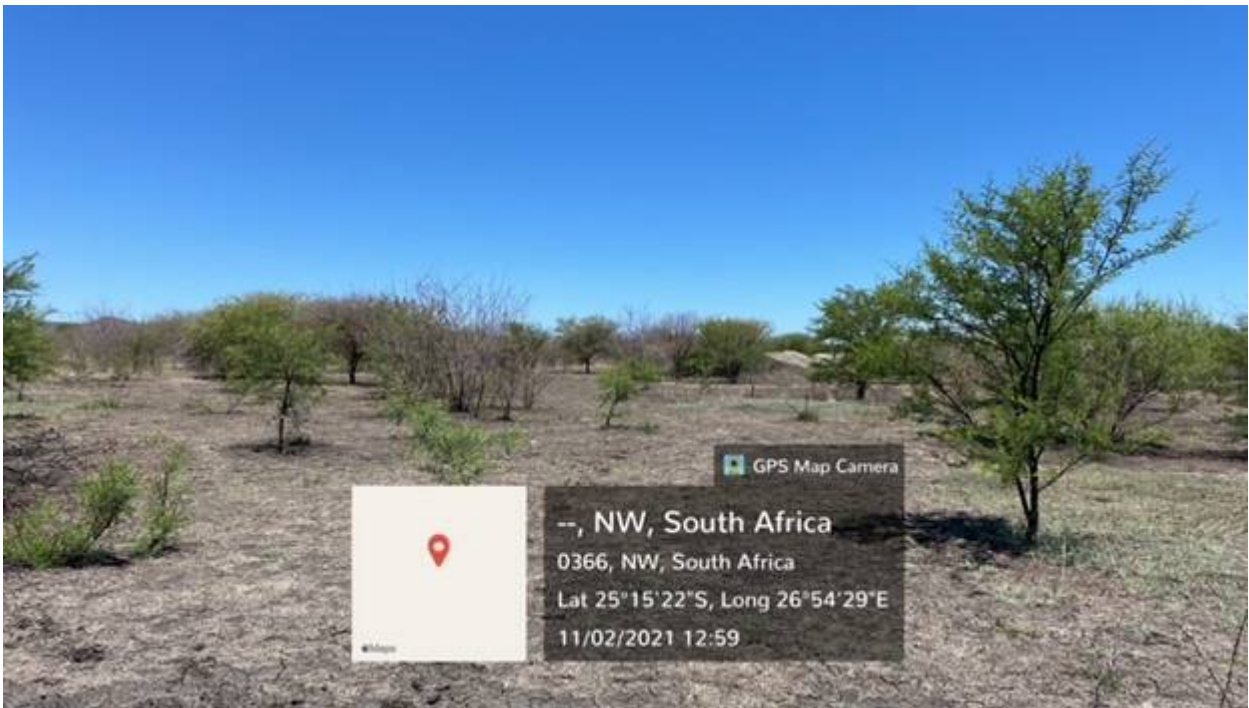
Ernst & Young Workshop on Financial Provisioning for Mine Rehabilitation.

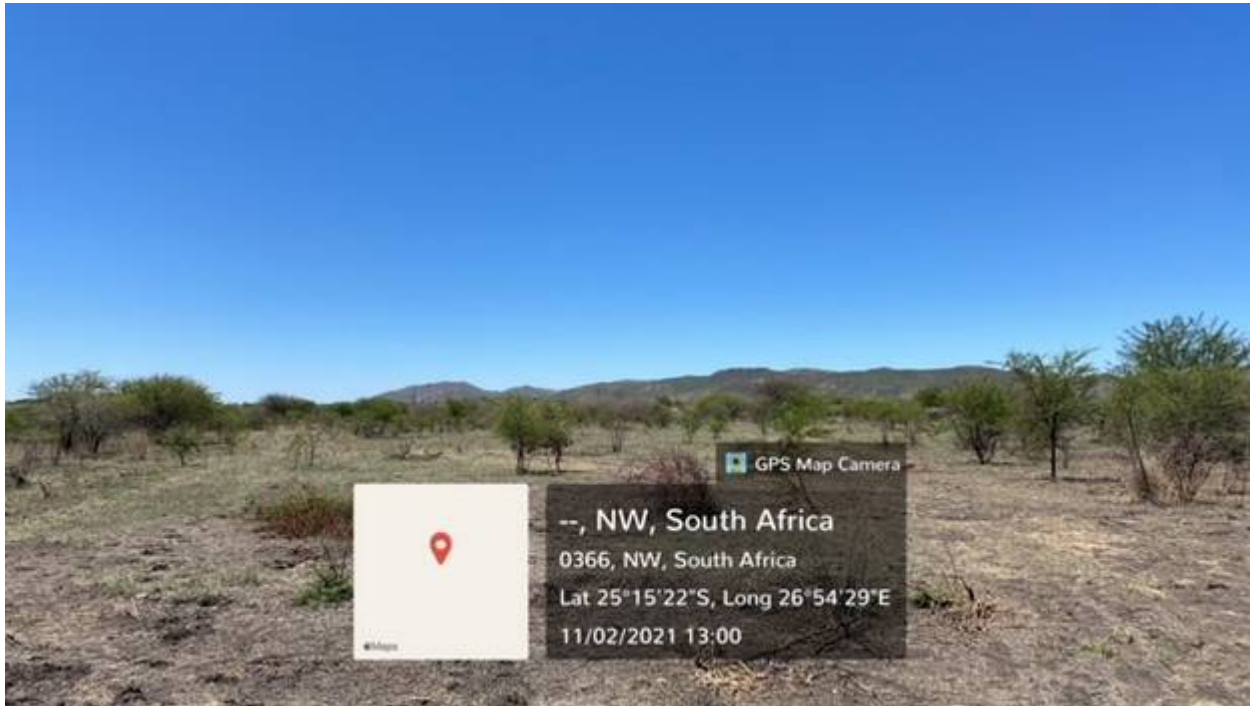
Workshop on "Introduction to the Practical Implementation of Environmental Law & Recent Legislation".

Air Quality Management, Dustfall monitoring and reporting.

APPENDIX 2: SITE PHOTOGRAPHS







APPENDIX 3: PUBLIC PARTICIPATION REPORT

APPENDIX 4: PLANS/MAPS