DRAFT BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME

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

NAME OF APPLICANT : M Chrome Iron Steel (Pty) Ltd

REFERENCE NUMBER : NC 30/5/1/1/2/ 13520 PR

FARM NAME : Farm 125 and 131

MAGISTERIAL DISTRICT : Barkley West

COMMODITY : Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium, Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand

DATE : August 2023

STANDARD DIRECTIVE

In terms of the Mineral and Petroleum Resource Development Act as amended, the Minister must grant Mining or Prospecting right if among others the mining will not result in unacceptable pollution, ecological degradation, or damage to the environment''.

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

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.

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REFERENCES

1. Council for Geoscience (C J Vorster),2007
2. Statistics South Africa(census), 2011
3. http://www.samsamwater.com/climate,2016

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1. IDENTIFICATION OF THE APPLICATION IN RESPECT OF WHICH THE ENVIRONMENTAL MANAGEMENT PLAN IS SUBMITTED.

Table 1-1: Details of the applicant

ITEM	COMPANY CONTACT DETAILS
Company Name	M Chrome Iron Steel (Pty) Ltd
Full Name and	Ms Refilwe Monageng
Tel no	011 037 9938 / 081 254 3074
Fax no:	086 599 3318
E-mail address	rmonageng@mresources.co.za
Postal address	Wilgeheuwel ext6 Roodepoort Gauteng, 1724

Table 1-2: Details of the EAP

ITEM	CONSULTANT CONTACT DETAILS applicable)
Name	TPR Mining Resources (Pty) Ltd
Tel no	012 345 6321
Fax no:	086 599 3318
Cellular no	079 244 2470
E-mail address	info@tprmining-resources.co.za
Physical address	27 Geringer Street Del Judor Emalahleni 1035

Project team

EAP: Ms. Pheladi Mphahlele

Qualification: BESMEG (Mining and Environmental Geology)

Author EAP: Ms Lethabo Chauke and Mr. Thato Ramoraswi

Qualification: National Diploma in Environmental Sciences and BEnvSc (Environmental Science), Cert Waste Management

2. Location of the overall activity

Table 2.1: Details of the affected site

Farm name	Portion of the remaining extent of the farm 125 and 131
Application area (Ha)	5.497 Ha
Magisterial district	Barkley West
Distance and direction from nearest town	approximately 45.1 km along the R31 route from Kuruman town to Rusten.
21 digit Surveyor general code for each farm portion	C01500000000012500000 C01500000000013100000

3. INTRODUCTION

M Chrome Iron Steel (Pty) Ltd have applied for an Environmental Authorisation for Prospecting Right on portion of the remaining extent of the farm 125 and 131. The proposed prospecting area will be explored in three phases namely, literature review, site observation, field mapping and drilling. The type of drilling (diamond/core drilling) to be used has minimal impact on the environment.

Literature review is the first stage of prospecting wherein scientists need to conduct research about the location, geology and the suitable prospecting method by means of books, journals, internet, article etc. This is done in order to gain an overview of the study area and gathering as much information for reference.

Site observation takes place when scientists personally go to site and discovers the functioning of the site. Scientist can gain first-hand knowledge of the geology, vegetation, Land-use activities and operations that occurs around the study area.

Field mapping include the description of the geological features and structural geometry of a deformed field area, simultaneously conducting geophysical survey.

Drilling phase will involve drilling of the positioned boreholes using diamond core drilling technique. About two (2) sumps will be constructed at each drilling site for the storage of water used to cool the drill rig. The sump will be constructed to be one square meter in size and have a maximum depth of one metre. Soils removed

from the sump (1 cubic meters) will be placed adjacent the drilling site and used for rehabilitation of the site after drilling.

Boreholes will be drilled at pre-planned sites. The boreholes will be drilled to intersect all the expected Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium, Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand bearing layers and will be logged by the geologist. The Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium, Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand samples will be sent to the laboratory for quality analyses. This data will form the basis for the geological modelling and financial evaluation.

This activity is contemplated under NEMA act (107 of 1998), as amended and section 16 of the Mineral Petroleum Resource Development Act 2002 (Act 28 of 2002) as amended.

3.1 Project locality

The area where prospecting will take place is located approximately 45.1 km along the R31 route from Kuruman town to Rusten on portion of the remaining extent of the farm 125 and 131, within the jurisdiction of Kgatelopele Local Municipality, ZF Mgcawu District of Northern Cape Province.

Site co-ordinates of the application area

No:	X	Y
1	-27.803285	23.800278
2	-27.91769	23.733151
3	-27.900294	23.691272
4	-27.812198	23.75006

4. Locality Map of the proposed farm

See attached Locality **Appendix A**

4.1 Description of the Scope of the proposed overall activity

4.1.1 Listed and specified activities

Table 4.1: listed activities

Name of activity E g. for prospecting drill site, site camp	Aerial extent of the activity Ha or m^2	Listed activity mark with an X where applicable or affected.	Applicable listing notice (GNR 983,984.985)
Drill site (indicated by circular dots)	10Ha	X	GNR 983(Activity 20)
Ablution facility (mobile hired toilets closer to each drill site)	0 M^2		
Accommodation (camping site for drilling contractor outside prospecting site)	Not applicable		
Equipment storage (outside prospecting site)	Not applicable		
Sample storage (outside prospecting site)	not applicable		
Site office (No site office to be established)	not applicable		
Access route (Pre-existing access routes will be used)	100 m		

4.2 DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN

4.2.1 Minerals to be prospected

M Chrome Iron Steel (Pty) Ltd intends to prospect for Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium, Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand utilising diamond core drilling and ore sampling. Drilling will be conducted on specified drilling points logged by the geologist.

4.2.2 Methods to be used for prospecting

Non-invasive methods

Non-invasive methods include geological mapping, geophysical survey and remote sensing and produces minimal impact on the environment. These methods contribute to understanding of the orebody, such depth, orientation, size and structure that controls the orebody. Results obtained from the non-invasive methods will be used to plan the drilling programme.

Invasive methods

Invasive methods will include diamond core drilling which is preferred when prospecting for Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium, Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand. Core drilling is done in order to ascertain the stratigraphy and reef horizon of the ore body. Both the invasive and non-invasive methods will be utilized for the prospecting activities.

4.2.3 Environmental Attributes

The environmental attributes will be determined through the baseline assessment. A baseline assessment will be undertaken to describe the environment that is likely to be affected during prospecting. The baseline assessment will include the local setting and infrastructure, climate, topography, soil and land capability, land use, biodiversity (including threatened and endangered species, plants of medicinal value and conservation areas), surface water, groundwater, geology, noise, air quality, places of cultural interest and sensitive landscapes (including wetlands, heritage sites and land claims), the socio-economic setting and waste.

4.2.4 Identification of impacts and risks

The environmental risk analysis will be performed to identify potential environmental impacts associated with the prospecting project.

4.2.5 Consideration of alternatives

No possible alternative has been envisaged at the current moment, if things change in future such information will be made available, however should the prospecting right be granted that will assist the applicant to consider applying for either a mining permit or a mining right depending on the outcome of the prospecting results.

4.2.6 Process to assess and rank impacts

Various ranking includes probability, duration, scale, and magnitude.

Once these factors have been ranked for each impact, the significance of the two aspects, occurrence, and severity, will be assessed using the following formula:

SP (Significance points) = (Magnitude + Duration + Scale) x Probability

The maximum value is 100 significance points (SP). Risks are identified as potentially significant (High, >60 SP), Moderate (30 – 60 SP) or insignificant (Low, <30 SP).

In some instances, risks can be rated as uncertain or unknown. Risk management strategies will be identified for the potentially significant risks, while the uncertain risks will be re-evaluated after a data collection and analysis programme.

4.2.7 Contribution of specialists reports

Vegetation sensitivity specialists can assist in determining any protected species within the prospecting area including protected terrestrial areas. Such information will assist in remediation phases and rehabilitation. Geo-hydrological studies can aid in developing monitoring and mitigation measures to reduce contamination of underground water during the drilling phase, archaeological investigation of ancient habitation or graves.

4.2.8 Determination of impact management objectives and outcomes

- Fire management plan: To ensure that the prospecting area is prepared in the event of a fire breaking out.
- Boreholes drilling management: All drilling rigs are fitted with 85db rated noise suppressor and water is used for dust suppression.

5. Policy and Legislative Context

Table 5.1: listed activities

Applicable legislation and guidelines used to compile these report	Reference where applicable	How does this development comply with and respond to the legislation and policy

National Environmental Management Act 107 of 1998,GNR 983 Listing Notice 1, Activity 20	Government gazette No: 10328,04 December 2014 No 38282, Department of Environmental Affairs	An application for Environmental Authorisation has been lodged in terms of the NEMA ACT (107 of 1998)
National Environmental Management: Biodiversity Act (No 10 of 2004), Sections 57, 65-69, 71, 73 and 75	Department of Environmental Affairs	An application for a permit for removal of indigenous plant has not been lodged, if by any means there is existing indigenous plants within the proposed prospecting area, an application will be lodged with the department of Environmental Affairs prior to removal
National Heritage Resources Act (No 25 of 1999), Section 34–36(NHA)	South African Heritage Resource Agency	An application for a permit to demolish old structures that are more than 60 years old, or presence of graves has not been lodged, if there is presence of archaeological remains within the proposed prospecting area, such will be done in accordance with prescribed legislation.
Mineral Petroleum Resource Development Act 28 of 2002 (MPRDA)	Department of Mineral Resources	An application for a prospecting right has been lodged with the Department of Mineral Resources and Energy in terms of MPRDA (28 of 2002) section 16
National Water Act (Act 36 of 1996)NWA	Department of Water Affairs	Application for a Water-use licence will be applicable should any

		water resources be disturbed within the prospecting area.
Conservation of Agricultural Resource Act (Act 43 of 1993) CARA	Department of Agriculture and Fisheries	Protection of agricultural resources from any prospecting activities will be practised.

5.1 Need and Desirability of the proposed activities

According to the geological characteristics of the proposed prospecting area, portion of the remaining extent of the farm 125 and 131 are situated 45.1 km along the R31 route from Kuruman town to Rusten. The type of prospecting to be conducted has minimal impact on the environment as it will only involve geophysical survey, drilling and sampling of ore, to determine the quantity and grading of the ore. The need is to determine Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium, Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand quality and to quantify the commodities to develop a 3D geological model. The post –prospecting land use will return back to its original purposes if the commodities are found uneconomical but if found viable then a mining permit/right application will be lodged.

5.1.1 Socio economic

The total population of the Northern Cape Province is 1.30 million people and Kgatelopele Local Municipality has a total population of 18 687 which constitutes 46.03% of the total District population.

The Kgatelopele Local Municipality is characterised by poor socio-economic conditions and low levels of development which is not an uncommon trend in the region. The Kgatelopele Local Municipality is characterised by low levels of employment and a high percentage of people who are not economically active. This in turn accounts for the high poverty levels and low-income levels. High unemployment rates impact negatively on municipalities as they are accompanied by low affordability levels which generally result in a poor payment rate for services. Kgatelopele Local Municipality's unemployment rate is estimated to be 22.3% while the youth unemployment rate is 29.1% and working age is 66.4%.

Sources: Statistics South Africa, Census 2016

5.1.2 Location suitability

The geology of the farm area indicates presence of reddish soil and gravel outcrops material around the area. The area where mining will take place is located on a vacant land. The geology of the farm is characterised by mixture of red-yellow apedal freely drained soils and plinthin catena upland duplex and magalitic and other industrial uses with in the construction sector. The proposed site is dominated by grassland vegetation, shrubs, rocks and trees.

5.2 Motivation for the overall preferred site, activities and technology alternatives

5.2.1 Preferred site

The geological characteristics of the farm where mining will take place comprises of gravel soil and sand material suitable for the preferred commodities to be mined. The area comprises of sandy soil and grasslands and shrubs. The Farm 131 is characterised by mixture of red-yellow apedal freely drained soils and plinthin catena upland duplex and magalitic soils.

5.2.2 Technology alternatives

The proposed exploration programme will be carried out in two phases. The first phase involves a desktop study in order to identify target sites for exploration drilling. This will include a review of available information, creation of geological and financial model and the identification of target sites for sampling.

The second phase of exploration will require the drilling of a first borehole to a certain depth in (m). Assuming the targeted seams are encountered during drilling, cores will be raised and sections inserted into sampling canisters. The samples will then be taken to a laboratory for testing and analysis.

5.2.3 Summary of exploration programme to be undertaken. Desktop study:

This programme aims to assess historical data of previous work done on the prospecting area as well as the surrounding areas. Desktop studies will comprise of the following key activities:

- Literature review of articles on the prospecting area
- Studying existing geological, geophysical, geochemical, remote sensing maps
- Acquiring and assessing previous exploration data if available, conducted on the prospecting area and the surroundings

5.2.4 Geological Mapping

After conducting a desktop study of the property, the next subsequent activity will entail field mapping the area to determine various rocks and minerals that have economic potential. A detailed mapping programme needs to be undertaken so as to identify the rock and minerals where there is Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium, Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand mineralization present.

This might include the following mapping techniques such as:

- Identifying and measuring outcrops
- Identifying various rock and mineral lithologies.
- Mapping geological structures that might be of economic importance.
- Mapping alteration processes that might be of economic importance such as weathering, leaching, dissolution, and enrichment processes.

5.2.5 Structural Mapping

The programme will determine the dip of the ore body and the strike of the ore body. Furthermore, structure such as faulting and folding will be mapped out from the mapping exercise to determine any physical controls for mineralization. All areas that need to be drilled will be properly demarcated and laid out on site.

5.2.6 Location of Suitable boreholes

Drilling

As we are targeting shallow and open-castable mineral resources, drilling will be limited to a depth of 100m at which mineralization occur. Initially five (5) boreholes will be drilled across the proposed site and a further 5 boreholes will be drilled depending on the success of the initial boreholes. The exact number of boreholes is not yet known at this stage as a geologist haven't conducted a geophysical survey. Any existing infrastructure, water bodies, sensitive vegetation found within the proposed site will be demarcated/ buffered from the prospecting activities and drilling will be conducted 100m away. The azimuth and plunge of the drill holes will depend mainly on the strike and dip of the rocks. They will be planned in a manner to ensure that the ore body is intersected.

Size of the boreholes

Due to the geological setting of the affected farm, which is characterised by alluvium, dolerite, mudstone and sandstone which the prospecting right area is situated in the middle. The proposed drilling diameter that would be suitable to the affected prospecting area is explained on the below table.

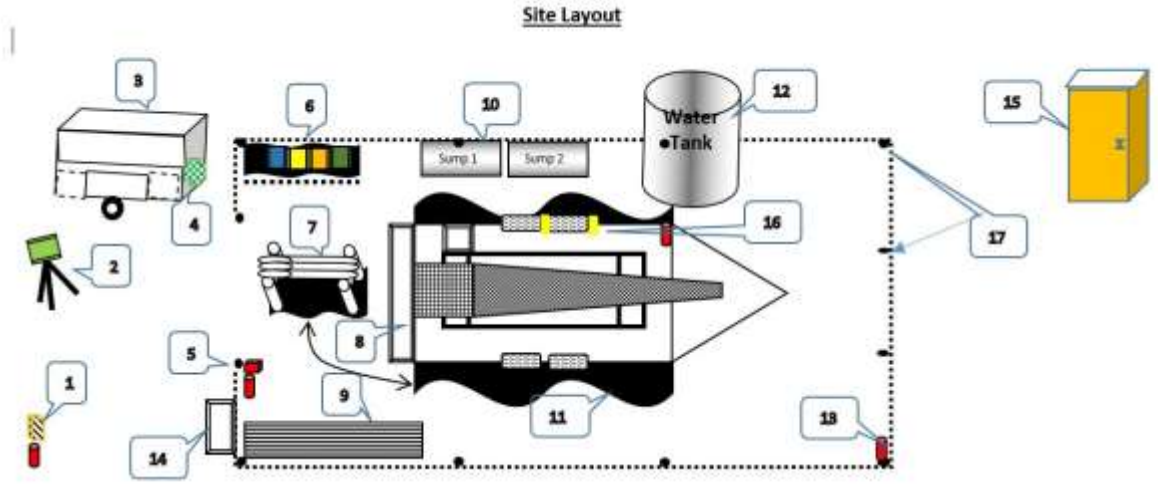
- Diameter (0,0635m)
- Depth (100m)

Table 5-2: calculations of the size (area) of a borehole

A	**∏**	**r^2**	**M**
Area	Pie	Radius	Metres
$A = \prod r^2$ **$A = \prod \times (0.03175m)^2$** **$A = 3.17 \times 10^{-3}\ m^2$ (size of each borehole)**			

5.2.7 Types of equipments that is going to be used during the operation

Drilling of holes- Standard Diesel powered drilling rig will be used for the holes.
Site visit - Standard 4x4 Bakkie.



Item #	Description	Item #	Description	Item #	Description	Item #	Description
1	Smoking Zone	6	Dust Bins	11	Plastic Liner	16	Stop Blocks
2	Emergency Assembly Point	7	Rods/Casings Stand	12	Water Tank	17	Steel Poles
3	Resting Shelter	8	Drill Rig	13	Fire		

					Extinguisher		
4	First Aid Box	9	Steel Sheet / Core	14	Safety Board		
5	Super Sound	10	Sumps/water tanks	15	Toilet		

6. Description of the process followed to reach proposed preferred alternatives within the site

6.1.1 Details of the development footprint alternatives considered

ANALYSIS OF ALTERNATIVES

In terms of the NEMA EIA Regulations one of the criteria to be taken into account by the competent authority when considering an application is “any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimise harm to the environment”. Alternatives are defined in the Regulations as “different means of meeting the general purpose and requirements of the activity”. It is therefore necessary to provide a description of the need and desirability of the proposed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives will have on the environment and on the community that may be affected by the activity.

6.1.2 Property alternative

The prospecting sites will be determined by the location of the ore body using dataset collected during the geophysical survey.

6.1.3 Technology alternative

There are different drilling types that can be used for prospecting activities namely:

- **Percussion drilling**

It is a manual drilling technique in which a heavy cutting or hammering bit is attached to a rope or cable is lowered in the open hole or inside a temporary casing.

- **Rotary core drilling**

It is a drilling technique that uses sharp and rotational drill bits to create holes in the earth's crust.

- **Reverse circulation drilling**

It is a drilling technique that uses compressed air to push into the rock with force and creates rock chips in the process.

- **Multi-combination rigs**

It is a drilling technique that uses both the percussion and rotary drilling techniques.

- **Trenching**

Trenching can also be an alternative prospecting method but at the same time produces significant environmental impact on the site where prospecting will be conducted, it involves excavation of a deep narrow hole as opposed to a drill rig which will utilize about a 200m^2 in size.

6.1.4 No-go alternative

The no-go alternative will hinder development within and around the area and will not provide sufficient evidence of possible mine development within the farm properties as it was investigated from previous studies done.

7. Details of the Public Participation process followed

7.1 Confirmation of consultation

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

The Interested and Affected Parties were confirmed to this matter. A newspaper advertisement was published on the **Kathu Gazette** newspaper on the **15th July 2023** and Site Notices were placed on and around the site to inform Interested and Affected Parties with regard to the prospecting right application. Any possible concerns in terms of possible impacts were communicated directly to the proponent. As directed on the acceptance letter from the competent authority, the applicant informed and requested comments from landowners. See **Appendix D**

7.2 Record of the public participation and the results thereof

7.2.1 Identification of Interested and Affected Parties

Landowners and their contact details were identified through a Title Deed search and through the public participation for the properties falling within the proposed prospecting area. Site notices were placed on and around the site to allow the members of the surrounding community to register and comment on the proposed prospecting application.

7.3 The details of the engagement process

7.3.1 Description of the information provided to the community, landowners, and interested and affected parties

The following information was provided to the Landowner and Interested and Affected Parties through emails:

M Chrome Iron Steel (Pty) Ltd is planning as part of the prospecting work to conduct drilling operations on the drill sites that would have been logged by geologist, which will be rehabilitated when drilling ceases. The aim of the prospecting is to determine whether there is any viable Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium, Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand to be extracted in the long term. Should the prospecting study provide enough information in terms of a feasible long term mining project, an application will be made to the Department of Mineral Resources for either a Mining Permit or Right.

Should a Mining Right nor Permit be applied for, it will be for an opencast mine, and no underground section will be required due to the shallow depth of the Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium, Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand within the area. M Chrome Iron Steel (Pty) Ltd requested the landowners for their co-operation during the prospecting process. Landowner of the affected farm were informed of the proposed prospecting application for their consent. **See Appendix D**

7.3.2 List of which parties identified in above that were in fact consulted, and which were not consulted

Table 7.1: Landowners and I&APs of the proposed area have been consulted.

Name of Interested /affected parties	Contact Details	How did the Consultations take place?	What were His /her concerns about The operation?
Hennie Engelbrecht Landowner	Hennienr@mweb.co.za	Emails were sent	Still waiting for comments
Department of Rural Development and Land Reform	162 George Street, Kimberlite Building, Kimberley, 8301	Emails were sent	Still waiting for comments
Department of Water and Sanitation	28 Central Road, Beaconsfield, Kimberly, Tel: 8301 053 830 8800/ 7600	Emails were sent	Still waiting for comments
Department of Roads and Public Works	1 st Pauls Rd, Colville, Kimberley, 8301 053 839 2100	Emails were sent	Still waiting for comments
SANRAL	NRstat@nra.co.za	Emails were sent	Still waiting for comments
Department of Environmental Affairs and Nature Conservation	dvaheeden@ncpg.gov.za	Emails were sent	Still waiting for comments
SAHRA	www.sahris.co.za	Emails were sent	We are waiting for responses
Kgatelopele Local Municipality	222 Barker Street, Daniëlskuil 8405	Emails were sent	We are waiting for responses

7.3.3 List of views raised by consulted parties regarding the existing cultural, socio-economic or biophysical environment.

The drilling plan will avoid areas such as graves, buildings and indigenous or endangered species flora and fauna. The department of Rural Development have been notified of this application with regards to any land claims that might be pending, local people and businesses with appropriate skills will be identified and included in the project tender process by M Chrome Iron Steel (Pty) Ltd. The project owners are committed to employ local people and businesses during the project, where possible.

Due to the nature of prospecting, employment opportunities will be minimal. The prospecting crew is small (5 people) with specialized skills. Were possible, local people will however be employed during the project. Compensation for damages will be negotiated with the lawful occupiers (in accordance with the Arbitration Act of 1965 (Act No.42 of 1965) before any drilling can be initiated on the farm. This will be based on the merits of each case.

7.3.4 List of views raised by consulted parties on how their existing cultural, socio-economic or biophysical environment potentially will be impacted on by the proposed prospecting or mining operation

The consulted parties did not raise any views on how the existing cultural, socio-economic or biophysical environment will be impacted by the proposed prospecting area.

7.3.5 Other concerns raised by the aforesaid parties.

7.3.6 Confirmation that minutes and records of the consultations are appended.

See attached **Appendix D.**

7.3.7 Information regarding objections received.

There are no objections that have been registered to date.

7.4 The manner in which the issues raised were addressed

The Interested and Affected Parties were given an opportunity to raise their concerns through emails, telephones, site notices, newspaper advertisement, etc. Consultations were done within the prescribed timeframes to allow the landowner and interested and affected parties sufficient time to respond and raise issues. See attached **Appendix D**

8. Summary of issues raised by I&APs

Interested and Affected parties List the names of persons consulted in this column Mark with an X where who must be consulted were in fact consulted		Date comments received	Issued raised	EAP 's response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues or responses were incorporated
Affected parties					
Landowner/s	**X**				
Hennie Engelbrecht			Still waiting for comments		**Appendix D**
Lawful occupier/s of the land					
Landowners or lawful occupiers of adjacent					

properties					
N/A					
Municipal Councillor					
Municipality					
Kgatelopele Local Municipality	X		Still waiting for response		**Appendix D**
Organ of state (Responsible for infrastructure that may be affected Roads department, Eskom, Telkom, DWA					
Department of Water and Sanitation	X		Still waiting for response		**Appendix D**
SANRAL					

Communities					
N/A					
Department of Land Affairs					
Traditional Leaders					
N/A					
Department of Environmental Affairs					
Department of Environmental Affairs and Nature Conservation	X		Still waiting for response		**Appendix D**
Other Competent authorities affected					
Department of Roads and Public Works	X		Still waiting for response		**Appendix D**
SAHRA	X		Still waiting for response		**Appendix D**

Other affected parties					
Interested parties					

9. Environmental Attributes associated with the alternatives

9.1 Baseline environment

9.1.1 Type of environmental affected by the proposed activity

Climate

The Northern Cape is generally hot and dry. Maximum summer temperatures often exceed 40°C. During winter, the average daytime temperatures are mild and night time temperatures may drop below 0°C. There are four climatic zones in the Northern Cape: hot desert, cold semi-arid, cold desert and hot semiarid. Kuruman (where the project area is located) is classed as a cold semiarid area. Rainfall data from the South African Weather Stations (SAWS), due to the semiarid nature of the area, evaporation levels exceed annual rainfall. Wind direction in Kuruman is predominantly from the north east. The main sources of air pollution in the Northern Cape are biomass burning and mining, followed by industry and motor vehicles. Biomass burning is a major contributor of carbon monoxide (CO) whereas mining contributes particulate matter and total suspended particles (TSP). Long range atmospheric transport of air pollutants from the industrialised Highveld and biomass burning in southern and central Africa may influence ambient air quality over parts of the Northern Cape.

Topography

The study area is characterised by escarpments, hills and lowlands, with the series of koppies and ridges for TLM being Karannaberg koppies. KLM is defined by very flat landscape, Crown hills with an elevation of 1760mamal are found in the north western boundary of the KLM. The area applied for is relatively flat with a highest elevation of 1560mamsl (Toposheet: 1: 25 000, 2823CB and 2823AD).

9.1.2 Description of the current land uses

The proposed prospecting permit is dominated by livestock farming and also used for irrigation farming with largest part of the area covered by low shrubs. The current land-use activities will be avoided during the drilling phase of the programme.

Figure 9.1: A picture depicting the existing activities.

9.1.3 Description of specific environmental features and infrastructure on the site

Fauna and Flora

This municipal area has a Savanna type of biome. The Savanna Biome is the Centre of wildlife tourism and meat production (game, cattle and goats) in South Africa. Vegetation types coverage of the municipal area Ghaap Plateau Vaalbosveld 66.78% Kuruman Mountain Bushveld 20.57% Kuruman Thornveld 6.79% Olifantshoek Plains Thornveld 3.65% Southern Kalahari Mekgacha 0.17% Southern Kalahari Salt Pans 2.03% “The Ghaap plateau is a higher lying, pre-Karoo surface with its main physiographic element being the surface of dolomite that gives the form to the plateau” (Siyanda EMF, 2012: 5).

9.1.4 Environmental and Current land use Maps

Figure: 9.2: Aerial map

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

10.1 Potential impacts of the proposed prospecting or mining operation on the environment, socio-economic conditions and cultural heritage.

10.1.1 The main prospecting activities (e.g., access roads, topsoil storage sites and any other basic prospecting design features)

Topsoil

Topsoil shall be removed from all areas where physical disturbance of the surface will occur. Topsoil is to be replaced by direct return where feasible rather than stockpiling it for extended periods. Topsoil shall be adequately protected from being blown away or being eroded by being covered with a plastic liner.

Land Capability

Land capability will be negatively impacted on an area where soil is disturbed. The significance is low, the disturbance of grazing land will be restricted (kept to a minimum) to the planned prospecting site only and useful infrastructure needs to be identified.

Management action is required to ensure the rehabilitation plan is expanded to include mitigation measures. Develop closure documentation to record the rehabilitation plan and post-closure features. Will identify and negotiate with the post-closure land user, which useful post-closure structures must remain.

Surface Water

Surface water is likely to be impacted during the invasive phase, despite stringent precautions. This would also be the case during the prospecting activities in most cases however, the nature of pollutants/ spillage would not lead to toxicity just soils (Suspended solids) and vegetative waste.

Ground Water

It is not expected that the prospecting activity will impact on the groundwater quality. The drilling machine that we will use is a diamond drill rig that does not contaminate ground water. All drilling chemicals are biodegradable. Initial geo-hydrological review indicate that the groundwater is below planned drilling depths.

Air Quality

It is expected that negligible amount of dust will be generated during the drilling phase. The impact will be insignificant and will be controlled with water carts where needed. The majority of the drilling is undertaken in a wet state with little possibility of dust or air quality impacts. The drill rigs and vehicles are serviced regularly and properly maintained to minimise emissions.

10.1.2 Plan of the main activities with dimensions

Please refer to the Prospecting Right Programme.

10.1.3 Description of construction, operational, and decommissioning phases.

- **Construction Phase**

Detailed site survey and investigation will involve demarcating sensitive and protected areas by geophysical survey of the proposed area by a suitably qualified person.

All exploration boreholes sites will be staked by a suitably qualified geologist. The sites will thereafter be plotted on a plan drawn to an appropriate scale.

- **Operation Phase**

Prospecting phases are designed to be completed in annual periods allowing for compilation of results in statutory reporting. Each part of each phase is dependent on the success of the previous set of work (Please refer to the Prospecting Works Programme for details on these various phases). Programmes are by their nature not rigid and may be varied in response to results, which would result in an adjustment of expenditure as set out in the proposed budget.

The diamond drilling will be utilised to drill boreholes on a predetermined grid, during drilling of each borehole, two sumps of approximately 1.0 × 1.0 m each will be excavated for storing water from the drilling operation. The top and sub-soil removed from the sump and drilling boreholes will be stockpiled in close proximity to the sump. The sump will be backfilled manually by a spade once the drilling and sampling of boreholes is completed. The samples on the core taken from the desired horizons will be sent to the laboratory for analysis; hence, concurrent rehabilitation of the disturbed areas will be undertaken as drilling takes place.

- **Decommissioning Phase**

Decommissioning of an area commences after the cessation of prospecting in the area and terminates with closure. In the intervening period between the commencement of decommissioning and closure of aftercare and or maintenance may be imposed. A closure certificate will be applied for, once the primary decommissioning activities of demolition, rehabilitation and re-vegetation have been completed. The re-vegetation area must be self- sustaining. The drill sites are rehabilitated. Drilling material, liquid spills and refuse are cleared and transported to the relevant municipal dump site.

During final rehabilitation, Except for farm roads, no trucks and infrastructure related to the prospecting operation will remain in place after the decommissioning phase. Where tracks have resulted in more damage, such tracks will be ripped at 90° to the inherent slope and seeded with the recommended seed mix. The sumps will be rehabilitated in such a manner to return the area to as close as possible to its pre-drilling environment.

Post closure, the prospecting area will consist of the re-vegetated areas with vegetation cover comparable to the surrounding areas. No prospecting related infrastructure will remain on the prospecting site. The area will conform to the pre-prospecting topography. The areas affected by the prospecting will be stable and erosion free.

Feasibility studies will involve compiling the final geological report, reserve determination, pre-feasibility studies, mining feasibility study, market research, sales agreement etc.

After closure phase, the rehabilitated area will be monitored on a quarterly basis to ensure that the site returns to an acceptable state, in the event that is not happening naturally, the area will be seeded. After the decommissioning of the site and if it can be determined that the site is stable, an Environmental Authorisation for the decommissioning of the site and a closure certificate will be applied for in terms of the relevant laws.

10.2 Listed activities (in terms of the NEMA EIA regulations)

The proposed prospecting of Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium, Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand.

Activity 20" ***Any activity including the operation of tha activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right.***

10.2.1 Identification of potential impacts

(Refer to the guideline)

Table 3-1 below shows potential impacts per activity and listed activities.

Table c-1: Potential Impacts

Activity	Impact
• Drilling programmes	• Loss of Topsoil • Impact on vegetation • Dust from roads and land • Waste Disposal • Noise • Water use

Site of ecological, social and environmental importance will be avoided. Sensitive grassland, clusters of indigenous trees and shrubs or similar climbing that may contain a large biodiversity of threatened and endangered species will be avoided. Farmlands actively used for crop farming preferably will be avoided especially where the drilling would be located in land. Access road to and around the farm regarded as preferential drilling sites where the drilling position must be structured in manner that will still allow traffic to continue normally. Heritage resources, including archaeological or paleontological site may not be disturbed without a permit from the heritage specialist.

10.2.2 Potential cumulative impacts

Impact on water resources has only been identified through online research and site inspection which are situated on the north east side of the proposed site which is also shown in the screening tool report attached in appendix F. The research has

indicated that the prospecting area consist of water resources which have to be buffered when prospecting activities commences.

10.2.3 Potential impact on heritage resources

Potential heritage sites will be identified during the planning phase to ensure that such areas are avoided. Each prospecting site will be visited prior to any work starting to identify possible heritage sites. Local knowledge will be used to identify and confirm heritage sites. Where boreholes are sited in proximity to heritage sites and depending on the proximity to the drilling site, appropriate measures such as flagging, pegging or installation of temporary fencing will be undertaken to ensure that the site is not impacted on during prospecting. The prospecting programme will be designed to avoid disturbance of heritage sites.

10.2.4 Potential impacts on communities, individuals or competing land uses in close proximity

There will be no impacts on communities, individuals or competing land uses in close proximity to the prospecting areas, due to the limited impact of the drilling machines at any specific point in time.

We will ensure that during prospecting activities, no heritage site, trees, vegetation, and other sensitive area in the property applied for. Were the land is used for farming should be avoided. Animals should be kept protected at all times.

(If no such impacts are identified this must be specifically stated together with a clear explanation why this is not the case)

10.2.5 Confirmation that the list of potential impacts has been compiled with the participation of the landowner and interested and affected parties,

The potential impacts has been compiled in the consultation documents where the EAP sent the documents using emails to the landowner of the area. The interested and affected parties were communicated with by sending documents via emails. **Please refer to Appendix D**.

10.2.6 Confirmation of specialist report appended.

There are no individual specialist reports that were conducted as part of the prospecting application but if they will be any, confirmation will be sent as soon as it is available.

11. Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of environmental impacts and risks

11.1.1 Potential impact of each main activity in each phase, and corresponding significance assessment

The undertaking of a screening level environmental risk assessment consists of the identification of all possible environmental risks, including those which appear to be insignificant based on the input from existing data, and the qualitative ranking of the impacts identified.

The significance of the identified impacts on the various environmental components as part of the closure phase will be determined using the approach outlined below. This incorporates two aspects for assessing the potential significance of impacts (terminology from the Department of Environmental Affairs Guideline document on EIA Regulations, April 1998), namely occurrence and severity, which are further sub-divided as on table 3.2 below:

Table 11-1: Occurrence and Severity

Occurrence		Severity	
Probability of occurrence	Duration of occurrence	Magnitude (severity) of impact	Scale / extent of impact

In order to assess each of these factors for each impact, the following four ranking scales will be used:

Table 11-2: Methodology for Impact Assessment

Probability		Duration	
5	Definite/don't know	5	Permanent
4	Highly probable	4	Long-term
3	Medium probability	3	Medium-term
2	Low probability	2	Short-term
1	Improbable / None	1	Immediate
0			
Scale		Magnitude	
5	International	10	Very high/don't know
4	National	8	High Moderate Low
3	Regional	6	Minor
2	Local	4	
1	Site only	2	

Once these factors have been ranked for each impact, the significance of the two aspects, occurrence, and severity, will be assessed using the following formula:

SP (Significance points) = (Magnitude + Duration + Scale) x Probability

The maximum value is 100 significance points (SP). Risks are identified as potentially significant (High, >60 SP), Moderate (30 – 60 SP) or insignificant (Low, <30 SP).

In some instances, risks can be rated as uncertain or unknown. Risk management strategies will be identified for the potentially significant risks, while the uncertain risks will be re-evaluated after a data collection and analysis programme.

Table 11-3: Impact 1 – Loss of top soil

Activity			Impact	
Drilling Programmes			Loss of Topsoil	
Magnitude	Duration	Scale	Probability	Significance
2	1	1	5	Low (30)

Table 11-4: Impact 2 – Impact on vegetation

Activity			Impact	
Drilling Programmes			Impact on vegetation	
Magnitude	Duration	Scale	Probability	Significance
2	1	1	2	Low (8)

Table 11-5: Impact 3 – Dust from Road

Activity			Impact	
Drilling Programmes			Dust from Road and Land	
Magnitude	Duration	Scale	Probability	Significance
2	2	2	3	Low (18)

Table 11-6: Impact 4 – Waste Disposal

Activity			Impact	
Drilling Programmes			Waste Disposal	
Magnitude	Duration	Scale	Probability	Significance
2	2	2	4	Low (24)

Table 11-7: Impact 5 – Noise

Activity		Impact		
Drilling Programmes		Noise		
Magnitude	Duration	Scale	Probability	Significance
2	2	2	4	Low (24)

Table 11-8: Impact 6 – Water uses

Activity		Impact		
Drilling Programmes		Water Uses		
Magnitude	Duration	Scale	Probability	Significance
2	2	2	4	Low (24)

Assessment of potential cumulative impacts

Table 11-9: Impact 1 – Dust from road and land

Activity		Impact	
Drilling Programmes		Dust from Road and Land	
Magnitude	Duration	Scale	Probability
2	2	2	3
Significance			
Low (18)			

Table 11-10: Impact 2 – Noise from drilling programme

Activity		Impact	
Drilling Programmes		Noise from Drilling Programme	
Magnitude	Duration	Scale	Probability
2	2	2	3
Significance			
Low (18)			

Review or assessment of cumulative impact analysis will be done early in the process. Information that will be presented will be commensurate with the impact of the project. Greater detail will be provided for potentially serious impact, in all phases.

Proposed mitigation measures to minimise adverse impacts.

Significant cumulative impacts will be identified that may affect resources of concern and suggest measures that will avoid and minimize adverse effect to the environment.

List of actions, activities, or processes that have sufficiently significant impacts to require mitigation

Table 3-12 overleaf shows the List of actions, activities, or processes that have sufficiently significant impacts to require mitigation.

Table 11-11: List of actions, activities, or processes that have sufficiently significant impacts to require mitigation

Significant Impact	Measures	Negative impacts on the environment to be mitigated or managed
Dust	Low	Vehicles will be instructed to drive at low speeds Prospecting activities will mainly occur during season of low wind gust
Noise pollution	Low	All rigs are fitted with silencers to minimize noise Rigs will not be allowed to operate during the night but within working hours from 7H00 to 17H00
Minor Exhaust Smoke	Medium	The machine will be serviced regularly to avoid minor smoke
Topsoil disturbance	Low	Topsoil is normally not disturbed in the process. Where topsoil is removed it is stored for later replacement i.e., for digging of drill sumps.
Oil spills	Low	Any spillage onto the ground will be dug and disposed of in designated landfill operation

Associated list of appropriate technical or management options

The best technical option is rehabilitation and the best management option to rehabilitation is adherences to a couple of important aspects by management to ensure concurrent rehabilitation to take place and the plan is continuously to reflect the latest development.

The following management options will be taking place on site, irrespective of the significance of the ratings above:

Topsoil

Topsoil shall be removed from all areas where physical disturbance of the surface will occur. The topsoil removed, shall be stored in a bund wall within the boundaries of the prospecting area. The topsoil stored in the bund wall shall be adequately protected from being blown away or being eroded.

Dust control on the access roads

The liberation of dust into the surrounding environment shall be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents
The speed of trucks and other vehicles must be strictly controlled to avoid dangerous conditions, excessive dust or excessive deterioration of the road being used.

Noise

Work will only be performed during daylight hours if the site is located within 500m of settlements or communities. Proper design and maintenance of equipment, including silencers and mufflers. Regular checks on the noise emissions of equipment in operation should be performed. All equipment to be used during the construction and operational phases is to be kept in good working condition. This is of particular importance for the exhaust systems of the diesel earthmoving equipment. Should complaints about the noise be received from the community, the drilling contractors nor the applicant needs to assess the situation and make appropriate recommendations to reduce the noise impacts on nearby residents and, where necessary, a noise specialist.

Establishing the drilling site

Drilling sites shall be sited on a practical basis after consultation with the landowner. The area required for long-term drilling sites shall also be determined after consultation with the landowner and kept to a minimum. Prospecting activities shall be restricted to the agreed area. In order to contain non-biodegradable oil and fuel spills, drip pans or PVC lining shall be provided for mobile drills and drip pans or a thin concrete slab and/or with a PVC lining shall be installed before stationary drill rigs (long term) are erected. In the case of a need for a water supply pipeline to be laid to a site, it shall be done in consultation with the landowner and in such a manner that the surface and natural vegetation are not unduly disturbed.

Proper and frequent maintenance shall be done to minimize unnecessary spillage. In the case of long-term drilling operations, each drill hole shall have adequate measures to prevent pollution of groundwater, drainage systems or topsoil by effluent during the drilling operation. Separate pits shall be excavated and constructed for wastewater and grease and oil polluted fluid. When excavating these pits, the topsoil and the subsoil shall be stored separately. These pits shall be lined with an impermeable layer of concrete or PVC to prevent pollution. The pit shall be surrounded by an earth wall of at least 50mm in height and be constructed to withstand the impact of heavy rainfall. The contents of pits and drip pans must be disposed of at a recognized facility. Any spill should be cleaned up immediately by removing the spill together with the polluted soil and disposing of it at a recognized dumping facility. On completion of prospecting, the drilling site shall be rehabilitated. Pits shall be pumped dry, and the contents disposed of as described above. Linings must be removed and disposed of in the same manner. After all foreign matter has been removed from the pits, the excavations shall be backfilled with subsoil, compacted, and levelled with previously stored topsoil. No foreign matter such as cement or other rubble shall be introduced into such backfilling.

All boreholes shall be covered and made safe by means of a concrete cap, unless otherwise determined. On cultivated land, where practicable, a concrete cap shall be installed at least 1 metre below the surface. Boreholes shall be backfilled and compacted with appropriate inert material and soil. No foreign matter such as rubble or waste material shall be introduced into the hole. Where drilling sites (long-term operation) have been denuded of vegetation/grass or where soils have been compacted or crusts formed, the surface shall be ripped or ploughed and if necessary, appropriately fertilized to allow vegetation to grow rapidly. If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, it may be required that the soil be analysed and any deleterious effects on the soil arising from the prospecting operation, be corrected and the area be seeded with a seed mix to a certain specification.

Waste disposal

Designated areas will be planned and established for the disposal and temporary storage of all wastes on site. The necessary bins will be provided for the collection of waste. Domestic waste will be removed from site weekly by an independent waste disposal contractor to a registered or licensed disposal facility. Any hazardous waste will be stored separately in approved waste containers and removed from the site by an independent waste disposal contractor to a registered or licensed disposal facility. Waste from the drilling operation will be place within the dumping area as indicated on the Plan and removed by subcontractors for further utilisation. Responsible waste management practices will be implemented.

Surface Water

A 100m buffer zone will be placed on any water resource found on-site. No drilling or any other activity will take place within this buffer zone. The surface water resource will only be crossed at designated established crossing areas. No run-off water from the drilling programme will be allowed to run into the surface water resource.

Review the significance of the identified impacts

(After bringing the proposed mitigation measures into consideration)

All the significance impact identified has a low rating.

12. The positive and negative impacts that the proposed activity and alternatives will have on the environment and the community that may be affected

12.1 Positive impacts

12.1.1 Economic development

- The Project will create an income stream for the business that operates within the proposed area and the surrounding areas and the beneficiaries of the project especially the Kgatelopele local municipality residents as well as those of the municipalities around, however opportunities are minimal during the prospecting stage.
- Contribution of the business to the coffers of Tax of the Government of the Republic of SA.
- Acceleration of infrastructural developments in the area and the other rural underdeveloped areas.

12.1.2 Job Creation

- If the prospecting is granted and a Mineral Resource is determined, the applicant will lodge an application for a Mining Right or Permit which will stimulate the following;
- Communities will benefit from the selection, appointment of casual

employment that will take place as a result of construction of the project.

- This employment will be executed in line with the necessary skills required during construction, from the beginning to the completion of construction. Labour-force requirements include (artisans, engineers, builders, plumbers, construction engineers, electricians, various trades men, etc.).

Permanent jobs shall be available at the completion of the Project.

12.2 Negative impacts

There are minimal negative impacts that will be envisaged at this phase, due to the nature of the activity to be conducted.

For drilling phase

- Loss of Topsoil
- Impact on vegetation
- Dust from roads and land
- Waste Disposal
- Noise
- Water use
- Reduction of arable land for agricultural activities

13. Mitigation measures that could be applied and the level of risk

Significant potential impacts that were identified for the prospecting phase includes the following

- Loss of vegetation
- Soil erosion
- Spillage of drill fluid
- Disturbance of daily farming activities affecting production yield of the farm.

Mitigation measures that could be applied

- Dust suppression
- Revegetation to prevent soil erosion
- Avoiding watercourse and wetlands using buffer zones
- Conduct drilling on duration provided by the landowner.

14. Motivation where no alternative sites were considered

There has been a large increase in mining activities in Kgatelopele local Municipality has been brought about by investor confidence in mining and positive commodity prices. Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium,

Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand mining is also an enormous economic contributor to the area, and promotes economic growth and employment creation in the town. The prospecting methods to be used will minimize potential impacts to the preferred site. Although the applicant has applied for a size approximately **5.497 Ha** area, it is only the specified drilling points that will be disturbed. Some of the prospecting methods will provide that drip pans be used in order to contain non-biodegradable oil and fuel spills for mobile drills to reduce spillages.

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

It is the most suitable site to prospect for Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium, Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand on the proposed site. Geological setting of the area indicates that there is abundance of Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium, Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand reserve deposits around the area. Residences are located more than **5 km** from the proposed prospecting area, as a result impact on human beings will be minimal.

The prospecting area to be utilised is minimal and only specified site for drilling will be used or disturbed. Sensitive areas such as watercourses will be avoided with buffers. As indicated above, the prospecting phase will not require any permanent infrastructure to be constructed on site, as a result, a small portion of the site will be disturbed and the areas impacted will be rehabilitated.

16. Description of the process undertaken to identify, assess, rank the impacts and risks the activity will impose on the preferred site.

The prospecting methods that will be applied for drilling are both non-invasive and invasive as such, there is minimal expectations of impacts for the proposed activity on the preferred site. Prospecting phase due its nature of operation provides impacts on a small scale and those impacts identified will be adhered to and monitored during and after the project phase.

17. Assessment of each identified significant impact and risks

Table 18.1

Name of Activity	Potential impact	Aspects affected	Phase	Significance	Mitigation type	Significance (if mitigated)
Site Clearance	Dust generation	Air quality	Establishment phase	Minimal negative impact	Dust suppression	Negligible negative
	Loss of topsoil	Soils	Establishment phase	Minimal negative impact	Soil stripping	Negligible negative
	Loss of fauna & flora	Fauna & flora	Establishment phase	Minimal negative impact	Limited infrastructure footprint	Negligible negative
	Sedimentation of wetlands	Wetlands	Establishment phase Operational phase	Minimal negative impact	Buffer zones	Negligible negative
	Sedimentation & contamination of surface watercourses	Surface water	Operational phase	Minimal negative impact	Limited infrastructure footprint	Negligible negative
	Groundwater contamination	Groundwater	Operational phase	Minimal negative impact	Avoidance and spillage attention	Negligible negative
	Noise generation	Noise	Decommission phase	Minimal negative impact	Adhering to operating hours	Negligible negative

Drilling of prospecting boreholes	Soil compaction and erosion	Soils	Decommission phase	Minimal negative impact	Vegetation, restrict access	Negligible negative
	Sedimentation of wetlands	wetlands	Decommission phase	Minimal negative impact	Buffer zones	Negligible negative
	Contamination of groundwater	Groundwater	Decommission phase	Minimal negative impact	Consent from landowners from water usage	Negligible negative
Rehabilitation	Sedimentation of surface watercourses	Surface water	Decommission phase	Minimal negative impact	Rehabilitation of sumps	Negligible negative
	Soil compaction & erosion	Soils	Decommission phase	Minimal negative impact		Negligible negative
	Dust generation	Air quality	Decommission phase	Minimal negative impact	Dust management plan, vegetation	Negligible negative

18. Summary of specialists reports

Table 19.1

List of studies that are not undertaken	Recommendations of specialists reports	Specialists recommendations that have been included in the EIA report	Reference to applicable sections where specialists recommendation shave been included in the EIA report
Soil Impact Assessment	Significance of impacts & Mitigation measures	X	Individual specialist reports were not conducted due to the minimal impacts of the proposed activities
Fauna & flora	Significance of impacts & Mitigation measures	X	Individual specialist reports were not conducted due to the minimal impacts of the proposed activities
Wetlands Impact Assessment	Significance of impacts & Mitigation measures	X	Individual specialist reports were not conducted due to the minimal impacts of

			the proposed activities
Surface water impact assessment	Significance of impacts & Mitigation measures	X	Individual specialist reports were not conducted due to the minimal impacts of the proposed activities
Groundwater impact assessment	Significance of impacts & Mitigation measures	X	Individual specialist reports were not conducted due to the minimal impacts of the proposed activities
Heritage impact assessment	Significance of impacts & Mitigation measures	X	Individual specialist reports were not conducted due to the minimal impacts of the proposed activities

19. Environmental impact statement

19.1 Summary of the key finding of the environmental impact assessment

Table 20.1

Project phase	Receiving environment	Impact description	Pre-mitigation significance	Post-significance
Establishment phase	Social	Nuisance impacts due to heavy vehicles	Insignificant negative	Insignificant negative
	Soil, land capability	Loss of topsoil resources and capability	Minor negative	
	Fauna & flora	Loss of fauna & flora	Minor negative	
	Surface water	Sedimentation& contamination of surface water	Minor negative	
	Groundwater	Groundwater contamination	Negligible negative	
Operational phase	Social	Nuisance impact due to drilling, earthworks, heavy vehicles	Minor negative	
	Soil, land-use& capability	Soil compaction	Minor negative	
	Wetland	Contamination of wetlands	Minor negative	
	Surface water	Contamination of surface watercourses	Minor negative	
Decommission phase	Air quality	Elusive dust generation	Minor negative	
	Soil,land-use &land capability	Soil contamination, restoration of land capability		
	Fauna & flora	Destruction of suitable habitat		
	Surface water	Contamination & sedimentation of surface watercourse		

19.2 Final site Map

See attached site Map **Appendix A**

19.3 Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives

Associated Positive Impacts – Temporary Infrastructure:

Low intensity site establishment; Easy movement of infrastructure as prospecting progress; and complete removal of infrastructure at closure of the prospecting phase.

The negative impacts associated with the project that were deemed to have a Low-Medium or Medium

Significance includes:

- Clearance of site through removal of vegetation and topsoil Low to Med
- Exposed area become prone to soil erosion Low to Med
- Wetland deterioration Low to Med
- Disturbance of the geological strata Med-High
- Dust nuisance stemming from proposed project Low-Med
- Loss of and disturbance of surface archaeological sites Low-Med
- Contamination of area with hydrocarbons or hazardous waste materials Low-Med
- Potential for loss of soil and damage to soil characteristics Low -Med
- Potential for erosion, loss of soil characteristics, Compaction of soil & degradation through stockpiling Low-Med
- Loss of biodiversity Low-Med
- Alteration of topography Low-Med
- Visual intrusion due to the proposed project Low – Med
- Emissions from vehicles and drilling equipment on site Low-Med
- Potential disruption to graves (if found) Med
- Potential hydrocarbon contamination from leaks or spills leaching into the water table Low-Med

- Loss of food, nest sites and refugia for fauna Low-Med
- Potential hydrocarbon contamination which may reach downstream surface water bodies Low-Med
- Potential damage to or destruction of sensitive faunal habitats Low-Med
- Pans & watering points Low-Med

20. Proposed impact management objectives and impact management outcomes

Compilation of the Draft EMPR assists in determining the manner in which impact realised and suggest mitigation, monitoring and management strategies in turn developing greater outcomes of the proposed project

Management Objectives	Role	Management outcomes
Visual Aspect	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer	Ensure that the site have a neat appearance and is kept in good condition at all times. Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status
Dust Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. Dust monitoring consultant to check dust results and provide guidelines.	Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. Limit speed on the access roads to 40km/h to prevent the generation of excess dust. Spray roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g., DAS products) if dust is generated above acceptable limits. Assess effectiveness of dust suppression equipment. Re-vegetate all disturbed or exposed areas as soon as possible to prevent any dust source from being created.

		Thoroughly soak all stockpiles to ensure dust suppress
Noise Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer. Compliance to be monitored by the Noise Monitoring Specialist	Ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the prospecting area. Ensure that all prospecting vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Compliance with the appropriate legislation with respect to noise will be mandatory. Implement formal noise monitoring on a quarterly basis.
Management of weed/invader plants	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer	Implement a weed and invader plant control management plan. Control declared invader or exotic species on the rehabilitated areas. Keep the temporary topsoil stockpiles free of weeds
Topsoil management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer	Strip and stockpile the upper 500 mm of the soil and protect as topsoil. Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. Conduct topsoil stripping, stockpiling, and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. Place topsoil stockpiles along the northern and western boundaries of the site. Topsoil heaps may not exceed 1.5m in order to preserve microorganism within the topsoil.
Protection of natural vegetation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to	Contain all activities within the boundaries of the approved prospecting area. Demarcate, signpost, and manage the 20m

	be monitored by the Environmental Control Officer.	buffer area as a no-go area around areas with natural vegetation.
Fauna Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	Ensure no fauna is caught, killed, harmed, sold, or played with. Instruct workers to report any animals that may be trapped in the working area. Ensure no snares are set or nests raided for eggs.
Management of health and safety risks	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	Ensure that workers have access to the correct PPE as required by law. Ensure all operations comply with the Occupational Health and Safety Act.
Handling of Hazardous Materials and Substance	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer	Store all hazardous materials or substances in a closed storage facility with an impermeable floor. Storage area to meet the following conditions: Construct storage area on a level area. Floor of the storage area should be impermeable. Storage area should be outside the 1:100-year flood line or further than 100m from the edge of a watercourse, whichever is greatest. Access to the materials/substances may only take place with the prior notification of the site manager. Fuel storage tanks should have an impermeable bund wall and base within which the tanks sits raised above the floor, on plinths. The bund capacity should be sufficient to contain 110% of the tank's maximum capacity. Consider the distance and height of the bund wall relative to that of the tank to ensure that oil does not spout beyond the confines of the bund. Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. Inspection should be at least weekly, and any accumulated rainwater should be removed. All valves

		and outlets should be checked to ensure that they are intact and closed securely. Slope the bund base towards a rainwater sump of sufficient size. Contain contaminated water until it can be collected by a registered hazardous waste handling contractor or be disposed of at a registered hazardous waste handling facility. Ensure availability of drip trays underneath all stationary equipment or vehicles
Waste management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	Ensure no waste storage area is established outside the boundaries of the prospecting area. Ensure vehicle maintenance only take place within the service bay area of the off-site workshop. If emergency repairs are needed on site, ensure drip trays are present. Ensure all waste products are disposed of in a 200 litre closed container/bin inside the emergency service area. Ensure diesel bowser is equipped with a drip tray at all times. Use drip trays during each and every refuelling event. Ensure the nozzle of the bowser rests in a sleeve to prevent dripping after refuelling. Keep drip trays clean. No dirty drip trays may be used on site. Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility. Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility. File proof on site. Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. Place all used oils, grease, or hydraulic fluids therein

		and remove these receptacles from the site on a regular basis for disposal at a registered or licensed hazardous disposal facility. Store non-biodegradable refuse such as glass bottles, plastic bags etc., in a container with a closable lid at a collecting point. Collection should take place on a regular basis and disposed of at the recognised landfill site. Prevent refuse from being dumped on or in the vicinity of the prospecting area. Biodegradable refuse to be handled as indicated above.
Management of access roads	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer.	Maintain newly constructed access roads so as to minimise dust, erosion, or undue surface damage. Divert storm water around the access roads to prevent erosion. Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. Repair rutting and erosion of the access roads caused by the proposed activities
Protection of Cultural or Heritage Artefacts	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	Maintain newly constructed access roads so as to minimise dust, erosion, or undue surface damage. Divert storm water around the access roads to prevent erosion. Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. Repair rutting and erosion of the access roads caused by the proposed activities. Protection of Cultural or Heritage Artefacts. Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. Notify Heritage and the ECO immediately.

After care on rehabilitated areas	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	Control run-off water via temporary banks to ensure that accumulation of run-off does not cause down-slope erosion. Only do topsoil spreading at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal. Plant a cover crop immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. Fertilize the cover crop for optimum production. Ensure rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation must not be considered complete until the first cover crop is well established. Monitor all rehabilitated areas for erosion, and appropriately stabilized if any erosion occurs.

21. Aspect for inclusion as conditions of authorisation

The proposed strategies ranging from mitigation measures, monitoring and management systems should be part of the conditions of the authorisation.

22. Description of any assumption, uncertainties, and gaps in knowledge

The prospecting phase which largely involves a minimal impact approach to the environment, having said that the information provided in this report will assist the competent authority to arrive with an appropriate conclusion to the proposed activity in question.

23. Opinion as to whether the proposed activity should or should not be authorised

23.1 Reasons why the activity should be authorized or not

The proposed activity should be authorised considering the need and desirability of the activity relevant to the location of the area where the proposed activity is to be conducted on. The end result of the proposed activity is to determine type, amount and value of the commodity applied for due to the demand of that commodity to the global market and the economic benefits notwithstanding the recommendations and measures to be put in place to monitor impact response and minimisation.

23.2 Conditions that must include in the authorisation

As discussed above the recommendations, mitigation measures proposed in the Draft EMPR will suffice as conditions.

24. Period for which the environmental authorisation is required

The prospecting right will expire in five years' time, similarly the authorisation should remain active until the right expires, as contents of the authorisation will no longer serve value when prospecting phase has ended that is after rehabilitation has been concluded.

25. Undertaking

Project team confirms that the undertaking that is applicable to the basic assessment report and Draft EMPR is made available at the last section of the report.

26. Financial provision

In accordance with the requirements of regulation 54(i) of the Mineral and Petroleum Resource Development Act, 2002 (Act 28 of 2002) M Chrome Iron Steel (Pty) Ltd has calculated the environmental closure liability for the proposed project according to the financial provision.

26.1 Explain how the aforesaid amount was derived

26.2 Quantum calculations

(Provide a calculation of the quantum of the financial provision required to manage and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulation54 (1) in respect of each of the phases referred to)

The Guidelines as prescribed by the Department indicates that a rate per hectare is required in terms of the class of mine (C class) as well as the environmental sensitivity of the mine.

26.2.1 Commodity type and saleable mineral by-product

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

Commodity type	Iron ore, Manganese ore, Copper ore, Jaspilite, Lithium, Diamonds, Shale, Kaolin, Rare Earth Element, General Clays, Aggregate Dimension stones, General sand and silica sand
Saleable mineral by-product	

26.2.2 Risk ranking

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

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

26.2.3 Environmental sensitivity of the prospecting area

According to Table B.4

Environmental sensitivity of the prospecting area	Low

26.2.4 Level of information

According to Step 4.2:

Level of information available	Limited

26.2.5 Identify closure components

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)		No
2(A)	Demolition of steel buildings and structures		No
2(B)	Demolition of reinforced concrete buildings and structures		No
3	Rehabilitation of access roads	Yes	
4(A)	Demolition and rehabilitation of electrified railway		No
4(B)	Demolition and rehabilitation of non-electrified railway lines		No
5	Demolition of housing and facilities		No
6	Open rehabilitation including final voids and ramps	Yes	
7	Sealing of shafts, adits, and inclines		No
8(A)	Rehabilitation of overburden and spoils	Yes	
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)		No
8©	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)		No
9	Rehabilitation of subsided areas		No
10	General surface rehabilitation, including grassing of all denuded areas	Yes	

11	River diversions		No
12	Fencing		No
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)		No
14	2 to 3 years of maintenance and aftercare		No

26.2.6 Unit rates for closure components

According to Table B.6 master and multiplication factors for applicable closure components.

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)		
2(A)	Demolition of steel buildings and structures		
2(B)	Demolition of reinforced concrete buildings and structures		
3	Rehabilitation of access roads	51	1
4(A)	Demolition and rehabilitation of electrified railway		
4(B)	Demolition and rehabilitation of non-electrified railway lines		
5	Demolition of housing and facilities		
6	Open rehabilitation including Final voids and ramps	301350	1
7	Sealing of shafts, adits and inclines		
8(A)	Rehabilitation of overburden and spoils	200900	1
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)		
8©	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)		
9	Rehabilitation of subsided areas		
10	General surface rehabilitation, including grassing of all denuded areas	159147	1
11	River diversions		
12	Fencing		
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)		
14	2 to 3 years of maintenance and aftercare		

26.2.7 Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.1
Weighting factor 2: Proximity of urban area where goods and service are to be supplied	1.05

26.2.8 Calculation of closure costs

Table B.10 Template for level 2: "Rules-based" assessment of the quantum for financial provision (see attached calculation)

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and planned closure gives a sum total of **R 63 270.47 (see Appendix E)**

26.3 Confirm that this amount can be provided for from the operating expenditure

The amount of financial provision will be paid by M Chrome Iron Steel (Pty) Ltd immediately after the Environmental Management Plan has been approved.

27. Specific information required by the competent authority

27.1 Compliance with the provision of section 24(4)a and b read with section 24(3) and 7 of the National Environmental Management Act(107 of 1998).The EIA report must include

27.1.1 Impact on the socio-economic conditions of any directly affected persons

There will be minimal impact on the socio-economic status of the persons directly affected as the prospecting phase consist of fairly marginal labour to complete the project. Potential negative impacts will be addressed in consultation with the I&APs to avoid violation of any person rights.

Visual exposure:

The prospecting area was identified to constitute the lowest possible visual impact on the surrounding environment. The applicant should however ensure that housekeeping is managed to standard, as this will mitigate the visual impacts during the operational phase of the mine. Upon closure the site will be rehabilitated and sloped to ensure that the visual impact on the aesthetic value of the area is kept to a minimum. The site will have a neat appearance and be kept in good condition at all times.

Air Quality:

The background air quality of the surrounding area is relatively good due to low industrial activity. Factors contributing to air pollution are the burning of veld and agriculture in the area. Given the surrounding extent of mostly covered areas, no extreme dust generation under windy conditions is experienced. Dust will be generated by the movement of machinery and vehicles. Dust suppression measures should be implemented to prevent excessive dust on site. Due to the remote setting of the proposed prospecting area the potential impact of dust nuisance on the surrounding environment is deemed to be of low significance.

Noise:

The surrounding areas are characterised by an agricultural setting in which vehicles and farm equipment operate. The traffic on the roads surrounding the property contributes to the ambient noise of the area. The noise to be generated at the proposed site operation is expected to temporarily increase the noise levels of the area. Drilling, Loading and transportation of the material will generate noise daily. The significance of noise on the surrounding environment is therefore deemed to be of low significance. Mitigation measures should be implemented to ensure employees conduct them in an acceptable manner while on site in order to lessen the noise impact of the proposed activity on the surrounding environment.

Existing Infrastructure:

It is expected that the proposed prospecting activity will have a very low impact on the surrounding environment as activities will be contained within the boundaries of the site. The proposed footprint area will not require the building of any permanent structures. The proposed prospecting on the property will also reduce the amount of trucks delivering materials, from outside sources. This will have a direct positive impact on the traffic volumes of the surrounding roads and price of the commodity.

27.1.2 Impact on any national estate referred to in section 3(2) of the National Heritage Resource Act

Heritage sites within the proposed prospecting area will be identified in consultation with the landowners and appropriate measures will be proposed to protect such sites from the impact arising from the project.

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

The report compiled together with the information includes proof of consultations, site visits pictures and minutes etc.

No alternatives sites were considered during the site visit. If drill sites are to be found unfeasible due to the natural environment, these drill sites will be relocated to a position possible with minimal impacts associated. However, the applicant considered two activity alternatives during the planning phase of this project:

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

a. The use of temporary Infrastructure will entail the use of machinery that is either track-based or can be removed without difficulty. Temporary Infrastructure to be used in the prospecting method will entail some temporary offices, storage facility and chemical toilet, with servicing of vehicles and equipment being done off-site at the existing workshop on the applicant's farm.

Positive Aspects: The positive aspects associated with the use of temporary infrastructure firstly enable the applicant to move the temporary infrastructure within the boundaries of the prospecting area as prospecting of the mineral progresses. Secondly the decommissioning phase is facilitated as the removal of temporary infrastructure from the prospecting area during the rehabilitation of the site is easy and highly effective. The use of permanent infrastructure will entail the construction of an office building with ablution facilities, and installation of a permanent vehicle service area.

i. The use of permanent Infrastructure will increase the impact of the proposed project on the environment as it will entail the establishment of more structures, lengthen the period required for rehabilitation as well as increase the rehabilitation amount as the permanent Infrastructure will either have to be decommissioned or be maintained after the closure of the site.

The construction of permanent Infrastructure at the site will also increase the visual impact of the proposed project on the surrounding environment and additional mitigation measures will have to be implemented to address the impact.

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

No-go Alternative:

The ‘No Go’ option for development was considered. However, this was adjudged to not be the best land-use option for the following reasons: The grazing value of the land is at present considered to be extremely low due to the high level of disturbance, resulting in the area being characterized by non-palatable grasses and low biomass. The no-go alternative entails no change to the status quo and is therefore a real alternative that must be considered. In the event that the no-go alternative is implemented it will prevent the prospecting of the study area.

Environmental Management Programme Report

28. Details of EAP

Details of the Environmental Assessment Practitioner has been included in **Part A (section 1)**

29. Description of the aspect of the activity

Description of the aspect of the activity has been included in **Part A (section 1)**

30. Composite Map

A Map containing all the required information regarding the proposed prospecting site. **See Appendix A**

31. Description of the impact management objectives including management statement

31.1 Determination of closure objectives

The closure objectives for the proposed prospecting activity include the following:

- Rehabilitation of the prospecting sites
- Reduction of the visual impact of the prospecting sites
- Information provision to the competent authority
- Submit monitoring results to the relevant competent authority

Prospecting activities are to be undertaken in a manner which facilitates site rehabilitation and the restoration of existing land capabilities. The primary objectives of rehabilitation includes:

a) The facilitation of the re-establishment of the land use and capability to as close as reasonably to the original conditions;

b) Removal of all infrastructure and material introduced to site

c) Removal of all wastes and their related disposal

d) And promotion of the rapid re-establishment of natural vegetation and the restoration of site ecology.

The disturbed areas shall be rehabilitated to ensure that:

The biodiversity habitat is encouraged by the new land use after prospecting;

Future public health and safety are not compromised; The site is reversed to almost its original state; Environmental and resources are not subject to physical and chemical deterioration; The after-use of the site is beneficial and sustainable in the long term; Any adverse socio-economic impacts are minimized; and All socio-economic benefits are maximized.

This will be done by complying with the conditions in the environmental management program below, and relevant statuary requirements. The contractor and employee will be made aware of their environmental responsibilities and will be empowered to execute the work program in compliance with the requirements of this EMPR.

The following closure objectives are proposed with regard to rehabilitation of the prospecting area:

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

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- The topsoil will be placed back as a growth medium, and the sides of the excavation will be sloped with acceptable contours to prevent soil erosion.
- No trees to be removed over areas where prospecting is required.
- Rehabilitation will be conducted after the prospect drilling is complete.
- Rehabilitation will be ongoing and conform to 1.5 m^2 being stripped of topsoil and 1.5 m^2 being rehabilitated after the oversized and processed soil is worked back into the excavation. Thus, there will only be 1.5 m^2 of land open for rehabilitation in operational times.
- Fill and topsoil could be placed over the slopes to provide a suitable medium for the establishment of vegetation.
- No waste will be permitted to be deposited in the excavations.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the prospecting operation be corrected, and the area be seeded with a vegetation seed mix to his or her specification.

Photographs of the sites, before and during the prospecting operations and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.

Prior to replacing the topsoil, the material that was removed from these areas will be replaced in the same order as it originally occurred.

All Temporary Infrastructures, equipment, plant, and other items used during the prospecting period will be removed from the site.

Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the prospecting area and disposed of at a recognized landfill facility, proof of this removal will be kept on file at the applicant's office. It will not be permitted to be buried or burned on the site.

Weed / Alien clearing will be done in a sporadic manner during the life of the prospecting activities.

Species regarded as the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure. Final rehabilitation shall be completed within a period specified by the Regional Manager.

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

31.2 Volume and rate of water use required

Water usage will be limited to the following activities

- For drill bits to control overheating
- Dust suppression for heavy vehicles

Rate will be determined during the operation depending on the source of water available.

31.3 Has a water use licence been applied for ?

Water use licence has not been applied due to the fact that site specific drill points are still to be determined. Water will be brought to site every day for use on site. Potable water would be bought locally and supplied to site.

32. Impact to be mitigated in their respective phase

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

Table 33.1

Activities	Phase	Size and scale	Mitigation measures	Compliance with standards	Time period for implementation
Site Clearance	Dust generation	Air quality	Establishment phase	Minimal negative impact	Dust suppression
	Loss of topsoil	Soils	Establishment phase	Minimal negative impact	Soil stripping
	Loss of fauna & flora	Fauna & flora	Establishment phase	Minimal negative impact	Limited infrastructure footprint
	Sedimentation of wetlands	Wetlands	Establishment phase Operational phase	Minimal negative impact	Buffer zones
	Sedimentation & contamination of surface watercourses	Surface water	Operational phase	Minimal negative impact	Limited infrastructure footprint
	Groundwater contamination	Groundwater	Operational phase	Minimal negative impact	Avoidance and spillage attention
	Noise generation	Noise	Decommission phase	Minimal negative impact	Adhering to operating hours
Drilling of prospecting boreholes	Soil compaction and erosion	Soils	Decommission phase	Minimal negative impact	Vegetation, restrict access
	Sedimentation of wetlands	Wetlands	Decommission phase	Minimal negative impact	Buffer zones
Rehabilitation	Contamination of groundwater	Groundwater	Decommission phase	Minimal negative impact	Consent from landowners from water usage

32.2 Impacts to be mitigated in their respective phases

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

Table 32.2

Activities	Phase	Size and scale	Time period for implementation	Compliance with standards	Mitigation measures
DEMARCATION OF SITE	Operational	2985.15 Ha	Life of the activity	Degradation of the gravel access road: • NRTA, 1996 The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.	All intersections with main tarred roads will be clearly signposted. Drivers will be enforced to keep toset speed limits. Trucks will be in road-worthy conditions. A fund will be set aside to maintain the serviceability of the road verge where the trucks approach or depart from the main road. Ensure directional floodlights are utilized that focus light on the necessary areas and reduce light pollution to surrounding environment.
Establishment of the temporal infrastructure within the mining site	Operational	10Ha	Construction / Site Establishment phase Throughout operational and decommissioning phases	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Portable toilets are to be emptied and cleaned regularly. Ensure reputable contractors are utilized for management of facilities. Portable toilets will be managed by a reputable contractor and inspected daily for any potential leaks. Water should not be released into the surrounding environment unless relevant permission obtained from DWS Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed, and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that

					only areas required to be lit are lit. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduce risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.
				Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly, especially during times of high dust generation.
				Noise Handling: NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Emission Handling: All vehicles will be regularly serviced to ensure they are in proper working condition and to reduce risk of excessive emissions.
				Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the prospecting area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery, and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.

				Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004 Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetate all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed, and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with a herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles need to be kept free of weeds Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage

					together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.
				Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity. Should graves be observed on site then all activity should be ceased and the area demarcated as a no-go zone. A specialists will need to be consulted and responsible action considered whether grave relocation or ceasing activity
				Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Inform staff, contractors, and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduce risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity.
				Not applicable as these are mobile and will be removed during rehabilitation and closure of the site	Negative impact on fauna that may enter the area: • The site manager must ensure that no fauna is caught, killed, harmed, sold, or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set, or nests raided for eggs or young.

					Ensure advertising is limited to local and regional areas, and only specifically advertise for Jobs nationally if skills are not available. Ensure that all power-related structures are adequately marked with relevant signs and warnings and fenced off.
Stripping and Stockpiling of topsoil	Operational	10Ha	Throughout operational and decommissioning phases	Land use zoning: • Northern Cape Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use. Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed, and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduce risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an

				Noise Handling: NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987 Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004	environmentally friendly dust-allaying agent that contains no PCB's (e.g,. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly, especially during times of high dust generation. Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions. Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery, and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received. Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control

				Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999 Contamination of surface or groundwater due to hazardous spills not cleaned:	methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles need to be kept free of weeds. Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity. Should graves be observed on site then all activity should be ceased, and the area demarcated as a no-go zone. A specialists will need to be consulted and responsible action considered, whether grave relocation or ceasing activity. Truck, machinery, and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will be called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduce risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.

Drilling of prospecting boreholes				Land use zoning: • Northern Cape Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use. Dust Handling: • NEM:AQA, 2004 Regulation 6(1) Noise Handling: NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act,	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed, and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduce risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly, especially during times of high dust generation. drilling alternatives will be considered to reduce noise and associated vibrations

				1987 Contamination of surface or groundwater due to hazardous spills not cleaned: The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993 Negative impact on fauna that may enter the area: • NEM: BA, 2004 • Site management has to strive to eliminate the impact on fauna in the	Truck, machinery, and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will be called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduce risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Ensure baseline photographs are taken of all structures which may be impacted for photographic evidence prior to any drilling. Ensure procedures are in place to compensate for damage. Ensure that all power-related structures are adequately marked with relevant signs and warnings and fenced off. Inform staff, contractors, and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize

				surrounding environment for the duration of the processing activities. Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004	directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduce risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity. Negative impact on fauna that may enter the area: • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set, or nests raided for eggs or young. Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed, and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles need to be kept free of weeds.

Rehabilitation	Decommissioning phase	10Ha	Throughout decommissioning phase	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004 NWA, 1998 The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993 Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to	Rehabilitate disturbed areas with natural indigenous flora. Monitor for cover abundance. Monitor area for erosion and pooling and rehabilitate if necessary. Continue with Surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Ensure that all staff members are made aware of all working conditions on site. Inform staff contractors, and visitors to not harm fauna in the area. Conduct annual surveys to monitor faunal biodiversity.

				eliminate the impact on fauna in the surrounding environment for the duration of the processing activities. Land use zoning: • Northern Cape Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use. • Every precaution must be taken to prevent contamination. The precautionary principal must apply	Keep mining in footprint. Excavation areas will be sloped during rehabilitation to even out depressions. Monitor, especially after first heavy rain falls to ensure adequate surface water drainage The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed, and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduce risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA. Should it be found that after prospecting operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.

33. Impact management outcomes

Table 33.1

Activity	Potential Impact	Aspects Affected	Phase	Mitigation type	Compliance
Column 1	**Column 2**	**Column 3**	**Column 4**		
Site Visit done by EAP	Emissions	Air Quality	Establishment phase	Emissions	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
	Fugitive dust generation	Air Quality	Establishment Phase	Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
	Potential disruption to grave sites	Archaeological and Cultural Resources	Establishment Phase	Survey area before site clearance	Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999
	Loss of fauna and flora species	Fauna and Flora	Establishment Phase	Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.
	Sedimentation of wetlands	Wetlands	Establishment Phase		

	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination	Soil	Establishment phase	Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.
	If the infrastructure is established within the boundaries of the approved mining area, no impact could be identified.	N/A	Establishment phase	N/A	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.
Stripping and Stockpile of Topsoil	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational	Implementation of proper housekeeping	• Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture

					as primary use
	Dust nuisance caused by the disturbance of soil, Emissions caused by vehicles and equipment	Emissions will be contained within the property boundaries and will therefore affect only the landowner		Dust suppression and Emission	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
	Sedimentation and contamination of surface water resources	Surface water	Establishment Phase, Operational Phase	Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998
	Groundwater contamination	Groundwater	Establishment Phase	Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:
	Noise generation	The noise impact should be contained within the boundaries of the property and will represent the current noise levels of the farm.	Establishment Phase, Decommissioning Phase	Noise control measures	Noise Handling: NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987

	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Flora	Operational phase	Implementation of weed control and weed/invader plant management plan. Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004
	Soil contamination and degradation	Soil	Operational Phase, Decommissioning Phase	Site Management Soil Management	• The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil
	Veld fire might seriously impact surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Land use	Operational	Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.

Drilling of Prospecting Boreholes	Alternation of visual environment	Topography and Visual Environment	Operational Phase	Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use
	Health and Safety Risk by Drilling Activities. Potential danger to surrounding communities	The Unsafe working conditions should only impact the applicant. Safety measures will be implemented	Operational	Implementation of safety control measures	The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993
	Noise nuisance generated by drilling equipment	The noise impact should be contained within the boundaries of the property and will represent the current noise levels of the farm.	Operational	Noise Control Measures	Noise Handling: NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
	Soil compaction	Soils	Operational Phase	Site Management Soil Management	• The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.

	Sedimentation of surface water resources	Surface Water	Operational Phase	Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS	NWA, 1998
	Elusive dust generation from drilling and excavation	Air Quality	Decommissioning Phase	Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)

34. Impact management actions

Table 34.1

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards

The list of activities for the Project are displayed in Table 1.1	The potential impacts associated with each activity are outlined in Table 1.3	The aspects affected as a result of the potential impact are outlined in Table 1.5	The mitigation types of each of the potential impacts are outlined Table 1.4	The time periods for each of the potential impacts are outlines in Table 1.4	The compliance with the standards for the potential impacts are outlined in Table 1.1

35. Financial provision

35.1 Determination of the amount of financial provision

35.1.1 Alignment of rehabilitation with the closure objectives

(Describe and ensure that the rehabilitation plan is compatible with the closure objectives determined in accordance with the baseline study as prescribed).

The following closure objectives will be applicable for rehabilitation:

- Remove all temporary infrastructure and waste from the site as per the requirements of this EMPR and of the Provincial Department of Mineral Regulation;
- Demolish / rehabilitate all roads with no post -prospecting use potential;
- Clear all carbonaceous material from site;
- Clear boulders from site;
- Remove all waste from site;

- Any wetlands in the area should not be compromised or destructed;
- Future public health and safety are not compromised;
- Ensure that no threat to surface and underground water quality remains;
- Ensure that all permanent changes in topography are sustainable and do not cause erosion or the damming up of runoff;
- Shape and contour all disturbed areas in compliance with the EMPR;
- The stockpiled topsoil will be spread over the disturbed area to a depth of at least 500 mm;
- Make safe any dangerous excavations or subsidence on the surface;
- Rehabilitate all disturbed areas in compliance with the EMPR and of the Provincial Department of Mineral Regulation;
- Ensure that all rehabilitated areas are safe, stable and self-sustaining in terms of vegetation;
- Control of weeds and alien invasive plant species is an important aspect after topsoil replacement and seeding has been done in an area;
- The applicant will comply with the minimum closure objectives as prescribed by DMRE;
- Any adverse socio-economic impacts are minimised; and
- All socio-economic benefits are maximised.
- Land disturbed will be rehabilitated to a stable and permanent form suitable for subsequent land use. The final land use will be agriculture, forestry, or subsistence farming, depending on where the prospecting site is located within the project area.
- There will be no adverse environmental effect outside the disturbed area and the affected area will be shaped to ensure effective drainage.
- The disturbed area will not require greater maintenance than that in or on surrounding land after closure.
- It is required that all exploration holes be re- habilitated, which is conducted on an ongoing basis.
- Boreholes sunk in agricultural lands will have the casings removed or cut to a minimum depth of 2m below surface, then a plug inserted at a minimum of 5m below surface and filled with concrete to 2m below surface.

- The remainder of the hole will be filled with top soil.
- Boreholes outside agricultural lands will be rehabilitated similarly and marked with a concrete beacon.

35.1.2 Confirm specifically that the environmental objectives in relation to closure have been consulted with the landowners

The landowners together with the I&APs have been consulted with regard to the closure objectives before allowing access to the proposed site, which will be provided to them on request.

35.1.3 Provide a rehabilitation plan that describes and shows the aerial extent of the main mining activities

The prospecting sites will be rehabilitated immediately following the commencement of the drilling activities. Upon closure of the prospecting activity all infrastructure will be removed. The compacted areas will be ripped and levelled upon which the topsoil will be replaced. No permanent structures will remain upon closure of the site. The rehabilitation plan shall entail removal of all generated waste, infrastructures and materials, re-vegetation of disturbed and cleared areas, rehabilitation of access roads, ensuring the growth of the existing grasses and plants species and cleaning of spillages etc. The rehabilitation process is summarised as follows:

- The drill rig and core will be removed from site
- The sumps will be pumped empty, and the oil and sludge disposed of at a registered disposal facility
- The wastewater will be removed from site and treated at a registered water treatment facility;
- All waste will be removed from site and disposed of accordingly;
- The sump liner will be removed and reused at another site, following the inspecting of the liner, or disposed of at a registered disposal facility;
- The sumps will be backfilled and levels;
- The site will be levelled and ripped to ensure there is no compaction.
- The topsoil will be spread over the site and the site vegetated with indigenous vegetation; and;
- The site will be monitored for the success of the rehabilitation;

35.1.4 Explain why the rehabilitation is compatible with the closure objectives

The rehabilitation plan has been compiled in support of the primary closure objective which is to rehabilitate the prospecting sites to their natural or predetermined state, or to land use that conforms to the generally accepted principles of sustainable development through restoration, remediation, rehabilitation, and stabilisation remediation of the impact land to a post-mining land use capable of supporting grazing activities.

Rehabilitation will be ongoing and conform to 1.5 m^2 being stripped of topsoil and 1.5 m^2 being rehabilitated after the oversized and processed soil is worked back into the excavation. Thus, there will only be 1.5 m^2 of land open for rehabilitation in operational times. One excavator will be used to excavate the alluvial soil. Fill and topsoil could be placed over the slopes to provide a suitable medium for the establishment of vegetation. No waste will be permitted to be deposited in the excavations. On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- The topsoil will be placed back as a growth medium, and the sides of the excavation will be sloped with acceptable contours to prevent soil erosion.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- Photographs of the sites, before and during the prospecting operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.
- Prior to replacing the topsoil, the material that was removed from these areas will be replaced in the same order as it originally occurred.

Final rehabilitation:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding and maintenance, and weed / alien clearing.
- All Temporary Infrastructures, equipment, plant, temporary housing, and other items used during the prospecting period will be removed from the site.
- Waste material of any description, including receptacles, scrap, rubble, and tyres, will be removed entirely from the prospecting area and disposed of at a

recognized landfill facility, proof of this removal will be kept on file at the applicant's office. It will not be permitted to be buried or burned on the site.

- Weed / Alien clearing will be done in a sporadic manner during the life of the prospecting activities.
- Species regarded as the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.

35.1.5 Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guidelines

Quantum calculations

(Provide a calculation of the quantum of the financial provision required to manage and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulation54 (1) in respect of each of the phases referred to)

The Guidelines as prescribed by the Department indicates that a rate per hectare is required in terms of the class of mine (C class) as well as the environmental sensitivity of the mine.

In terms of the area where the prospecting will be taking place, the land can be classified as:

- Biophysical: Low – Medium
- Social: Medium
- Economic: Medium

In accordance with the above, the rate per hectare is therefore prescribed as indicated.

Table 35.1: Environmental sensitivity of mine area

	Low	Medium	High
Rate per hectare to determine the quantum (rands)	200 0	500 0	800 0
Minimum amount	10 000.00		

Provision to be made

The calculation of financial as stated above is based on the exploration to be conducted as part of the exploration work programme. The exploration will be conducted with a phased approach. After the desktop study and geological analysis of phase 1 of the exploration work programme, one borehole will be drilled. Upon notice of successful results from the drilling of the first borehole, we will make the decision to commence with the rest of the exploration work programme. The EMPR as well as the financial provision for the rehabilitation of the Project area will be adjusted accordingly.

Exploration work programme will commence with Phase 1 which does not involve drilling or any other invasive exploration activities. There will be significantly less requirements for rehabilitation in the first year of the exploration programme, and financial provision that should be made is less. It is recommended that the financial provision to cover the first year of exploration be set out at R10 000.

35.1.6 Confirm that the financial provision will be provided as determined

The amount of financial provision will be paid by M Chrome Iron Steel (Pty) Ltd immediately after the Draft BAR and Environmental Management Plan has been approved.

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting

35.1.7 Monitoring of Impact Management Actions

List of Identified Impacts Requiring Monitoring Programmes

The identified impacts that require monitoring programmes includes the following:

- Site clearing and establishment:
- Removal of vegetation; and
- Soil erosion.
- Drilling:
- Soil erosion;
- Dust and noise;
- Water generated; and

- Groundwater levels and quality.
- Heritage landscape;
- Hydrocarbon spillages;
- Domestic waste; and Fires.
- Wetlands, pans, and dams will be avoided during the prospecting activities

Roles and Responsibilities for the Execution of the Monitoring Programmes

Supervisors must be appointed to monitor the potential impacts of the above mentioned activities and Project Managers will foresee that all of the management plans are implemented. Once the prospecting activities have been completed, RPM will appoint an independent environmental officer to conduct a site visit to audit the rehabilitation and a report will be compiled and submitted to the DMR.

35.1.8 Monitoring and reporting frequency

Monitoring and reporting frequency were discussed on the monitoring sections.

35.1.9 Responsible Persons

Roles and responsibilities with respecting to the monitoring programme were discussed on the monitoring section.

35.1.10 Time Period for Implementing Impact Management Actions

This was discussed on the impact management action section table

35.1.11 Mechanism for Monitoring Compliance

The method of monitoring the implementation of the impact management actions, the frequency of monitoring the implementation of the impact management actions were discussed on the monitoring phase, 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.

36. Indicate the frequency of the submission of the performance assessment/environmental audit report

A performance assessment report for the Project will be submitted on an annual basis to the DMR during proposed prospecting phase and on a two yearly basis during operation.

37. Environmental Awareness Plan

37.1 Employee communication process

(Describe how the applicant intends to inform his or her employees of any environmental risk which may result from their work).

Alarms will be set at all times to ensure that if there is any risk on site it should prevent employees to be endangered. The applicant will inform his or her employees of any risk on a daily basis should any such risk be identified. This will include Health and Safety as well as Environmental Risks.

37.2 Description of solutions to risks

(Describe the manner in which the risk must be dealt with in order to avoid pollution or degradation of the environment)

Table 37.1: General prospecting activity risks table

Risk	Cause	Controls / Mitigation
Veld fires	Smoking and discarding matches in the field	Maintain visual awareness of surroundings; smoking only in designated areas; keep a fire extinguisher on Site
Property damage	Reckless driving; driving over bushes and shrubs; Pavements	Follow existing roads and / or tracks; maintain visual
Damage to field equipment and tools	Vehicles getting stuck in loose sands	Follow existing roads and / or tracks; maintain visual
Stock / agricultural produce theft / hunting by employees	Trespassing of employees onto agricultural land	Staff will not live on site, will be supervised at all times

Erosion of site	Trampling by employees and vehicles	Personnel will be restricted to 25 metre radius of each borehole, away from gullies, wetlands and river banks
Damage to vegetation	Off-road driving to borehole sites	Where off-road driving is necessary, attempts to follow fence lines and animal tracks will be made at every possible opportunity
Erosion of existing roads	More frequent use of roads	Speed limits of 40km/h will be maintained at all times by vehicles, dust suppression monthly
Noise disturbance to residents and indigenous fauna	Drilling operations and vehicle traffic	Drilling times will be minimised and kept to working hours when residents are at work / school (away from sites)

37.3 Environmental awareness training

(Describe the general environmental awareness training and training on dealing with emergency situations and remediation measures for such emergencies).

As part of the construction phase for the project, induction training will be conducted on all people involved in the prospecting project including geologists, drilling crew and relevant technical services, prior to the commencement of any work. Training will involve all the relevant components of the EMPR including:

- Access, including use of roads, tracks, gates, etc.
- Control measures required to manage excluded and exempted areas.
- The handling, storage, and disposal of waste.
- Weed control.
- Fire prevention.
- Sediment and erosion control.

- Control measures to be implemented with regards to the management of water, noise, and dust.
- Rehabilitation of borehole sites and access tracks.

38. Specific information required by the competent authority

The financial provision for the environmental rehabilitation and closure requirements of Mining operations is governed by National Environmental Management Act, 1998, Act 107 of 1998), as amended, (NEMA) which provides in Section 24P that the holder of a prospecting right must make financial provision for rehabilitation of negative environmental impacts. The financial provision will be reviewed annually.

39. 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 inclusion of inputs and recommendations from the specialist reports where
- relevant; and
- The acceptability of the Project in relation to the finding of the assessment and level of mitigation proposed.

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Signature of the Environmental Assessment Practitioner:
Ms Pheladi Mphahlele (EAPASA reg)

Name of Company**:**
TPR Mining Resources (Pty) Ltd

Date: **04 August 2023**

39.1 The following Appendixes are attached

- **Appendix A- Site Map**
- **Appendix B- Photographs**
- **Appendix C-Facility illustrations**
- **Appendix D- Consultation Report**
- **Appendix E- Quantum Calculation**
- **Appendix F- Screening Tool Report**
- **Appendix G- Other information**