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
FARM NAME:	Farm 131
COMMODITY:	Copper Ore, Iron Ore, Manganese Ore and Nickel Ore
MAGISTERIAL DISTRICT:	Barkley West
DATE:	August 2023

FILE REFERENCE NUMBER SAMRAD: NC 30/5/1/3/2/ 11054 MP

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, 2017, 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.

TABLE OF CONTENTS

List of figures

SOURCES

1. Council for Geoscience,2014

LIST OF TABLES

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
Tel no	011 037 9938 / 081 254 3074
Fax no:	086 599 3318
E-mail address	rmonageng@mresources.co.za
Physical address	Wilgeheuwel ext6 Roodepoort Gauteng, 1724

Table 1-2: Details of the EAP

ITEM	CONSULTANT CONTACT DETAILS
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
Postal address	27 Geringer Street, Del Judor Witbank 1035

Project team

EAP: Ms Pheladi Mphahlele

Qualification: Bachelor in Mining and Environmental Geology

Author EAP: Mr Thato Ramoraswi and Ms Lethabo Chauke

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

2. LOCATION OF THE OVERALL ACTIVITY

Table 2-1: Locality Description

Farm name	Portion of the remaining extent of the Farm 131
Application area(Ha)	5 Ha
Magisterial district	Barkley West
Distance and direction from nearest town	Approximately 64km south-east of Kuruman along the R31 road connecting unnamed road to Dannielskuil.
21 digit Surveyor general code for each farm portion	C01500000000013100000

3. INTRODUCTION

M Chrome Iron Steel (Pty) Ltd has applied for an Environmental authorisation for a mining permit application of Copper Ore, Iron Ore, Manganese Ore and Nickel Ore on portion of remaining extent of the Farm 131. This type of mining will involve extraction of a mineral resource through open-cast mining. The life of the mine is estimated to be two years with a possible renewal of a maximum period of another three years. The production rate is to be calculated based on a 5Ha mining area for the duration of the mine. The life span will vary depending on production rates and the market demands for the product. This activity is contemplated under NEMA act (107 of 1998), as amended and section 27 of the Mineral Petroleum Resource Development Act 2002 (Act 28 of 2002) as amended.

3.1 Project locality

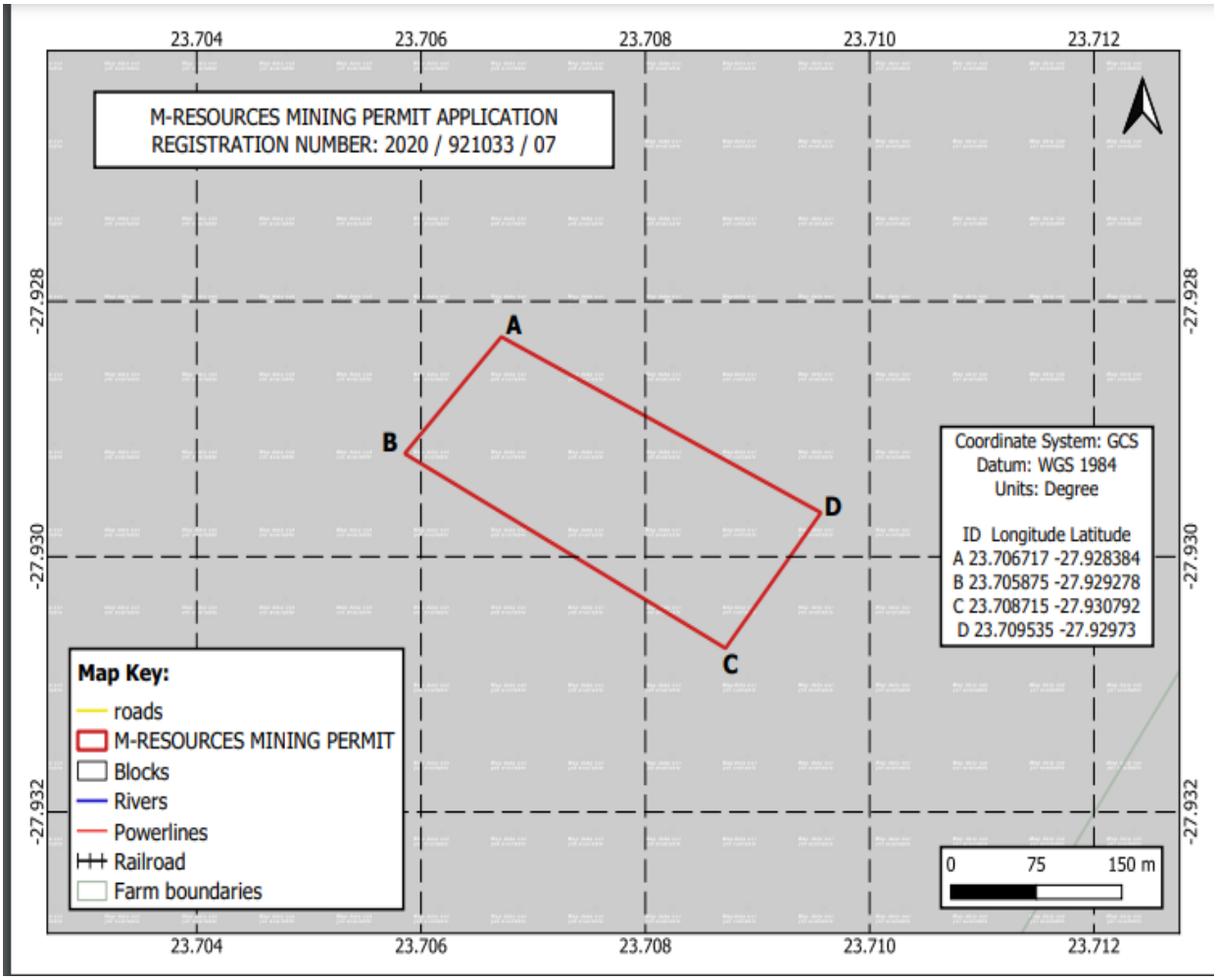
The area where mining operation will be conducted is located approximately 65 km south-east of Kuruman town along the R31 road connecting unnamed road to Danielskuil within the jurisdiction of Kgatelopele Local Municipality, District of ZF Mgcawu in the Northern Cape Province.

Site Co-ordinates of the application area

	X	Y
A	-27.928384	23.706717
B	-27.929278	23.705875
C	-27.930792	23.708715
D	-27.92973	23.709535

4. Locality Map of the proposed farm

Figure 4.1: Locality Map and See Attached **Appendix A**



4.1 Description of the Scope of the proposed overall activity

4.1.1 Listed and specified activities

Table 4-1: Listed and preferred activities

Name of activity E g. for mining, excavation 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)
Mining site (indicated by circular dots)	5Ha	X	GNR 983 Listing Notice No:1 (Activity 21 a,b)
Pit area(strip 1,2,)	2,99 Ha	X	GNR 983 Listing Notice No:1 (Activity 21)
Site Clearance	5 Ha	X	GNR 983 Listing Notice No:1 (Activity 21)
Rom Stockpile	0,2 Ha	X	GNR 983 Listing Notice No:1 (Activity 21)
Overburden stockpile	0,07 Ha	X	GNR 983 Listing Notice No:1 (Activity 21)
Topsoil stockpile	0,05 Ha	X	GNR 983 Listing Notice No:1 (Activity 21)
Mobile Crushing and Screening machine	0.8 Ha	X	GNR 983 Listing Notice No:1 (Activity 21)
Mobile toilets & sanitation	0,01 Ha	X	GNR 983 Listing Notice No:1 (Activity 21)
Mobile office	0,06 Ha	X	GNR 983 Listing Notice No:1 (Activity 21)
Access road	2702 m	X	GNR 983 Listing Notice No:1 (Activity 21)

4.1.2 Description of the activities to be undertaken

Mining Method

An open-cast mining operation can be viewed as being made up of some, or all, of the following sub-activities:

- Construction of Access road
- Establish temporary mobile office, toilets and sanitation
- Mining area (including strip 1, 2)
- Temporary mobile Crushing and Screening machine
- Temporary stockpiling of material (Topsoil stockpile, overburden and Commodity stockpile)
- Loading and hauling to the stockpile area and
- Rehabilitation

4.1.2. Description of Site Activities

The type of mineral to be mined is Copper Ore, Iron Ore, Manganese Ore and Nickel Ore. The method that will be employed is a very basic form of open-cast mining, and a 5Ha area will be demarcated for mining activities. The mined ore will be crushed and screened utilising a mobile crushing and screening plant. A front-end loader will be utilised to load the material into haulage trucks and transported to the end user.

The project infrastructure and activities will include site clearance, removal of topsoil and overburden and stockpiling, site establishment including access route around the pit, mobilisation of equipment, preparation of area for mining, excavation of an open-cast, loading zone and dust control, crushing and screening of commodities, hauling and transporting the commodities to stockpiles, ablution facilities, waste storage area and rehabilitation of site.

Figure 4.2: An illustration of mining operation

4.1.2.1 Site Clearance

Site clearance is the first step that must be conducted on-site to remove all the vegetation (grasses) that exist and to ensure that the area impacted is kept to an absolute minimum. The mining activities need to be designed with closure in mind. Top soil stockpile areas must be demarcated as no-go areas. Site clearance/ preparation mainly deals with the stripping and stockpiling of topsoil prior to the mining activities commencing as this might affect the quality and quantity of available valuable topsoil resources.

4.1.2.2 Maintenance of Access Roads

There is an existing access road outside the mining area. Any additional temporary roads such as roads/walk way inside the mining operation, created to gain access to site will be rehabilitated on completion of the Mining Permit operations, to the satisfaction of the relevant landowner.

4.1.2.3 Water Supply

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

4.1.2.4 Temporary offices and Ablution

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

4.1.2.5 Excavation of commodities

This is where commodities will be excavated using equipment's such as a truck and shovel. The ore will be crushed screened and transported to the end-user. A front-end loader will be utilised to load the material into haulage trucks and then be transported to the end-user.

4.1.2.6 Mobile Crushing and Screening

Crushing is a dry process which involve particle size reduction of large material into smaller rocks. Equipment's used for crushing of commodities are jaw crusher or cone crusher. Screening is a practice of taking granulated ore material and separating it into multiple grades by particle sizes will be screened and stockpiled in the mining area.

Figure 4.3: Illustration of Crushing and Screening

4.1.2.7 Waste

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

4.1.2.8 Stockpiles

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

4.2.1.10 Site Rehabilitation

When mining ceases, mine facilities and the site is reclaimed and closed. The goal of mine site reclamation and closure should always be to return the site to a condition that most resembles the pre-mining condition. Mines that are notorious for their immense impact on the environment often made impacts only during the closure phase, when active mining operations ceased. These impacts can persist for decades and even centuries.

4.4: Illustration of rehabilitation process

Phase	Activity	Expertise Required	Duration
Construction	Logistical consultation with land owner, Maintenance of Access road, Establish temporary mobile office and security dwellings, Establish temporary mobile ablution facility, Establish mobile screening,	Project Manager Contractor	2 Months

	Stripping and removal of existing topsoil and stockpiling and Construction of berm.		
Operational	Clearance of vegetation, Mining area, Temporary stockpiling of material (Topsoil stockpile, overburden and Rom stockpile), Excavation of ore, Crushing and Screening of ore, Loading and hauling to the stockpile area and Backfill rehabilitation concurrently as mine progress forward.	Project Manager Surveyor	20 months
Decommission and closure	Removal of mine infrastructure, Remaining exposed excavated areas filled and levelled with waste, Rehabilitation of excavations and disturbed land, Re-vegetation of	Contractor Environmentalist	2 Months

	land Closure report and application for closure certificate		
Post closure monitoring	Monitor rehabilitation sustainability and liaising with land owner on matters requiring action.	Project manager	2 years

During the construction assessment phase it is expected that, the main sources of impact will result due to the refurbishing of access road, construction of storage and maintenance area, assemblage and striping of top soil. The construction phase is commonly of a temporary nature with a definite beginning and end. Construction usually consists of a series of different operations, each with its own duration and potential for impacts.

4.2 Policy and Legislative Context

The Constitution of the Republic of South Africa Section 24

The Constitution stipulates that everyone has the right to an environment that is not harmful to their health or well-being; and the right to have the environment protected, for the benefit of the present and future generations, through reasonable legislative and other measures. The Constitution has thus paved the way for environmental legislation and NEMA in South Africa post-1994 and the need to find a new approach to protecting the environment in an integrated and sustainable manner. This BAR embodies the principals of the Constitution in its formulation.

Table 4-2: Policy and legislation Context

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	Government gazette No:	An application for

Management Act 107 of 1998,GNR 983 Listing Notice 1, Activity 21	10328,07 April 2017 No 38282, Department of Environmental Affairs	Environmental authorisation has been lodged in terms of the NEMA ACT (107 of 1998)EIA Regulations ,2017 as amended
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 mining area, an application will be lodged with the department of environmental Affairs prior to removal
Mineral Petroleum Resource Development Act 28 of 2002(MPRDA)	Department of Mineral Resources	An application for a mining permit has been lodged with the Department of Mineral Resources in terms of section 27 of the MPRDA (28 of 2002)
The National Water Act (No. 36 of 1998)	Department of Water and Sanitation	A WULA has to be applied for authorization due to the risk posed by the mining operations on adjacent watercourses. Section 21 C and I (related to altering the bed, banks, course or characteristics of a watercourse) No mining will take place within any watercourse or freshwater protection

		buffer.
The National Environmental Management: Waste Act (No. 59 of 2008)		The Applicant is required to minimize the generation of waste created. All waste generated on site will need to be dealt with according to the EMP (Appendix 1). Limited waste volumes will be generated during the different phases of the proposed Mine lifecycle, which will be disposed of at a registered landfill site. Key to the limiting of waste is appropriate training programmes being implemented and enforced.
The Mine Health and Safety Act (No. 26 of 1996)		The Mine Health and Safety Act provides for the protection of the health and safety of employees and other persons at mines and serves - • To promote a culture of health and safety; • To provide for the enforcement of health and safety measures; • To provide for appropriate systems for employee, employer and state participating in health and safety matters; • To provide effective monitoring systems and inspections,

		investigations and inquiries to improve health and safety; • To promote training and human resource development; • To regulate employers' and employees' duties to identify hazards and eliminate, control and minimise the risk to health and safety; and • To entrench the right to refuse to work in dangerous conditions.
The National Heritage Resources Act (No. 25 of 1999)		This Act has been put into place to protect and conserve heritage resources. If anything of heritage importance is found on the proposed site, the operational process will be halted and a suitably qualified specialist will be contacted. In consultation with the Applicant, no heritage resources were located on site. The site is completely transformed and has been farmed for decades. The site is now used as pasture for grazing cattle. The immediate surrounding land uses also consist of transformed cultivated land. Taking all this into consideration, the EAP

		(after also conducting a detailed site visit) determined that no Heritage Impact Assessment was required as part of the Basic Assessment process.

4.3 Need and Desirability of the proposed activities

The socio-economic status of the area where mining will take place requires such establishment for mining, which will in turn contribute to the local economic through creation of job opportunities in the area and the creation of secondary economic opportunities on the proposed farm for the applicant to invest into.

The type of commodity proposed to be mined is used in the construction industry e,g Buildings material in the plumbing and electrical industries, Motor parts: Copper conducts both heat and electricity more efficiently than many other metals and Wiring. Manganese is used also as an alloy with metals such as aluminum and copper. Important non metallurgical uses include battery cathodes, soft ferrites used in electronics, micronutrients in fertilizers, micronutrients in animal feed, water treatment chemicals, colorant for automobile undercoating. Iron ore was mostly used for smelting. Now Iron is used to make strong cutting tools and steel. Nickel alloys are increasingly being used in making rechargeable batteries for portable computers, power tools, and hybrid and electric vehicles. Nickel is also plated onto such items as bathroom fixtures to reduce corrosion and provide an attractive finish

The site is desirable for a number of reasons:

The site has existing well established farm roads that are in good condition and will be able to support the proposed mining activities. The proposed site does not contain any protected flora. It must further be noted that there were signs of fauna activities on the proposed property. This indicates that the existing mining operations are not significantly impacting on fauna. The mine site is situated away from large settlements and is surrounded by farms.

4.3.1 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 2011

4.3.2 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.

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

4.4.1 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.

4.4.2 Summary of Mining work programme to be undertaken. Desktop study:

This programme aims to assess historical data of the property and surrounding properties. Properties and previous work done on the property and will comprise of the following key activities:

- Historical data
- Previous mining activities
- Challenges relating to mining
- Depth
- Size of the ore body

4.4.3 Geological Mapping

After conducting a desktop study of the property the next subsequent activity will entail a field mapping the area to determine various rocks and minerals that have an economic potential a detailed mapping programme needs to be undertaken so as to identify the rock and mineral where there is Aggregate mineralization present.

This might include the following mapping techniques such as:

- 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. DESCRIPTION OF THE PROCESS FOLLOWED TO REACH PROPOSED PREFERRED ALTERNATIVES WITHIN THE SITE

5.1 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.

The positioning of the proposed activities will result in types of commodity to be mined. These constraints limit the possible locations, access road and position of the proposed mining area. Project alternatives have not been further assessed. The Copper Ore, Iron Ore, Manganese Ore and Nickel Ore mineral can be mined by open-cast and extent of front-end loader mining realistic options.

The project will take place on portion of the remaining extent of the Farm 131 located in the ZF Mgcawu district. The project will be based on mining Copper Ore, Iron Ore, Manganese Ore and Nickel Ore. The mining activity will be done as per the conditions of EA to ensure that there is no environmental conscious manner to ensure the area is rehabilitated to pre-mining condition and restore the current land use by implementing proper mitigation measures and rehabilitation methods.

Mining- open-cast is the preferred mining method, using some of the following equipment- front end loader trucks, tipper trucks and hydraulic shovels.

Processing- the processing plant will be placed on site, the primary extracted commodity will be crushed, screened and loaded on earthworks and transported to the end-user.

Road- mining will use the R31 road connecting to the unnamed road.

Waste- generation of domestic waste will be put in a dust bin and if any oil spillages will be removed and sent to registered land fill around the area.

6. DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

6.1 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 have been confirmed to this matter. Site notices were placed on and around the proposed site. A newspaper advertisement was published on the **12 July 2023** on the **Kathu Gazette** newspaper to inform interested and affected parties of the proposed mining activities. As directed on the

acceptance letter from the competent authority, the applicant has informed and requested comments from landowner, See attached **Appendix D**

6.2 Record of the public participation and the results thereof

6.2.1 Identification of interested and affected parties

Landowner and their contact details were identified through a Title Deed search and through the public participation for the properties falling within the proposed mining area to allow members of the surrounding community to comment on the proposed mining permit application. **See Appendix D**

6.3 The details of the engagement process

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

M Chrome Iron Steel (Pty) Ltd is planning to establish mining operation for Copper Ore, Iron Ore, Manganese Ore and Nickel Ore on portion of the remaining extent of the farm 131 located south east of Kuruman town along the R31 road connecting unnamed road to Danielskuil within the jurisdiction of Kgatelopele Local Municipality, District of ZF Mgcawu in the Northern Cape Province. The mining operation will be done on a two-year period upon renewal for another three years depending on the availability of the commodities applied for, as per Minerals and Petroleum and Resource Development Act, 2002 (Act 28 of 2002). Mining method to be used will be Open Cast Mining as determined by the shallow depth of the commodities.

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

Table 6-1 : 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?
Landowner Hennie Engelbrecht	Tel: 053 841 0935/6 Cell: 082 377 2417 henniesnr@mweb.co.za	Emails were sent	No response received

Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	162 George Street, Kimberlite Building, Kimberley, 8301	Emails were sent	No response received
Department of Water and Sanitation	28 Central Road, Beaconsfield, Kimberly, 8301 053 830 8800/ 7600	Emails were sent	No response received
Department of Roads and Public Works	1 st Pauls Rd, Colville, Kimberley, 8301 053 839 2100	Emails were sent	No response received
SAHRA	www.sahris.org.za	Emails were sent and documents were forwarded	No response received
Kgatelopele Local Municipality	222 Barker Street, Daniëlskuil 8405	Emails were sent	No response received
SANRAL	NRstat@nra.co.za	Emails were sent	No response received
Department of Environmental Affairs and Nature Conservation	dvaheeden@ncpg.gov.za	Emails were sent	No response recieved

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

The interested and affected parties were consulted and to date, we have not received their comments.

6.3.4 Confirmation that records of the consultations are appended.

See attached **Appendix D**

6.3.5 Information regarding objections received.

Currently there are no objections registered

6.4 The manner in which the issues raised were addressed

The interested and affected parties were given an opportunity to raise their concerns through site notices, emails, telephonically and newspaper advertisement.

7. SUMMARY OF ISSUES RAISED BY I&APS

Table 7-1: 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	X		We are still waiting for comments		**Appendix D**
Lawful occupier/s of the land					
N/A					
Landowners or lawful					

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

Department	X				
Department of Agriculture, Environmental Affairs, Rural Development and Land Reform			No comments received		Appendix D
Traditional Leaders	X				
Department of Environmental Affairs	X				
Department of Environmental Affairs and nature Conservation			No comments received		Appendix D
Other Competent authorities affected	X				
SANRAL			No comments received		Appendix D

Other affected parties					
Interested parties	N/A				
Department of Roads and Public Works			Still waiting for comments		Appendix D
SAHRA			Still waiting for comments		Appendix D

ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES

7.1 Baseline environment

7.1.1 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 semi-arid 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.

Figure 7-1: Photo depicting the topography of the area

Geology and Mineral Potential

The specific area applied for is within the Transvaal Supergroup Basin and is underlain by dolomitic limestone with subordinate coarsely crystalline dolomite and interbedded chert of the Campbell Rand Subgroup (Ghaap Group) and the banded iron-formation (BIF) of the Asbestos Hill Subgroup. Basal diamictites of the Makganyene Formation cut into the Ghaap Group. The BIF's are overlain by the amygdaloidal andesite lavas of the Ongeluk Formation, Postmasburg Group. The Ongeluk lavas are overlain by calcrete and sands of the Kalahari. The mineral types that are found in this municipal area include limestone and asbestos.

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).

Biodiversity

This municipal area has a Savanna type of biome. 2The Savanna Biome is the Centre of wildlife tourism and meat production (game, cattle and goats) in South Africa. 2.5.3.2. 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).

Water Resources

The proposed mining permit area fall within the Vaal River Water Management Area (WMA) and within Quaternary Catchment Areas D71B, D73A, D41J, C92A and C92C. The quaternary catchments feeds into the Vaal River and the Orange River and are characterised by low to high ecological sensitivity. The three drainages flowing in close proximity to the proposed mining area are Klein Riet, Skeifonteinspruit and Groenwaterspruit Rivers which are classified as Class C moderately modified and Class B largely natural.

7.1.2 Description of the current land uses

In general the Northern cape region is characterized by a mixture of land uses of which agriculture and mining is dominant within the rural areas. Although diamonds have been mined since 1892, the most important mineral currently mined is manganese. The residential areas vary between relatively large town (Postmasburg) to small scattered rural communities. The land cover and uses associated with the proposed mining permit is shown in the map below. The proposed mining permit is dominated by livestock farming and also used for irrigation farming with largest part of the area covered by low shrubs.

7.1.3 Description of specific environmental features and infrastructure on the site

Screening Tool Report

According to the Screening Tool Report, the site comprises of very high sensitivity of palaeontology, medium sensitivity in plant species and Agriculture, low sensitivity of Animal species theme, aquatic biodiversity Archaeological and Cultural Heritage theme, defence, civil aviation theme and terrestrial biodiversity So, A paleontological study was deemed unnecessary because according to the EAP's

observation during the site inspection, the site was vacant, comprises of grasslands and shrubs and the EAP consulted with the SAHRA and we are awaiting for their comments that a Paleontological study should be conducted or not.

Figure 7.2: Picture of ground cover and existing vegetation

7.1.4 Environmental and Current land use Map

(See Appendix B and Figure 7.3)

Figure 7.3: Aerial Map

8. IMPACTS AND RISKS IDENTIFIED INCLUDING THE NATURE, SIGNIFICANCE, CONSEQUENCES, EXTENT, DURATION AND PROBABILITY OF THE IMPACTS, INCLUDING THE DEGREE TO WHICH THESE AFFECT THE NATURAL ENVIRONMENT

8.1 Assessment of Open-cast mining: operational phase

Table 8-1: Impact Assessment – Open-cast mining: Operational Phase

Aspect	Impact	Probability	Duration	scale	magnitude	significance	Mitigation measures
Geology	Collapse of overlying strata and voids creation	Define	Permanent	Local	Low	Low	The direct effect on the geological Structure in this situation is not important and regarded as normal consequences of mining. No specific mitigation required (significant will remain low)
Topography	Change in landform(macro perspective)	Define	Permanent	Local	Low	Low	The overall effect on landform is inconsequential. No specific mitigation measures are required (significant will remain low)
	Change to drainage lines due to surface subsidence	Define	Permanent	Local	Moderate	Moderate	Mapping of surface is undertaken (significance will remain moderate)

Soils	Loss of topsoil due to higher erosion potential with increase in surface slopes associated with subsidence	Highly probable	Medium term	Site only	High	Moderate	Reshape the steep slope areas to grades below 4% and re-vegetate disturbed areas (significance will be reduced to low)
	Changes to the soil physical, chemical and biological properties due to loss of topsoil because of erosion and/or rehabilitation of subsided areas	Highly probable	Medium term	Site only	High	Moderate	Enforce conservational tillage and cultivation practice, improve organic status of soils, maintain soil fertility level and curb topsoil loss (significance will be reduced to low)
Land capability	Impaired agricultural potential due to surface subsidence induced by high extraction mining and formulation of steep slopes due to differential surface	Highly probable	Long term	Local	Moderate	Moderate	Reshape steep slope areas to grade below 4%;provision of water to affected groundwater users; provision of drainage to prevent surface ponding (significance reduced to low)

	subsidence						
Land-use	Change in existing land use patterns due to surface subsidence related to high extraction mining	Medium probability	Long term	Site only	Moderate	Low	No mitigation required
Vegetation	Displacement of remaining natural grassland due to surface subsidence change and subsequent change in soil properties	Medium probability	Long term	Local	Moderate	Moderate	Implement and maintain measures to ensure that subsided areas are free-draining.(significance reduced to low)
Animal life	Displacement of animal life due to subsidence	Low probability	Medium term	Local	Low	Low	No specific mitigation required
Surface water	Impairment of local surface water quality and hence aquatic ecosystem health and beneficial use of water	Highly	Long term	Local	moderate	moderate	Application of best practice water pollution control measures as stipulated in the within the EMP (significance reduced to low)

	Adverse impacts on functional attributes related to wetlands and pans						
Groundwater	Lowering of groundwater levels related to mine dewatering	Highly probable	Permanent	Regional	moderate	moderate	No mitigation measures are possible(significance remains the same)
	Impacts on groundwater quality due to storage of contaminated mine water on the surface	Highly probable	Permanent	Local	moderate	moderate	Contamination has already occurred. Discontinuation at mine closure of the use of bird pan for the storage of contaminated mine water should eliminate this source of contamination.

8.1.1 Assessment of impact related to water management for proposed mine: operational phase

Table 8-2: Impact Assessment – Water management related: Operation Phase

Aspect	Impact	Probability	Duration	Scale	Magnitude	Significance	Mitigation measures

Surface water	Floods exceeding the design flood level will impact on water courses	Low probability	Medium term	Local	Low	Low	Measures for storm water management to prevent overflow are detailed in the EMP(Significance remains low)
	Contamination of surface water by surface run-off	Medium probability	Medium term	Local	Low	Low	Rainwater falling into the Pit will be redirected off course, seepage cannot be controlled, but management of acid will carried out using measures outlined in the EMP(Significance remains low)
	Reduction in water quantity in the pan used for potable water.	Low probability	Medium term	Local	Low	Low	Regular monitoring of aquatic life will conducted(Significance remains low)

9. METHODOLOGY USED IN DETERMINING AND RANKING THE NATURE, SIGNIFICANCE, CONSEQUENCES, EXTENT, DURATION AND PROBABILITY OF ENVIRONMENTAL IMPACTS AND RISKS

9.1 DEFINITIONS AND CONCEPTS:

a) Environmental significance

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

- Environmental significance is a value judgment
- The degree of environmental significance depends on the nature of the impact
- The importance is rated in terms of both biophysical and socio-economic values

Determining significance involves the amount of change to the environment perceived to be acceptable to affected communities

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

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

b) Impact Description

It provides the assessment impacts related to mining for the operational phase. The potential geological impact is the collapse of overlaying strata and creation of voids due to the historical high extraction of Open-cast mining. Furthermore, due to the extraction of the aggregate seam and the removal of associated geological material for the open–cast passages and thoroughfare, voids are created. This results in a permanent effect on geology.

The predicted surface subsidence within historical areas of high extraction will vary between 0, 8 and 1,5m. Undisturbed strata or bord and pillar mining areas area highly unlikely to experience subsidence. As in the case of geology, topography is also permanently changed by Open-cast high extraction mining. The general landform of the areas within which high extraction mining has taken place will not change from the existing gently sloping landform. In the short term some localised changes to drainage patterns will occur, however on a micro level topography will be punctuated by surface undulations or humps, surface cracking and the formation of sub-surface cracks.

c) Impact

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

d) Consequence

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

e) Likelihood

A qualitative term covering both probability and frequency.

f) Frequency

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

g) Probability

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

h) Environment

Surrounding in which an organization operates, including air, water, land, natural, resources, flora, fauna, humans and their interrelation (ISO 14001, 1996).

i) Methodology

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

Environmental Significance = Overall Consequences x Overall Likelihood

j) Determination of Overall Consequence

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

k) Determination of Severity / Intensity

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

Table 10-1 will be used to obtain an overall rating for severity, taking into consideration the

various criteria.

Table 9-1: Rating of Severity

Type of criteria	Rating				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignificant / non-harmful	Small / potentially harmful	Significant / harmful	Great / harmful	Disastrous Extremely Harmful
Social/community response	Acceptable/I&AP satisfied	Slightly tolerable/possible objections	Intolerable/sporadic complaints	Unacceptable Widespread complaints	Totally unacceptable /possible legal actions
Irreversibility	Very low cost to mitigate/high potential to mitigate impacts to level of insignificance/easil	Low cost to mitigate	Substantial cost to mitigate/potential mitigate/potential to mitigate impacts/potential to reverse impacts	High cost to mitigate	Prohibitive cost to mitigate/little or no mechanism to mitigate impact irreversible

	y reversible				
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change deterioration or disturbance	Moderate change/deterioration or disturbance	Significant change/deterioration or disturbance	Very significant change/ deterioration or disturbance	Disastrous change/ deterioration or disturbance

Determination of Likelihood:

The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5 as described below and in tables 6 and 7.
Determination of frequency
Frequency refers to how often the specific activity related to the event, aspect or impact is undertaken

Rating of Frequency:
Table 9-2: Frequency rating

Rating	Description
1	Once a year or once/more during operation
2	Once/more in 6 months
3	Once/more a month
4	Once/more a week
5	Daily

Determination of probability

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

Rating of probability

Table 9-3: Probability rating

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

Overall likelihood

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

Table 9-4: Example of calculating overall likelihood

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

Determination of overall environmental significance.

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

Stripping and stockpiling of topsoil:

Visual intrusion associated with the establishment of the mining area

Rating: Low Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	3	1	2	4	1	2.5	5

Dust nuisance caused by the disturbance of soil

Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	3	2	2.6	4	3	3.5	9.1

Noise nuisance caused by machinery stripping and stockpiling the topsoil

Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	3	2	2.3	4	3	3.5	8.1

Infestation of the topsoil heaps by weeds or invader plants

Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	4	2	3	6.9

Loss of topsoil due to incorrect storm water management

Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	3	3.5	9.1

Contamination of area with hydrocarbons or hazardous waste material

Rating: Low-Medium

			Consequence			Likelihood	Significance

Severity	Duration	Extend		Probability	Frequency		
3	3	1	2.3	4	3	3.5	8.1

Excavations:

Visual intrusion associated with the excavation activities

Rating: Medium-High

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	5	2	3	5	5	5	15

Dust nuisance due to excavation activities

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	2	3	5	4	4.5	13.5

Noise nuisance generated by excavation equipment

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	2	2.6	4	4	4	10.4

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

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	2	3	4	3	3.5	10.5

Unsafe working conditions for employees

Rating: Low-Medium

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

Negative impact on the fauna and flora of the area

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	5	3	4	10.4

Potential damage or cultural or heritage aspects
Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	1	1	1.6	1	1	1	1.6

Contamination of area with hydrocarbons or hazardous waste materials
Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	3	3.5	9.1

Stockpiling and Transporting of material
Visual intrusion the associated with the stockpiled material and vehicles transporting the material
Rating: Medium-high

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	2	3	5	5	5	15

Loss of material due to ineffective storm water handling
Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	3	3.5	9.1

Weed and invader plant infestation of the area due to the disturbance of the soil
Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	2	3	7.8

Dust nuisance from stockpiled material and vehicles transporting the material
Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	2	3	4	5	4.5	13.5

Degradation of access roads
Rating: Medium

			Consequence			Likelihood	Significance

Severity	Duration	Extend		Probability	Frequency		
3	4	2	3	4	4	4	12

Noise nuisance caused by vehicles
Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	2	2.6	4	5	4.5	11.7

Contamination of area with hydrocarbons or hazardous waste materials
Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	3	3.5	9.1

Weed and invader plant infestation of the area to the disturbance of the soil
Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	2	3	7.8

Dust nuisance from stockpiled material and vehicles transporting the material
Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	2	3	4	5	4.5	13.5

Degradation of access roads
Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	2	3	4	4	4	12

Noise nuisance caused by vehicles
Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	2	2.6	4	5	4.5	11.7

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	3	3.5	9.1

Sloping and Landscaping:

Visual intrusion associated with sloping and landscaping activities

Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	2	2	2	4	1	2.5	5

Soil erosion

Rating: Low-Medium

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

Health and safety risk posed by un-sloped areas

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
4	5	1	3.3	4	5	4.5	14.9

Dust nuisance caused during sloping and landscaping activities

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	4	1	2.5	3.3

Noise nuisance caused by machinery

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	4	1	2.5	3.3

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	4	1	2.5	3.3

Replacing the Topsoil and Re-Vegetation of the disturbed area

Visual intrusion associated with the replacing of the topsoil and re-vegetation of the mining area.

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	2	1	1.5	2

Loss of reinstated topsoil due to the absence of vegetation

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	3	1	2	3	1	2	4

Infestation of the area by weed and invader plants

Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	3	1	2	4	2	3	6

9.2 Assessment of potential cumulative impacts

The proposed mining activity will entail establishment of a mining area within a natural environment. The disturbance of the natural areas will however be contained within the boundaries of the site.

The cumulative impacts associated with the establishment of the industrial area could be the following:

Additional traffic on the local roads during construction and operational phases.

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	2	2.6	4	4	4	10.4

The influx of people in the area during construction and operational phases

Rating: Low-Medium

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

Additional water supply to the areas

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	4	1	2	5	5	5	10

10. THE POSITIVE AND NEGATIVE IMPACTS THAT THE PROPOSED ACTIVITY AND ALTERNATIVES WILL HAVE ON THE ENVIRONMENT AND THE COMMUNITY THAT MAY BE AFFECTED

10.1 Positive impacts

10.1.1 Economic development

- The Project will create an income stream for the business that operates within the proposed area of Kuruman area and the beneficiaries of the project especially the Kgatelopele Local Municipal residents as well as those of the municipalities within the ZF Mgcawu District.
- 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 under developed areas.

10.1.2 Job Creation

- Communities will benefit from the selection, appointment of casual employment that will take place as a result of site establishment of the project.

- This employment will be executed in line with the necessary skills required during mining operations, from the beginning to the commissioning phase. Labour-force requirements include (artisans, engineers, engineers, electricians, various trades men, etc.).

10.2 Negative impacts

Negative impacts that will be envisaged at this phase will include the following.

For Excavation phase

- Loss of Topsoil
- Impact on vegetation
- Dust from roads and land
- Waste Disposal
- Noise
- Water use

11. MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK

11.1 Proposed mitigation measures to minimize adverse impacts.

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

a) Stripping and stockpiling of topsoil:

- Visual intrusion associated with the establishment of the mining area.
- Dust nuisance caused by the disturbance of the soil
- Noise nuisance caused by machinery stripping and stockpiling the topsoil
- Infestation of the topsoil by weed or invader plants
- Loss of topsoil due to incorrect storm water management
- Contamination of area with hydrocarbons or hazardous waste materials

b) Excavations:

- Visual intrusion associated with the excavation activities
- Dust nuisance due to excavation activities
- Noise nuisance generated by excavation equipment
- Contamination of surface or groundwater due to effluent runoff from

excavation area

- Unsafe working conditions for employees
- Negative impact on the fauna and flora of the area
- Contamination of the area with hydrocarbons or hazardous waste materials

c) Stockpiling and Transporting of material

- Visual intrusion associated with the stockpiled material and vehicles transporting the material
- Loss of material due to ineffective storm water handling
- Weed and invader plant infestation of the area due to the disturbance of the soil
- Dust nuisance from the stockpiled material and vehicles transporting the materials
- Degradation of access roads
- Noise nuisance caused by vehicles
- Contamination of area with hydrocarbons or hazardous waste materials

Sloping and landscaping

- Visual intrusion associated during stockpiling and landscaping activities
- Soil erosion
- Health and safety risk posed by un-sloped areas
- Dust nuisance caused during sloping and landscaping activities
- Contamination of area with hydrocarbons or hazardous waste materials

Replacing the Topsoil and Re-Vegetating of the disturbed area:

- Visual intrusion associated with the replacing of the topsoil and re-vegetation of the mining area.
- Loss of reinstated topsoil due to the absence of vegetation
- Infestation of the area by weed and invader plants

3.2.2 Concomitant list of appropriate technical or management options

(Chosen to modify, remedy, or stop any action, activity or process which will cause significant impacts on the environment, socio-economic conditions and historical and cultural aspects as identified. Attach detail of each technical or management option as appendices)

a) Visual Mitigation:

- The site is screened by alien trees and the permit holder will need to protect the trees on the road side to mitigate the visual impact.
- The site needs to have a neat appearance and be kept in good condition at all times.
- Upon closure the site needs to be rehabilitated and sloped to ensure that the visual impact on the aesthetic value of the area is kept to a minimum.

b) Dust Handling

The liberation of dust into the surrounding environment should be effectively controlled by the use of, inter alia, water spraying and /or other dust-allaying agents.

The site manager should ensure continuous assessments of all dust suppression equipment to confirm it effectiveness in addressing dust suppression.

Speed on the access roads should be limited to 30km/h to prevent the generation of excess dust.

Roads must be sprayed with water or an environmentally friendly dust-allying agent that contains no PCB's (eg DAS products) if dust is generated above acceptable limits.

All stockpiles should be thoroughly soaked to ensure dust suppression on the site

c) Noise Handling:

The applicant should ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours

All mining vehicles should be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.

d) Management of weed and invader plants:

A weed and invader plant control management plan should be implemented at the site to ensure eradication of all listed plants in terms of Conservation of Agricultural Act (Act no 43 of 1983)

Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:

"The plants can be uprooted, felled or cut off and can be destroyed completely"

The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with directions for the use such as herbicide"

The temporary topsoil and overburden stockpiles need to be kept free of weeds

e) Storm water Handling:

Storm water should be diverted around the topsoil heaps, stockpile areas and access roads to prevent erosion and loss of material,

Runoff water should also be diverted around the stockpile areas with trenches and contour structures to prevent erosion of the work areas.

Mining should be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water Affairs and any other conditions which that department may impose.

Clean water (rain water) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water system.

Dirty water must be prevented from spilling or seeping into clean water system

The storm water management plan must apply for the entire life cycle of the mine and over different hydrological cycles (rainfall patterns)

The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management plan.

f) Management of Health and Safety Risks:

Workers should have access to the correct personal protection equipment (PPE) as required by law

All operations should comply with the Occupational Health and Safety Act.

g) Waste Management

No processing area or waste pile may be established within 100m of the edge of any river channel or other water bodies.

Any vehicle repairs may only take place within the temporary service bay service bay area and all waste products must be disposed of in a 200 litre closed container/bin found inside the emergency service area.
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 by removing the spillage together with the polluted soil by disposing of the at a recognized facility

Suitable covered receptacles should be available at all times and conveniently placed for the disposal of waste

Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc. should be stored in a container with a closable lid at a collecting point and collected on a regular basis and disposed of at a recognized landfill site. Specific precautions should be taken to prevent refuse from being dumped on or in the vicinity of the mine area. Biodegradable refuse generated should be handled as indicated above.

h) Management of Access Roads

Newly constructed access roads (if applicable) must be adequately maintained so as to minimize dust, erosion or undue surface damage.

Storm water should be diverted around the access roads to prevent erosion,
Erosion of access road: Vehicular movement must be restricted to existing access routes to prevent crisscrossing of tracks through undisturbed areas.

i) Topsoil Handling

Where applicable the first 300m of topsoil should be removed in strips and stored at a demarcated and signposted stockpile area. Stockpiling of topsoil must be done to protect it from erosion, mixing with overburden or other material. The topsoil must be used to cover the rehabilitated area and improve the establishment of natural vegetation.

The temporary topsoil stockpiles of each removed strip should be kept free of weeds.

Topsoil stockpiles should be placed on a levelled area and measures should be implemented to safeguard the piles from being washed away in the event of heavy rains/storm water.

Topsoil heaps should not exceed 2m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.

Storm and runoff water should be diverted around the stockpile area and access roads to prevent erosion.

j) **Protection of fauna and flora**:

The site manager should ensure that no fauna is caught, killed, harmed, sold or played with.
Workers should be instructed to report any animals that may be trapped in the working area.
No snares may be set or nests raided for eggs or young
No plants or trees may be removed without the approval of the ECO.
A search and rescue exercise should be conducted prior to any mining taking place at the site, to ensure that all protected and or sensitive plants is removed from the mining area.

- 3.2.3 Review the significance of the identified impacts.

(After bringing the proposed mitigation measures into consideration)

Stripping and stockpiling of topsoil

Visual intrusion associated with the establishment of the mining area

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	2	1	1.6	3	1	2	3.2

Dust nuisance caused by the disturbance of the soil

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	3	2	2.5	3.3

Noise nuisance caused by machinery stripping and stockpiling the overburden

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	3	2	2.5	3.3

Infestation of the topsoil heaps by weeds or invader plants

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	2	1	1.6	3	2	2.5	4

Loss of topsoil due to incorrect storm water management

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	1	1	1.6	2	1	1.5	2.4

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	1	1	1.6	3	2	2.5	4

Excavations:

Visual intrusion associated with the excavation activities

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	4	5	4.5	10.4

Dust nuisance due to excavation activities

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	2	1	1.6	3	2	2.5	4

Noise nuisance generated by excavation equipment

Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	2	3	2.5	5.8

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

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	1	2	2	2	1	1.5	3

Unsafe working conditions for employees

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	1	1	1.6	2	1	1.5	2.4

Negative impact on the fauna and flora of the area

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	2	2	2	2.6

Potential damage to cultural or heritage aspects

Rating: Low

			Consequence			Likelihood	Significance

Severity	Duration	Extend		Probability	Frequency		
3	1	1	1.6	3	2	2.5	4

Stockpiling and Transporting of Material

Visual intrusion associated with the stockpiled material and vehicles transporting the material

Rating: Low

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

Los of material due to ineffective storm water handling

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	1	1	1.6	2	1	1.5	2.4

Weed and invader plant infestation of the area due to the disturbance of the soil

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	2	1	1.6	3	2	2.5	4

Dust nuisance from stockpiled material and vehicles transporting the material

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	2	2	2	2.6

Degradation of access roads

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	2	1.6	3	2	2.5	4

Noise nuisance caused by vehicles

Rating: Low-Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	3	3	3	6.9

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		

3	1	1	1.6	3	2	2.5	4

Sloping and landscaping

Visual intrusion associated with sloping and landscaping activities

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	2	1	1.3	2	1	1.5	2.4

Soil erosion

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	2	1	1.5	2

Health and safety risk posed by un-sloped areas

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	3	1	2	2	1	1.5	3

Dust nuisance caused during sloping and landscaping activities

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	3	1	2	2.6

Noise nuisance caused by machinery

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	4	1	2.5	3.3

Contamination of area with hydrocarbons or hazardous waste material

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	3	1	2	2.6

Replacing the Topsoil and Re-Vegetation of the disturbed area:

Visual intrusion associated with the replacing of the topsoil and re-vegetation of the mining area

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	2	1	1.5	2

Loss of reinstated topsoil due to the absence of vegetation

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	2	1	1.6	3	1	2	3.2

Infestation of the area by weed and invader plants

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	3	2	2.5	3.3

All impacts are deemed to be of low significance due to the establishment of the proposed mining area in a formerly disturbed area. The above mentioned mitigation measures will however be implemented to ensure that the activity is managed to have the lowest possible impact on the surrounding environment. Removal of vegetation during the operation can also expose land to erosion, particularly during the rainy season. Given proper mitigation this is a short term impact of low – medium significance.

12. MOTIVATION WHERE NO ALTERNATIVE SITES WERE CONSIDERED

The Open-Cast mining method to be used will minimize potential impacts to the preferred site. Although the applicant has applied for a size of 5Ha area, it is only the specified excavated points that will be disturbed. The excavation methods to be used will provide reduction of spillages.

13. STATEMENT MOTIVATING THE ALTERNATIVE DEVELOPMENT LOCATION WITHIN THE OVERALL SITE

Due to the abundance of the Copper Ore, Iron Ore, Manganese Ore and Nickel Ore around the farm 131 and its surrounding areas, it is the most suitable site to extract the commodities. Residences are located more than 5km from the proposed mining area and as a result impact on human beings will be minimal.

As indicated above mining phase will not require any permanent infrastructure to be constructed on site, as a result small portion of the site will be disturbed and those areas impacted will be rehabilitated.

14. DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS, AND RANK THE IMPACTS AND RISKS THE ACTIVITY WILL IMPOSE ON THE PREFERRED SITE.

The type of mining method to be used that will be applied for is Open-cast mining, as such, there is minimal expectations of impacts for the proposed activity on the preferred site. The following steps best describes the process.

14.1 Assessment of each identified significant impact and risks

Table 14-1: Assessment of each identified significant impact and risks

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
Excavation of the mine site	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

Table 14.2: Assessment of each phase identified potentially significant impact and risks

Name Of Activity	Potential Impact	Aspects Affected	Phase	Significance	Mitigation Type	Significance When mitigated are implemented
Site establishment						
General and Access road	Disturbance of surrounding areas	All	Site establishment phase	Low	• Fence the site indicated on the mine plan, prior to undertaking any activity on the site. . Maintenance of Access road • Treat all areas outside the fence as no-go areas. • Should any heritage features (e.g. artefacts, structures or human remains) be identified on site, all work should be ceased, and a heritage specialist should have contacted to investigate the find.	Very Low

• The heritage specialist will provide further management measures and recommendations in terms of notifying relevant heritage authorities, etc. • Failing implementation of the requirements listed in this table, a fine may be issued at the discretion of the ECO						
Vegetation clearance	Loss of ecological processes	Indigenous vegetation	Site establishment phase	Very Low	• Removal and disposal of alien vegetation • Stripping, mulching and stockpiling indigenous vegetation • Re-vegetation during rehabilitation	Very Low
Topsoil stripping	Dust Soil erosion Loss of topsoil	Natural vegetation and soil	Site establishment phase	Medium	• Control dust by wetting during dry, dusty conditions. • Prevent erosion by placing of berms • Follow correct topsoil stripping and stockpiling methods	Low

Subsoil and topsoil stockpiles	• Dust • Loss of topsoil and subsoil through inadequate management or erosion • Contamination of topsoil •Alien vegetation proliferation	•Natural vegetation • Top soil • Sub soil	Site establishment phase	Low	• Control dust by wetting during dry, dusty conditions. • Prevent erosion by placing of berms • Implement adequate subsoil and topsoil stockpiling methods And management • Prevent access of contaminants near topsoil stockpiles •Alien vegetation monitoring and management on topsoil stockpiles	Low
Site camp including ablution facilities, waste management facilities, material	• Soil erosion • Visual impacts for the landowners, surrounding land	• Vegetation • Soil • Visual	Site establishment phase	Low	• Effective solid waste management • Sufficient housekeeping	Very Low

	and road users				• Appropriate materials management • Locate site camp in disturbed area as far as possible and equipment storage.	
Construction and Operational phase						
Vegetation clearance	Loss of ecological processes	Indigenous vegetation	Constructional phase	Low	• Removal and disposal of alien vegetation • Stripping, mulching and stockpiling indigenous vegetation • Re-vegetation during rehabilitation	Low

Soil stockpiles	• Dust • Loss of topsoil and subsoil through inadequate management or erosion • Contamination of topsoil • Alien vegetation proliferation	• Natural vegetation • Top soil Sub soil	Constructional and operational phase	Low	• Implement adequate subsoil and topsoil stockpiling methods and management • Prevent access of contaminants near topsoil stockpiles • Alien vegetation monitoring and management on topsoil stockpiles	Low

Site camp including. ablution facilities, waste management facilities, material and equipment storage, etc	• Soil erosion • Visual impacts for the landowners, surrounding land and road users	• Vegetation • Soil • Visual	Constructional phase	Low	• Effective solid waste management • Sufficient housekeeping • Appropriate materials management • Locate site camp in	Very Low

					disturbed area as far as possible	
Material stockpiles	• Dust generation • Visual impacts on surrounding land and road users • Erosion	• Visual • Topsoil	Constructional and operational phase	Very Low	• Dust suppression measures • Erosion control measures • Screening of stockpiles behind existing vegetation • Stripping of topsoil before stockpiling materials	Very low

Blasting, Excavation, stockpiling of gravel, loading & haulage	• Noise • Dust • Traffic	Adjacent area to mining footprint	Operational phase	Very low	• Advise adjacent land users of expected blast at least 5 days prior. • Blasting should be according to the approved blasting plan to control vibration and fly-rock. • Control impact on roads by properly servicing the operating trucks • Speed limit should be 40 km per hr on gravel roads. • Control dust by wetting the ground during dry, dusty conditions. • Loads must be covered with tarpaulin.	

• Flag personnel to be on duty when trucks are running.

Re-fuelling of plant	Contamination of environment	Soil environment	Operational phase	Low	• Prevent by not storing fuel on site and re-fuelling to be done from a mobile bowser with Dpc laid down to contain dripping	Low
Site camp including: ablution facilities, waste management facilities, material and equipment	• Soil erosion • Visual impacts for the landowners, surrounding land and road users	• Vegetation • Soil • Visual	Construction and Operational phase	Low	• Effective solid waste management • Sufficient housekeeping • Appropriate materials management • Locate site camp in • disturbed area as far as possible	Very Low

Job creation	Job creation leading to improved socioeconomic conditions for community members and contractors	Community members	Construction and Operational phase	Medium positive	• Ensure that local community members and contractors are employed as part of the contract	Medium positive
Decommissioning Phase						
Decommissioning and rehabilitation	• Reinstatement of land use potential	Land Use	Decommissioning phase	Low positive	• Restoration of the landform and removal of infrastructure to reinstate land use potential	Low positive
	• Incorrect replacement of topsoil and subsoil leading to poor reinstatement of the area	Sub-soil and Top-soil	Decommissioning phase	Low	• Ensure rehabilitation plan is followed • Implement erosion control measures • Monitor erosion and remediate where necessary	Very low

15. SUMMARY OF SPECIALISTS REPORTS

Table 15-1: Summary of Specialists Report

List of studies undertaken	Recommendations of specialists reports	Specialists recommendations that have been included in the EIA report	Reference to applicable sections where specialists recommendation have been included in the EIA report
Soil Impact Assessment	N/A	N/A	N/A
Fauna & flora	N/A	N/A	N/A
Wetlands Impact Assessment	N/A	N/A	N/A
Surface water impact assessment	N/A	N/A	N/A
Groundwater impact assessment	N/A	N/A	N/A
Heritage impact assessment	N/A	N/A	N/A

16. ENVIRONMENTAL IMPACT STATEMENT

16.1 Summary of the key finding of the environmental impact assessment

Table 16-1: Summary of key findings of the EIA

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	Major negative
	Fauna & flora	Loss of fauna & flora	Minor negative	Major negative
	Surface water	Sedimentation& contamination of surface water	Minor negative	Minor negative
	Groundwater	Groundwater contamination	Negligible negative	Insignificant negative
Operational phase	social	Nuisance impact due to drilling, blasting, earthworks, heavy vehicles	Minor negative	Major negative
	Soil ,land-use& capability	Soil compaction	Minor negative	Major negative

	wetland	Contamination of wetlands	Minor negative	
	Surface water	Contamination of surface watercourses	Major negative	Minor negative
Decommission phase	Air quality	Elusive dust generation	Minor negative	Insignificant negative
	Soil ,land-use &land capability	Soil contamination, restoration of land capability	Minor negative	Minor negative
	Fauna & flora	Destruction of suitable habitat	Minor negative	Major negative
	Surface water	Contamination & sedimentation of surface watercourse	Major negative	Minor negative

16.2 Final site Map

See attached final site Map **Appendix A**

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

Impacts resulting from establishment phase

- Clearance of site through removal of vegetation and topsoil
- Exposed area become prone to soil erosion
- Wetland deterioration

Impacts resulting from operation phase

- Nuisance of heavy vehicles
- Dust generation by heavy vehicles

17. Proposed impact management objectives and impact management outcomes

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

Recommendations that derived from the impact management

- Avoidance of detrimental negative impacts of the sensitive areas
- Prevention of long term effect/impacts from the proposed project
- Restore the proposed areas of interest to its natural form

18. 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.

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

The type of commodity to be mined being Copper Ore, Iron Ore, Manganese Ore and Nickel Ore 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.

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

20.1 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 type of commodity to be mined will have minimal impact on the environment as measured by the economic benefits notwithstanding the recommendations and measures to be put in place to monitor impact response and minimisation.

20.2 Conditions that must include in the authorisation

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

21. Period for which the environmental authorisation is required

The mining permit will expire in 2 years' time with a possible renewal of another 3 years, similarly the authorisation should be active until the permit expires, as contents of the authorisation will no longer serve value when mining has been decommissioned has ended that is after having done closure and rehabilitation has been concluded.

22. Undertaking

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

23. 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 the Department of Minerals guidelines. The cost closure is estimated to the total of **R 216 154,87 (See Appendix F)**

23.1 Explain how the aforesaid amount was derived

23.1.1 Quantum calculations

Provide a calculation of the quantum of the financial provision required to manager and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulations 54 (1) in respect of each of the phases referred to)

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

Mine type and saleable mineral by-product

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

Mine type	Open-cast
Saleable mineral by-product	Copper Ore, Iron Ore, Manganese Ore and Nickel Ore

Risk ranking

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

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

Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low

Level of information

According to Step 4.2:

Level of information available	Limited

Identify closure components

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)		No
2(A)	Demolition of steel buildings and structures		No
2(B)	Demolition of reinforced concrete buildings and structures		No
3	Rehabilitation of access roads		No
4(A)	Demolition and rehabilitation of electrified railway		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	Yes	
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

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	21179	1

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

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 at final, planned closure gives a sum total of **R 216 154,87 (See Appendix F)**

23.2 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 upon approval of the BAR and Environmental Management Programme Report.

24. Specific information required by the competent authority

24.1 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

24.1.1 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 mining operation will involve a Copper Ore, Iron Ore, Manganese Ore and Nickel Ore commodity 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.

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

There are no heritage sites identified within the proposed mining area as per the site inspection conducted. Appropriate measures have been proposed to protect such sites from the impact arising from the project should they be discovered during operation.

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

The report compiled together with the information is provided as proof of consultations, site visits etc.

Environmental Management Programme Report

25. DETAILS OF EAP

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

26. DESCRIPTION OF THE ASPECT OF THE ACTIVITY

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

27. COMPOSITE MAP

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

28. DESCRIPTION OF THE IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENT

28.1 Determination of closure objectives

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

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

28.2 Volume and rate of water use required

Water usage will be limited to the following activities

It is only during dust suppression for heavy vehicles, the type of commodity to be mined will not require any water-use. At a given point that a water use is triggered a licence will be applied for in terms of section 21 of the National Water Act, 1998 (Act 36 of 1998).

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

Table 28-1: Measures to rehabilitate the environment affected by undertaking any listed activity

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 & contaminatio	Surface water	Operational phase	Minimal negative impact	Limited infrastructure footprint

	n of surface watercourses				
	Groundwater contamination	Groundwater	Operational phase	Minimal negative impact	Avoidance and spillage attention
	Noise generation	noise	Decommission phase	Minimal negative impact	Adhering to operating hours
Excavation of the mine site	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

28.4 Impacts to be mitigated in their respective phases

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

Table 28-2: Measures to rehabilitate the environment affected by undertaking any listed activity

Activity	Aspects Affected	Phase	Size and Scale of Disturbance	Mitigation Measure
Column 1	**Column 2**	**Column 3**	**Column 4**	**Column 5**
Site Clearance	Social Nuisance	Establishment Phase	Limited to the mining site ▪	Keep soils moist to suppress Possibility of dust;
				Site clearing to take place during daylight hours only
				Vehicles and machinery will be properly maintained to

				minimise operating noise
				Ensure that dust suppressants are applied to gravel or unpaved roads that are in use;
	Soils	. Establishment Phase	100 m2	Ensure topsoil is stored in one dedicated stockpile, less than 1m high, and within the demarcated mining site; and
				Topsoil stockpiles will be covered with a plastic liner during windy and rain conditions so as to prevent erosion (October to March).
				Only remove vegetation when and where necessary;
				▪ Minimise the size of the excavated

	Fauna and Flora	Establishment Phase	100 m2	sites as far as possible
				Indigenous trees will not be removed
				Drainage lines, and indigenous vegetation will be avoided Use existing access road
	Wetlands	Establishment Phase	Local	Ensure site clearing is limited to the designated areas
				All watercourses will be avoided and the stipulated buffer will be implemented
	Surface water	Establishment Phase	Local	Berms must be constructed around the periphery of the mining site to separate clean and dirty water
				Water within the excavated site must be diverted to the water sump

				All watercourses will be avoided and the stipulated buffer will be implemented
	Groundwater	Establishment Phase	Local	All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated;
				Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills;
				All vehicles and machinery to be serviced in a hard park area or at an offsite location
	Noise	Establishment Phase	Site Specific	Site clearing to take place during daylight hours only

				Vehicles and machinery will be properly maintained to minimise operating noise
				Vehicles will obey speed limits
Excavation	Social Nuisance	Operational Phase	Limited	Maintain excavation equipment and, if possible, fit silencing equipment
				excavation will only take place during daylight hours
				Use a dust suppressant and keep access roads moist
				Cover stockpiles with a plastic liner in windy and rain conditions so as to prevent topsoil from eroding
	Noise	Operational Phase	Site Specific	Maintain drilling equipment and, if possible, fit silencing equipment

	Fauna and Flora	Operational Phase	100 m2	Remove alien invasive species as and when they occur
				Maintain excavation equipment and, if possible, fit silencing equipment
				All personnel are to remain on the demarcated mining site only
				to prevent the footprint of the site expanding and further vegetation loss
	Soil	Operational Phase Decommissioning Phase	Site Specific	Immediately cease m excavation and contain and clean up any hydrocarbon spillages as they occur
				Ensure the spill clean-up kits are readily available in the event of a spillage

				Machinery and vehicles must be serviced and maintained off site at a workshop and drip trays must be in place to capture the spillage
	Surface Water	Operational Phase	Local	Topsoil stockpiles will be covered with a plastic liner during windy and rain conditions
				Berms on the periphery of the mining site will be inspected daily and maintained to ensure runoff from within the
				mining site does not report to the catchment
	Groundwater	Operational Phase	Local	Emergency spill response plan required to handle any unplanned spillages

				Daily inspection of the excavation must be undertaken prior to the commencement of Excavation and routine maintenance must be
				undertaken to prevent the likelihood of fluid dispersing and breakdowns
Decommission phase	Surface Water	Operational Phase Decommission phase	Local	The site and access roads will be kept moist to avoid the creation and disturbance of dust
				The sumps must be pumped empty and the oil and sludge must be disposed of at a registered waste facility
	Soil	Operational Phase Decommissioning Phase	100 m2	Sumps will be backfilled and the site levelled immediately after has concluded

				All compacted areas will be ripped to loosen the soils during rehabilitation
	Fauna and Flora	Decommissioning Phase	100 m2	Remove alien invasive species as and when they occur
				An alien invasive management plan must be established
				All compacted areas will be ripped to loosen the soils during rehabilitation and seeded with an appropriate seed mixture

29. IMPACT MANAGEMENT OUTCOMES

Table 29-1: Impact Management Outcomes

Activity	Potential Impact	Aspects Affected	Phase
Column 1	**Column 2**	**Column 3**	**Column 4**
Establishment Phase			
	Fugitive dust generation	Air Quality	Establishment Phase
	Loss of topsoil resources and land capability	Soils	Establishment Phase
	Loss of fauna and flora species	Fauna and Flora	Establishment Phase
	Sedimentation of wetlands	Wetlands	Establishment Phase
Operational Phase			
	Sedimentation and contamination of surface water resources	Surface water	Establishment Phase , Operational Phase
	Groundwater contamination	Groundwater	Establishment Phase
	Noise generation	Noise	Establishment Phase, Decommissioning Phase
	Soil contamination and degradation	Soil	Operational Phase, Decommissioning

			Phase
Excavation of commodity	Alternation of visual environment	Topography and Visual Environment	Operational Phase
	Soil compaction	Soils	Operational Phase
	Sedimentation of wetlands	Wetlands	Operational Phase
	Sedimentation of surface water resources	Surface Water	Operational Phase
	Contamination of groundwater and reduction in groundwater quantity	Groundwater	Operational Phase, Decommissioning Phase
	Elusive dust generation	Air Quality	Decommissioning Phase

30. IMPACT MANAGEMENT ACTIONS

Table 30-1: impact management actions

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	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

		outlined in Table 1.5			

31. FINANCIAL PROVISION

31.1 Determination of the amount of financial provision

31.1.1 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).

31.1.2 MINIMUM CLOSURE OBJECTIVES THAT WILL BE ADHERED TO

Rehabilitation of access roads

Whenever a mining permit is suspended, cancelled or abandoned or if it lapses and the holder does not wish to renew the permit, any access road or portion of the remaining extents thereof, constructed by the holder and which will no longer be required by the landowner/tenant, shall be removed and/or rehabilitated to the satisfaction of the Regional Manager

Any gate or fence erected by the holder which is not required by the landowner/tenant, shall be removed and the situation restored to the pre mining situation.

Roads shall be ripped or ploughed, and if necessary, appropriately fertilized (Based on a soil analysis) to ensure the re-growth of vegetation. Imported road construction materials which may hamper re-growth of vegetation must be removed and disposed of in an approved manner prior to rehabilitation.

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

Rehabilitation of excavated areas

The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be dumped into the excavation.
No waste will be permitted to be deposited in the excavations.
Once excavation have been refilled with overburden, rocks and coarse natural materials and profiled with acceptable contours and erosion control measures, the topsoil previously stored shall be returned to its original depth over the area.

The area shall be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora

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

Final rehabilitation

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

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

Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1 weeds according to CARA (Conservation of Agricultural Resources Act, 1983 – act 43;

Regulations 15 and 16 (as amended in March 2001) need to be eradicated from the site on final closure.

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

Quantum calculations.

(Provide a calculation of the quantum of the financial provision required to manager and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulations 54 (1) in respect of each of the phases referred to).The calculation of the quantum for financial provision was according to Section b of the working manual.

Mine type and saleable mineral by-product

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

Mine type	Open-cast
Saleable mineral by-product	Copper Ore, Iron Ore, Manganese Ore and Nickel Ore

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

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

Environmental sensitivity of the mine area
According to Table B.4

Environmental sensitivity of the mine area	Low

Level of information
According to Step 4.2:

Level of information available	Limited

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

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 at final, planned closure gives a sum total (**see Appendix F)**
Undertaking to provide financial provision (Indicate that the required amount will be provided should the permit be granted).
Herewith I, the person, whose name and identity number is stated below confirm that I am the person authorized to act as representative of the applicant in terms of the resolution submitted with the application. I herewith confirm that the company will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines, which final amount is unlikely to be less than R10/m2 of the area to be rehabilitated.

31.1.3 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 as they initially requested the closure objectives before allowing access to the proposed site.

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

The excavated sites will be rehabilitated immediately following the commencement of the mining activities. The rehabilitation process in summarised as follows:

- The excavation machines will be removed from the site
- The sumps will be pumped empty and the oil and sludge disposed of at a registered disposal facility
- The waste water 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;

31.1.5 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 excavated mining 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.

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

(Provide a calculation of the quantum of the financial provision required to manager and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulations 54 (1) in respect of each of the phases referred to)

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

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 at final, planned closure gives a sum total (**see Appendix F**)

Undertaking to provide financial provision
(Indicate that the required amount will be provided should the right be granted).

Herewith I, the person, whose name and identity number is stated below confirm that I am the person authorized to act as representative of the applicant in terms of

the resolution submitted with the application. I herewith confirm that the company will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines, which final amount is unlikely to be less than R10/m2 of the area to be rehabilitated.

31.1.7 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 before the Basic Assessment Report and Environmental Management Programme report can be approved.

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

31.2 Monitoring of Impact Management Actions

List of Identified Impacts Requiring Monitoring Programmes
The identified impacts that require monitoring programmes includes the following:

- Dust handling
- Noise handling
- Management of weed or invader plants
- Storm water handling
- Management of health and safety risks
- Waste management
- Management of access roads
- Topsoil handling

31.2.1 Functional requirements for monitoring programmes.

Dust Monitoring

- Dust suppression equipment such as a water car and water dispenser.
- The applicant already has the equipment available.

Noise Monitoring

- Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition.
- Compliance with the appropriate legislation with respect to noise will be mandatory.

Surface and storm water monitoring

- Sterilized water sampling bottles to be handed to an approved laboratory for water quality testing.
- Trenches and contours to be made where applicable to direct storm and runoff water around the stockpile areas.

Management of weed or invader plants:

- Removal of weeds should be manually or by use of an approved herbicide.

Management of Health and Safety Risks:

- Workers to be provided with the required PPE while operating on site.
- The necessary warning signs to be placed at the site to inform the public and workers of the mining activities

Waste Management

- Closed containers, for the storage of general hazardous waste, to be used until waste is removed to the appropriate landfill site.
- Hydrocarbon spill kits to enable sufficient clean-up of contaminated areas.

- Drip trays should be available to place underneath haul vehicles while the vehicles are parked at night.
- Should a vehicle have a break down, it should be removed from site immediately.

Management of access roads:

- Dust suppression equipment such as a water car and dispenser.

- Trenches and contours to be made to direct storm and runoff water around the access roads.

Topsoil Monitoring

- Excavating equipment to remove the first 300mm of topsoil from the proposed work areas. The applicant has this equipment available.
- Trenches and contours to be made to direct storm and runoff water around the stockpiled topsoil area.

31.2.2 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 mining activities have been completed, M Chrome Iron Steel (Pty) Ltd 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.

Table 31-1: Roles and Responsibilities

Monitoring Aspect	Role	Responsibility
Dust Monitoring	Site Manager to ensure compliance with the guidelines as stipulated in the EMP Compliance to be monitored by the Environmental Control Officer	- Control the liberation of dust into surrounding environment by the use of inter alia, water spraying and / or other dust allaying agents - Limit speed on the access roads to 30km/h to prevent the generation of excess dust. - pray roads with water or an environmentally friendly dust allaying agent that contains no PCB's (eg 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 suppression on the site.
Noise Monitoring	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer	- Ensure that employees and staff conduct themselves in an acceptable manner while on site. - Ensure that all mining vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.
Management of weed/invader plants	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. 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
Storm water Monitoring	Site Manager to ensure compliance with the guidelines	- divert storm water around the topsoil heaps, stockpile areas and access roads to prevent erosion and loss of material

	as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer	- divert runoff water around the stockpile areas with trenches and contour structures to prevent erosion of the work areas. - Conduct mining in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water Affairs, and any other conditions which that department may impose.
Management of health and safety risks	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer	- ensure that workers have access to the correct PPE as required by law. - All operations to adhere to the Occupational Health and Safety Act
Waste management	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer	- ensure that vehicle repairs only take place at the off-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 recognized facility - Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility

		- ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste - Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc, in a container with a closable lid at a collecting point. Collection should take place on a regular basis and disposed of at the recognized landfill site Ermelo. Prevent refuse from being dumped on or in the vicinity of the mine 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 minimize 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
Topsoil Monitoring	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the	- Remove the first 300mm of topsoil in strips and store at the stockpile area. - Keep the temporary topsoil stockpiles free of weeds. - Place topsoil stockpiles on a levelled area and implement measures to safeguard the piles from being washed away in the event of heavy

	Environmental Control Officer	rains/storm water. - topsoil heaps should not exceed 2m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. - divert storm and runoff water around the stockpile area and access roads to prevent erosion.
Surface Water Monitoring	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer	- Conduct quarterly water analysis when water is present in the stream bordering the site.

31.2.3 Monitoring and reporting frequency

Committed time frames for monitoring and reporting

Monitoring Aspect	Time Frames	Reporting
Dust monitoring	Throughout Construction, Operational and Decommissioning Phase	- compliance monitoring by site management - compliance monitoring of site by an Environmental Control Officer
Noise Monitoring	Throughout Construction, Operational and Decommissioning	- compliance monitoring by site management -

	Phase	compliance monitoring of site by an Environmental Control Officer
Management of weed/invader plants	Throughout Construction, Operational and Decommissioning Phase	- compliance monitoring by site management - compliance monitoring of site by an Environmental Control Officer
Storm water Monitoring	Throughout Construction, Operational and Decommissioning Phase	- compliance monitoring by site management - compliance monitoring of site by an Environmental Control Officer
Management of health and safety risks	Throughout Construction, Operational and Decommissioning Phase	- compliance monitoring by site management - compliance monitoring of site by an Environmental Control Officer
Waste Management	Throughout Construction, Operational and Decommissioning Phase	- compliance monitoring by site management - compliance monitoring of site by an Environmental Control Officer
Management of access roads	Throughout Construction, Operational and Decommissioning Phase	- compliance monitoring by site management - compliance monitoring of site by an Environmental Control Officer
Topsoil Monitoring	Throughout Construction, Operational and Decommissioning Phase	- compliance monitoring by site management - compliance monitoring of site by an Environmental Control Officer

31.2.4 Responsible Persons

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

31.2.5 Time Period for Implementing Impact Management Actions

This was discussed on the impact management action section table

31.2.6 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.

32. 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 mining operation and on a two yearly basis during operation.

33. Environmental Awareness Plan

33.1 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 time 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.

33.2 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)

The operations manager must ensure that he/she understands the EMP document and its requirement and commitments before any mining takes place. An environmental Control Officer needs to check compliance of the mining activities to the management programmes described in the EMP.
The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

Site Management:

Stay within boundaries of site – do not enter adjacent properties
Keep tools and material property stored.
Smoke only in designated areas.
Use toilets provided – report full or leaking toilets

Water Management and Erosion

Check the rainwater flows around the work areas that are not contaminated
Report any erosion
Check that dirty water is kept from clean water.
Do not swim in or drink from streams

Waste Management

Take care of your own waste
Keep waste separate into labelled containers – report full bins
Place waste in containers and always close lid
Don't burn waste
Pick-up any litter laying around

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

Never mix general waste with hazardous waste
Use only sealed, non-leaking containers
Keep all containers closed and store only in approved areas
Always put drip trays under vehicles and machinery

Empty drip trays after rain
Stop leaks and spills, if safe
Keep spilled liquids moving away
Immediately report the spill to the site manager/supervision
locate spill kit/supplies and use to clean-up, if safe
Place spill clean-up wastes in proper containers
Label containers and move to approved storage area

Discoveries:

- Stop work immediately
- Notify site manager/supervisor
- Includes - Archaeological finds, cultural artefacts, contaminated water, pipes, containers, tanks and drums, any buried structures

Air quality:

- Wear protection when working in very dusty areas
- Implement dust control measures:
- Sweep paved roads
- Water all roads and work areas
- Minimize handling of material
- Obey speed limit and cover trucks

Driving and noise:

- Use only approved access roads
- Respect speed limit
- Only use turn-around areas –no crisscrossing through undisturbed areas
- Avoid unnecessary load noises
- Report or repair noisy vehicles

Vegetation and Animal life:

- Do not remove any plants or trees without approval of the site manager
- Do not collect fire wood
- Do not catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site
- Report any animal trapped in the work area
- Do not set snares or raid nests for eggs or young

Fire management:

- Do not light any fires on site, unless contained in a drum at demarcated area

- Put cigarette butts in a rubbish bin
- Do not smoke near gas, paints or petrol
- Know the position of firefighting equipment
- Report all fires
- Don't burn waste or vegetation

33.3 Environmental awareness training

- Describe the general environmental awareness training and training on dealing with emergency situations and remediation measures for such emergencies)
- The operations manager must ensure that he/she understands the EMP document and its requirement and commitment before any mining takes place.
- In addition to the meeting to be held with the site employees to inform them of the basic steps towards environmental awareness, the operators of earth moving equipment should be informed of the following requirements:
- Mining within demarcated areas;
- No-go areas;
- Establishment of access roads;
- Handling of hazards waste;
- Handling of biodegradable and non-degradable waste;
- Temporary vehicle maintenance;
- Mining methods to be followed;
- Handling and storing of topsoil;
- Sloping of excavations;
- Speed control in order to reduce dust;
- Emergency procedure awareness.
- Labourers should be informed of the following during "toolbox talks":
- Reporting of unusual observations to management (e.g. fossils, graves, etc.);
- Reporting of spills to management;
- Felling or damaging trees for firewood not allowed;
- Making fires not allowed;
- Demarcated areas for mining;
- Establishing of access roads and erection of gates in fence lines;
- Status of gates of property owner;

- Toilet facilities and hygiene measures;
- Handling of waste;
- Emergency procedures awareness.

34. 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 mining right must make financial provision for rehabilitation of negative environmental impacts. The financial provision will be reviewed annually.

35. 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

Name of Company**:**

TPR Mining Resources (Pty) Ltd

Date: 06 August 2023

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36. THE FOLLOWING APPENDIXES ARE ATTACHED

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