



**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 : Addwatt (Pty) Ltd**

**REFERENCE NUMBER : NC 30/5/1/1/ 13319 PR**

**FARM NAME : Eildon 456 Kuruman Rd**

**MAGISTERIAL DISTRICT: Kuruman**

**DATE : December 2022**

## STANDARD DIRECTIVE

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

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

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications. It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

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



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## SOURCE

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

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

**Table 1-1: Details of the applicant**

ITEM	COMPANY CONTACT DETAILS
Company Name	Addwatt (Pty) Ltd
Full Name and	Mr. Ntuli Dumisane
Cell no	072 188 4792
Tel no:	011 907 3554
E-mail address	Dumisane.ntuli@sphandile.co.za
Physical address	14A Borax Street Alberton 1549

**Table 1-2: Details of the EAP**

ITEM	CONSULTANT CONTACT DETAILS
Name	TPR Mining Resources (Pty) Ltd
Tel no	087 980 5800
Fax no:	086 599 3318
Cellular no	079 244 2470
E-mail address	info@tprmining-resources.co.za
Physical address	29J Woltemade Street Witbank Mpumalanga Province 1035

### Project team

**Environmental Practitioner:** Ms. Pheladi Mphahlele

Ms. Pheladi Mphahlele obtained a Bachelor of Earth Science in Mining and Environmental Geology (BESMEG) in September 2017 from University of Venda as well as a Certificate in from VBK Business Venture in January 2015. She obtained knowledge in storm water management projects while working on community project in 2015 (2 months) in the construction sector. She also worked on research project while completing her honors in BESMEG. Furthermore, she is affiliated with EAPASA as a registered EAP. Projects experience are written below.



## **Environmental Consultant: Mr. Thato Jimmy Ramoraswi**

Mr. Thato Jimmy Ramoraswi obtained a Bachelor of Environmental Science in April 2009 from University of Venda as well as a Certificate in Waste Management from VBK Business Venture in January 2015. He obtained extensive experience (over 5 years) in Environmental Management in the construction and mining sector. He completed several EIA projects. He is affiliated to the South African wing of the International Association for Impact Assessment. He completed several EIA projects. He is affiliated to the South African wing of the International Association for Impact Assessment and in the process of Environmental Assessment Practitioners Association of South Africa (EAPASA) registration.

### Projects Experience (Environmental Impact Assessment)

- Environmental Assessment for the proposed development of filling station at Ga-Selala Village on the portion of farm Twyfelaar 119 KT, within the Greater Tubatse Local Municipality, Sekhukhune District Municipality, Limpopo Province, February 2013.
- Environmental Assessment for the proposed sand mining permit on portion of portion 39 of the farm Haakdoornboom 267 JR, within City of Tshwane Metropolitan Municipality, Gauteng Province, May 2019.
- Environmental Assessment for the proposed prospecting right of coal on portion of portion 41 and 42 of farm Rietvlei 140 HU, within the jurisdiction of Abaqulusi Local Municipality, Zululand District of Kwa-Zulu Natal Province, July 2019.
- Environmental Assessment for proposed mining permit of gold ore on farm on the remaining extent of farm kameelspoort 563 JU, within the jurisdiction of Mbombela Local Municipality, Ehlanzeni District of Mpumalanga Province, October 2021.



**2. Location of the overall activity**

**Table 2.1: details of the affected site**

<b>Farm name</b>	Eildon 456 Kuruman Rd
<b>Application area(Ha)</b>	2500 Ha
<b>Magisterial district</b>	Kuruman
<b>Distance and direction from nearest town</b>	Approximately 30.1 km from Kuruman to Khathu along the N14 route.
<b>21 digit Surveyor general code for each farm portion</b>	T00000000000045600000

**3. INTRODUCTION**

Addwatt have applied for an Environmental authorisation for prospecting right on farm Eildon 456 Kuruman Rd. The proposed prospecting area will be explored in three phases namely; literature review, Site observation, field mapping and drilling. The type of drilling to be used has minimal impact on the environment.

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

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

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

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



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

Boreholes will be drilled at pre-planned sites. The boreholes will be drilled to intersect all the expected applied commodity seams and will be logged by the geologist. Iron ore, manganese ore and diamond samples will be sent to the laboratory for quality analyses. This data will form the basis for the geological modelling and financial evaluation.

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

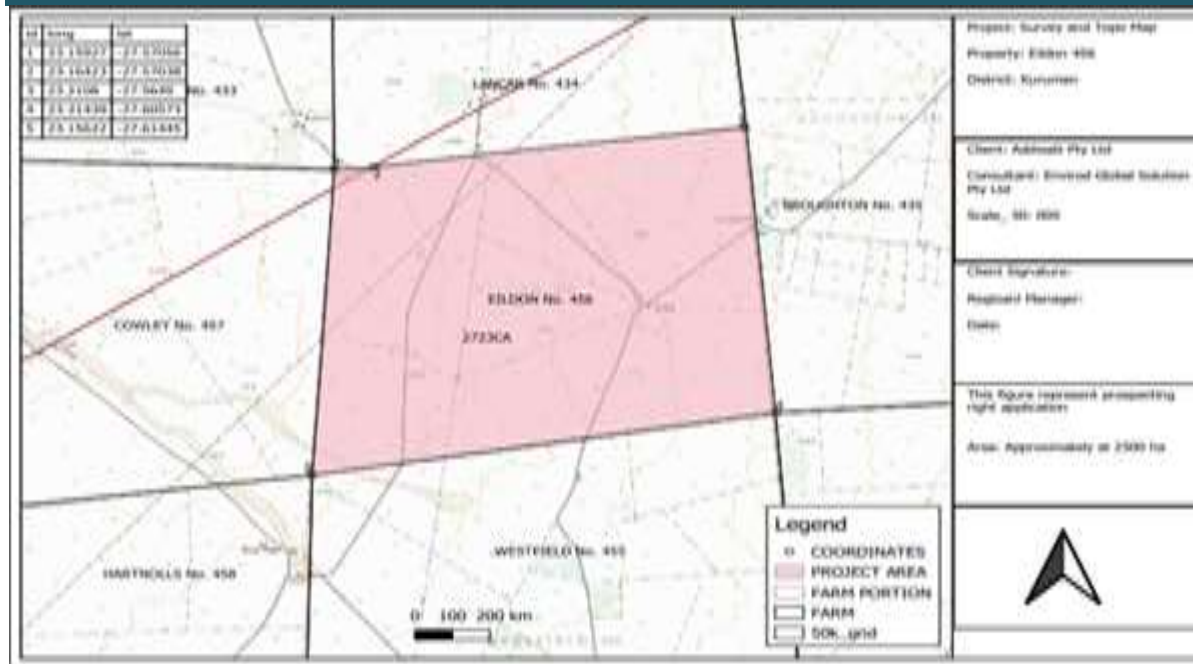
### 3.1 Project locality

The area where prospecting will take place is located approximately 30.1 km south west of Kuruman along the N14 route to Khathu.

#### Site Co-ordinates of the application area

No:	X	Y
1	-27.57056	23.15927
2	-27.57038	23.16423
3	-27.5649	23.2108
4	-27.60573	23.21439
5	-27.61445	23.15622

### 4. Locality Map of the proposed farm Eildon 456 Kuruman Rd



**4.1 Description of the Scope of the proposed overall activity**

**4.1.1 Listed and specified activities**

**Table 4.1: listed activities**

Name of activity E g. for prospecting drill site, site camp	Aerial extent of the activity Ha or m <sup>2</sup>	Listed activity mark with an X where applicable or affected.	Applicable listing notice 1 (GNR 983)
Overall Drill site points (indicated by circular dots)	1.5Ha	X	GNR 983 (Activity 20)
Ablution facility(mobile hired toilets closer to each drill site)	0M <sup>2</sup>		
Accommodation (camping site for drilling contractor outside prospecting site)	Not applicable		
Equipment storage (outside prospecting site)	Not applicable		
Sample storage (outside prospecting site)	not applicable		
Site office (No site office to be established)	not applicable		
Access route( Pre-existing access routes will be used)	100m		

**4.2 DECRPTION OF THE ACTIVITIES TO BE UNDERTAKEN**

**4.2.1 Minerals to be prospected**

Addwatt (Pty) Ltd intends to prospect for Iron ore, Manganese ore and Diamond utilising core drilling and ore sampling. Drilling will be conducted on specified drilling points depending on available site within the farm portions.

**4.2.2 Methods to be used for prospecting**

**Invasive methods**



Invasive methods will include diamond core drilling which is preferred when prospecting for Iron ore, Manganese ore and Diamond. Diamond Core drilling is done in order to ascertain the stratigraphy and reef horizon of the ore body.

### **Non-invasive methods**

Non-invasive methods includes ground magnetic survey and produces minimal impact on the environment. The ground magnetic survey will assist in identification of plotted sites within the boundary of the farm where drilling will take place, this type of survey is used to determine the required data for mapping of the ore body. Geophysical survey and field reconnaissance will also be undertaken in order to obtain detailed data of the ore to be prospected.

#### **4.2.3 Environmental Attributes**

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

#### **4.2.4 Identification of impacts and risks**

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

#### **4.2.5 Consideration of alternatives**

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

#### **4.2.6 Process to assess and rank impacts**

Various ranking include probability, duration, scale and magnitude.

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



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

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

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

**4.2.7 Contribution of specialists reports**

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

**4.2.8 Determination of impact management objectives and outcomes**

- Fire management plan: To ensure that the prospecting area is prepared in the event of a fire breaking out.
- Spill procedure: Ensure adequate ventilation, if the spill occurred in-doors.
- Boreholes drilling management: All drilling rigs will be fitted with appropriate dust and noise suppression equipment like water sprays and mufflers.

**5. Policy and Legislative Context**

**Table 5.1: listed activities**

Applicable legislation and guidelines used to compile these report(	Reference where applicable	How does this development comply with and respond to the legislation and policy
National Environmental Management Act 107 of 1998,GNR 983 Listing	Government gazette No: 10328,04 December 2014 No 38282, Department of	An application for Environmental authorisation has been



<p>Notice 1, Activity 20</p>	<p>Environmental Affairs</p>	<p>lodged in terms of the NEMA ACT (107 of 1998)</p>
<p>National Environmental Management: Biodiversity Act (No 10 of 2004), Sections 57, 65-69, 71, 73 and 75</p>	<p>Department of Environmental Affairs</p>	<p>An application for a permit for removal of indigenous plant has not been lodged, if by any means there is existing indigenous plants within the proposed prospecting area, an application will be lodged with the department of environmental Affairs prior to removal of impacts on the biodiversity have been identified and mitigation has been provided.</p>
<p>National Heritage Resources Act (No 25 of 1999), Section 34–36(NHA)</p>	<p>South African Heritage Resource Agency</p>	<p>An application for a permit to demolish old structures that are more than 60 years old or presence of graves has not been lodged, if there is presence of archaeological remains within the proposed prospecting area, such will be done in accordance with prescribed legislation.</p>
<p>Mineral Petroleum Resource Development Act 28 of 2002(MPRDA)</p>	<p>Department of Mineral Resources</p>	<p>An application for a prospecting right has been lodged with the Department of Mineral Resources in terms MPRDA (28 of</p>





		2002)section 16
National Water Act(Act 36 of 1996)NWA	Department of Water Affairs	Application for a Water-use licence will be applicable should any water resources is disturbed within the prospecting area. But so far, the applicant intends to utilize water supplied by the contractors.
Conservation of Agricultural Resource Act(Act 43 of 1993)CARA	Department of Agriculture and Fisheries	Protection of agricultural resources from any prospecting activities will be practised.

**5.1 Need and Desirability of the proposed activities**

The proposed prospecting activities will be conducted in order to find quality and quantity of the commodities to develop a business model for mining. The area is comprised of agricultural farming, livestock farming and grasslands.

The post –prospecting land use will return back to the current state if the commodities are found uneconomical but if found viable then a mining permit/ right will be applied.

According to the location of the proposed prospecting area. The farm Eildon 456 Kuruman Rd is situated 30.1 km south west of Kuruman along the N14 route to Khathu. The type of prospecting to be conducted which is diamond core drilling has minimal impact on the environment as it will only involve drilling and sampling of ore to determine the quantity and grading of the ore.

**5.1.1 Socio economic**

Mining contributes to the local GDP of the Kuruman and Khathu towns and local areas, with the existing mining operations of the commodities applied for. The distribution of Iron ore, Manganese ore and Diamond reserves is in abundance around the areas of Kuruman and Khathu. This will attract foreign investment to the local town and nearby communities through transportation, beneficiation. Introduction of mining operations will attract businesses to invest within the



surrounding area, there is already mining developments taking place due to iron ore, manganese ore and diamond reserves existing around the farm area. The town of Kuruman and Khathu consist of marginal residential site and few streets with retail and entertaining facilities. Introduction of mining operations will attract businesses to invest within the surrounding area, as a result bring development of parks, shopping Malls recreation facilities. This will improve social cohesion for the local communities.

The Gamagara Local Municipality comprises of a total population of 41 617 whereby the working age are about 71.9% while the non-working are 28.1%. It is estimated that youth unemployment in the municipal area is 22.4 (Statistics South Africa, 2011). So with the approval of the prospecting project, the youth unemployment still has a chance to be reduced.

Mining operation will boots local SMMEs and business, which will in turn reduce unemployment rate around the area. Mining operations will also attract retail facilities around the proposed mining area. Geological patterns indicate presence of Iron ore, Manganese ore and diamond reserves around the farm Eildon 456.

### 5.1.2 Location suitability

The farm area is characterised by grassland, reddish ground cover, fences, agricultural and livestock farming activities. There is low-residential concentration within the proposed farm area, which provides suitable establishment of prospecting activities. The commodity which is proposed to be prospected is geologically distributed within and around the farm area.

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

### 5.2.1 Preferred site

Due to the remote prospecting area, the potential impacts on the surrounding environment associated with prospecting is deemed of low significance. It is proposed that all prospecting related temporary infrastructure will be contained within the boundary of the prospecting area. As no permanent buildings will be established on site the layout / position of the temporary infrastructure will be determined by the prospecting progress and available space within the applied hectares of prospecting area.

Addwatt (Pty) Ltd will make use of temporary infrastructure during the prospecting operations. Prospecting will only to be done on vacant areas, close to access road and grasslands as the area comprises of shrubs and grasslands, where no flora will need to be removed or disturbed.



Workers will be transported to and from the site daily. The Kaapvaal Craton consists of mostly of the applied commodities.

### 5.2.2 Technology alternatives

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

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

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

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

- Historical data
- Previous prospecting activities
- Prospecting activity
- Challenges relating to exploration and mining
- Depth
- Thickness of the ore body
- Size of the ore body

### 5.2.4 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 ore 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
-

**5.2.5 Structural Mapping**

The programme will determine the dip of the ore body and the strike of the ore body. Furthermore, structure such as faulting and folding will be mapped out from the mapping exercise all areas that need to be drilled will be properly sited on site.

**5.2.6 Location of Suitable boreholes**

**Drilling**

As we are targeting shallow and open-castable, drilling will be limited to a depth of 50m-200 metres. Approximately 10 boreholes will be drilled but the exact number of boreholes will be determined after geophysical surveys have been conducted, with consideration of the existing infrastructure, water bodies found within the affected farm area which will be avoided. The orientation and dip of the drill holes will depend mainly on the strike and dip of the rocks. They will be planned in a manner to ensure that the ore body is intersected.

**Size of the boreholes**

Due to the geological setting of the affected farm, which is characterised by highly diverse of Iron ore, Manganese and Diamond. The proposed drilling diameter that would be suitable to the affected prospecting area is explained on the below table.

- Diameter (0,036m)
- Depth ( 50 m-200m)

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

A	$\pi$	$r^2$	m
Area	pie	radius	metres
$A = \pi r^2$ $A = \pi \times (0,018m)^2$ $A = 1.01 \times 10^{-3} m^2$ (size of each borehole)			

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

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



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

### 6.1.1 Details of the development footprint alternatives considered

#### ANALYSIS OF ALTERNATIVES

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

### 6.1.2 Property alternative

The prospecting sites will be determined by the location of the ore body using dataset collected during geophysical surveys, which will aid in identifying sensitive environments which will be avoided.

### 6.1.3 Technology alternative

There are available drilling types that are used for prospecting activities namely

#### ➤ Percussion drilling

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

#### ➤ Rotary core drilling

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

#### ➤ Multi-combination rigs

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



Trenching can also be an alternative prospecting method but at the same time produces significant environmental impact on the site where prospecting will be conducted. It involves excavation of a deep narrow hole as opposed to a drill rig which will utilize about a 100m<sup>2</sup> in size.

#### 6.1.4 No-go alternative

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

## 7. Details of the Public Participation process followed

### 7.1 Confirmation of consultation

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

The interested and affected parties have been confirmed to this matter. Site Notices and consultation documents were placed along the boundary, gates and accessible areas of the proposed site. A newspaper advertisement was published on the **08<sup>th</sup> December 2022** on the **Noordkaap Bulletin** newspaper to inform interested and affected parties of the prospecting activities. (See attached **Appendix D**).

Discussions were held with the relevant landowner and lawful occupiers to inform them of the proposed prospecting during the consultation site visits. Any possible concerns in terms of possible impacts were communicated directly to the proponent. As directed on the acceptance letter from the competent authority, the applicant has informed and requested comments from landowners. See **Appendix D**

### 7.2 Record of the public participation and the results thereof

#### 7.2.1 Identification of interested and affected parties

Landowner and their contact details were identified through a Title Deed search and through the public participation for the properties falling within the proposed prospecting area. site notices and Newspaper advert was placed to allow members of the surrounding community to comment on the proposed prospecting application. **See Appendix D**



**7.3 The details of the engagement process**

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

The following information was provided to the landowner, interested and affected parties through emails, meeting and telephones:

Addwatt is planning as part of the prospecting work to conduct drilling operations on the availability of the vacant site provided by the landowner, which will be rehabilitated. The aim of the prospecting is to determine whether there is any viable Iron ore, Manganese ore and Diamond to be extracted in the long term. Should the prospecting study provide enough information in terms of a feasible long term mining project, an application will be made to the Department of Mineral Resources for an either a Mining permit or right. Should this be the case, the option of purchasing some of the properties can be investigated and negotiated with the various owners.

The landowners was informed that should a Mining Right be applied for, it will be for an opencast mine, and no underground section will be required due to the shallow depth of iron ore, manganese ore and diamond within the area. Addwatt requested the landowners for their co-operation during the prospecting process of which the interested and Affected Parties has been informed of the proposed prospecting activities applied for. **See Appendix D**

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

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

Name of Interested /affected parties	Contact Details	How did the Consultations take place?	What were His /her concerns about The operation?
Babalas Communal Property Association	079 9945642 <a href="mailto:Dithare90@gmail.com">Dithare90@gmail.com</a>	Meetings, consultation documents and email were sent	No consent received yet



Gamagara Local Municipality	Cnr Frikkey Meyer and Hendrick Van Eck Roads, Civic Centre, Khathu, 8446  053 723 6000	Emails were sent	No response received yet
Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	162 George Street, Kimberlite Building, Kimberley, 8301	Email 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	No response received
SAHRA	www.sahris .co.za	Uploaded documents	No response received
ESKOM	Voortrekker St, Kuruman, 8460  053 712 2151	Emails	No response received





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

The drilling plan will avoid areas such as graves, buildings and indigenous or endangered species flora and fauna. The department of Rural Development have been notified of the application with regard to any land claims that might be pending, we are still awaiting a response from the Land Restitution section of the department, but if a claimant arises during the application phase the competent authority will be informed in due course.

Local people and businesses with appropriate skills will be identified and included in the project tender process by Addwatt. It is committed to employ local people and businesses during the project, where possible.

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

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

Interested and Affected parties were consulted but to date we haven't received their response regarding the above-mentioned aspects

### **7.3.5 Other concerns raised by the aforesaid parties.**

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

See attached **Appendix D**.

### **7.3.7 Information regarding objections received.**

No Objections have been registered to date.



#### 7.4 The manner in which the issues raised were addressed

The interested and affected parties were given an opportunity to raise their concerns and consultation were done through advertisement, site notices, meetings, email and telephonic conversation and we are still awaiting for response.. See attached **Appendix D**

**8. Summary of issues raised by I&APs**

Interested and Affected parties		Date comments received	Issues 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
List the names of persons consulted in this column					
Mark with an X where who must be consulted were in fact consulted					
<b>Affected parties</b>					
<b>Landowner/s</b>	<b>X</b>				
Babalas Communal Property Association				No response received	<b>Appendix D</b>
<b>Lawful occupier/s of the land</b>					



<b>Landowners or lawful occupiers of adjacent properties</b>					
<b>Municipal Councillor</b>					
N/A					
<b>Municipality</b>					
Gamagara Local Municipality	X		No response received		<b>Appendix D</b>
<b>Organ of state(Responsible for infrastructure that may be affected Roads department, Eskom, Telkom, DWA</b>					
Department of Water and Sanitation			No response received		

Eskom			No response received		
Department of Roads and Public Works			No response received		
<b>Communities</b>					
N/A					
<b>Department of Land Affairs</b>					
Department of Agriculture, Environmental Affairs, Rural Development and Land Reform(Land Restitution Support)	X		No response received		<b>Appendix D</b>
<b>Traditional Leaders</b>					
N/A	X				
<b>Department of Environmental Affairs</b>					
	X				
<b>Other Competent</b>					



<b>authorities affected</b>					
<b>Other affected parties</b>					
SAHRA	X				
<b>Interested parties</b>	N/A				
					Appendix D



## 9. Environmental Attributes associated with the alternatives

### 9.1 Baseline environment

#### 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 semi-arid. Kuruman (where the project area is located) is classed as a cold semi-arid 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.

##### Surface Water

The project area is located in quaternary catchment D41K, within the Lower Vaal River Water Management Area (WMA) and Drainage Basin D (Orange River basin). The Lower Vaal WMA is located downstream of the Bloemhof Dam and upstream of Douglas Weir. It extends to the headwaters of the Harts, Molopo and Kuruman River in the north and the Vaal River Downstream of Bloemhof in the south. The Lower Vaal WMA covers a catchment area of 51,543 km<sup>2</sup>. The Lower Vaal WMA can be subdivided into three sub-catchments; Harts, Vaal downstream of Bloemhof and Molopo. The quaternary catchment is located within the Molopo sub-area. Due to the low rainfall, flat topography and sandy soils over much of the WMA, little usable surface runoff is generated in the water management area. The runoff is highly variable and intermittent. Although occasional runoff occurs in the upper reaches of the Molopo River, no record exists of flow having reached the Orange River (according to the Overview of Water Resources Availability and Utilisation, 2003). The estimated runoff for the Molopo sub area is 197 million m<sup>3</sup>/a. The prospecting area is situated next to the Kuruman river but does not contain rivers within its boundaries.

##### Terrestrial Ecology

The greater project area falls within the Savanna Biome, within the Eastern



Kalahari Bushveld Bioregion and the Inland Saline Vegetation Bioregion. Only one vegetation type is associated with the project area, namely the Kathu Bushveld vegetation type, which is listed as Least Threatened in terms of Section 52 of NEMBA). The Ecosystem protection levels in Kathu Bushveld ecosystems are not protected as depicted in Figure 9 (less than 5% of the biodiversity target is met in formal protected areas). The proposed prospecting area is located in the Griqualand West Centre of Endemism. CBA's are terrestrial and aquatic features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services.

CBA's need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. Ecological support areas (ESA's) are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. There are no CBA's or ESA's within the prospecting area – the surrounding areas are classified as “Other Natural Areas” while the prospecting area itself is bare / transformed by historic mining activities as per the Land Use and Land Cover.

## Noise

The prospecting area is located within the Kuruman town part of the south next to the industrial area. The typical noise rating in the area and is expected to be that for rural districts / suburban districts with road traffic. According to SANS 10103:2008, the continuous noise rating level is thus likely between 35 dB(A) at night to 45 /50 dB(A) during the day.

## Soil and Terrain

Regional soils for the prospecting area are ferralic arenosols. Arenosols develop during the weathering of quartz-rich material. The soils have a loamy sand or coarse-grained texture and occur at a depth of at least 50 cm from the surface. The soil typically has less than 35% rock fragments by volume. The soil type is generally suitable for extensive stock grazing but could be used for arable crops if well irrigated. Quartz and feldspars are the dominant minerals in arenosols with lesser micas, pyroxenes, amphiboles, olivines, and heavy minerals (such as zircon, garnet, tourmaline, etc). Arenosols generally lack structure, they are not sticky when wet and loose grains when dry. A cemented layer may occur at some depths. Arenosols is a World Reference Base soil type, in terms of South African classification, arenosols would classify as 'plinthic', 'oxidic' or 'cumulic' soil groups. As per the distribution of these soil types, oxidic and cumulic soils are known to occur in the project region, with oxidic soils generally being in greater abundance. Cumilic soils are generally young soils with an orthic topsoil but weakly developed subsoil and formed in colluvial, alluvial or aeolian environments. Oxidic soils are generally iron



enriched through weathering with an orthic topsoil layer. The soils within the region of the prospecting area can be broadly categorised into groupings associated with the different types of vegetation (Mucina and Rutherford, 2006). The Kathu Bushveld vegetation type are hosted on aeolian red sand, surface calcrete and deep (>1.2m) sandy soils of Hutton and Clovelly soil forms.



**Figure 9.1:** A photo depicting the vegetation and topography

## Geology

The manganese deposits are confined to the Hotazel Formation of the Griqualand West Supergroup of the middle Proterzoic age. The base of the Hotazel Formation consists of a bright-red banded iron-formation bed (varieng from massive to fine-grained specularite and/or euhedral magnetite cystals) overlying volcanic glass breccias and lavas of the Ongeluk Formation. The banded iron-formation units grade into microcrystalline kutnohoritic ovoid-rich braunite rock. The kutnohorite in this area is concentrated in voids, which represent partially compacted, early diagenetic concretions in hematite and braunite rock. The braunite rock bed of the lower section of the lowest of the three sedimentary cycles present in the Hotazel Formation, is between 5 and 45m thick. This is the major ore unit of the Kalahari manganese field with a manganese content varying between 20 and 48 weight per cent. The middle manganese-bearing unit (cycle 2) is a maximum of 2m thick and is not economically viable. The top manganese ore body was mined in previous years. It rarely exceeds 5m thickness. Grey hematitic and manganese minnesotaite rocks are found between the lower and the middle manganese ore bodies.

About 1300 million years ago a widespread hydrothermal event occurred in the north-western portion of the Kalahari manganese field which reached temperatures up to 450oC in the Wessels, N'Chwaning and Black Rock Mines. This event decarbonated and desilicated portions of the Hotazel Formation to the north-west and thus upgraded the manganese content of the ore. Furthermore the hydrothermic event is of great significance for from the collectors point of view as a wide range of rare as well as unusual mineral combinations where produced.

### 9.1.1 Description of the current land uses

The study area comprises of buildings, grassland, agricultural and livestock farming, Since the area consist of the above mentioned, such will be avoided during the drilling phase of the programme as drilling will be undertaken 100m away from the features. The applicant intends to prevent impacts on the sensitive areas such as flora and fauna.

### 9.1.2 Description of specific environmental features and infrastructure on the site

#### Screening Tool Report

A screening tool report is generated from the National Web Based Environmental Screening Tool in order to assess the environmental sensitive areas in the proposed site and provides a motivation for the various specialist studies identified to be conducted. It also discusses whether the specialist studies forming part of this project are required to comply with the above Protocol. A site sensitivity is conducted through site inspection by the EAP in order to verify the current use of the proposed site for development as well as the site's environmental sensitivity, in accordance with the DEA Screening Tool (Appendix F), to determine the need for specialist inputs in relation to the themes.

According to the Screening Tool Report (Appendix F), the proposed site is located within a very high sensitivity of terrestrial themes and aquatic biodiversity, medium sensitivity of agriculture, animal species and paleontology, low sensitivity in archaeological and cultural theme, civil aviation, defence and plant species.

Based on the screening tool report result and site inspection, the EAP a surface water study and Ecological Study were deemed unnecessary as drilling will be conducted on vacant areas, close to access road, and the drilling machine planned to be used will not impact on the underground as the drill bits are biodegradable. All sensitive areas existing within the proposed prospecting boundary will be avoided and buffered.

### 9.1.3 Environmental and Current land use Maps



Figure: 9.1: Aerial map

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

**10.1 POTENTIAL IMPACTS OF THE PROPOSED PROSPECTING OR MINING OPERATION ON THE ENVIRONMENT, SOCIO-ECONOMIC CONDITIONS AND CULTURAL HERITAGE.**

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

**Topsoil**



Topsoil shall be removed from all areas where physical disturbance of the surface will occur. Topsoil is to be replaced by direct return where feasible (i.e. replaced immediately on the area where construction is completed, rather than stockpiling it for extended periods. Topsoil shall be adequately protected from being blown away or being eroded.

### **Land Capability**

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

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

### **Surface Water**

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

### **Ground Water**

It is not expected that the prospecting activity will impact on the groundwater quality. The drilling machine that we will use is a reverse circulation rig that does not contaminate ground water.

### **Air Quality**

It is not expected that amount of dust will be generated during the drilling phase. The impact will be insignificant and will be controlled with water carts where needed. The majority of the processing is undertaken in a wet state with little possibility of dust or air quality impacts.

## **10.1.2 Plan of the main activities with dimensions**

Please refer to the Prospecting Work Programme for a plan depicting all possible activities that will take place as part of the prospecting.



### 10.1.3 Description of construction, operational, and decommissioning phases.

#### ➤ Construction Phase

The Campsite will be established as close as possible to existing dwelling places with proper infrastructure such as tents or Caravans will be provided for employees. Clearing of vegetation will be avoided during the establishment of the campsite.

Detailed site survey and investigation will involve demarcating sensitive and protected areas by geophysical survey of the proposed area by a suitably qualified person. A Handheld proton magnetometer will be used to perform the magnetic survey over the proposed prospecting.

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

#### ➤ Operation Phase

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

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

#### ➤ Decommissioning Phase



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

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

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

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

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

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

The proposed prospecting of Iron ore, Manganese ore and Diamond

Activity 20” ***Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resource Development Act, 2002 (Act 28 of 2002), as well as any other applicable activity as contained in the listing notice or Listing notice 3 of 2014, required to exercise the prospecting right.***

**10.2.1 Identification of potential impacts**

(Refer to the guideline)

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

Table 10-1: Potential Impacts

Activity	Impact
<ul style="list-style-type: none"> <li>• Drilling programmes</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of Topsoil</li> <li>• Impact on vegetation</li> <li>• Dust from roads and land</li> <li>• Waste Disposal</li> <li>• Noise</li> <li>• Water use</li> </ul>

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

**10.2.2 Potential cumulative impacts**

Loss of wetlands, but the impact on wetland has only been identified through online research as we were not given access to investigate the farm area significant but wetlands within the application area and any wildlife value will be avoided in consultation with the landowners.



### 10.2.3 Potential impact on heritage resources

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

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

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

We will ensure that during the prospecting activities do not disturb the heritage site, trees, vegetation and other sensitive area in the property applied for. The interested and affected parties have identified that access roads should be the site were the drilling of hole will take place. Were the land is used for farming should be avoided. Animals should be kept protected at all times.

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

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

List of potential impacts has been compiled in the Basic Assessment Report and has been sent to the interested and affected Parties for consent and to date we have not received response. See attached **Appendix D**.

### 10.2.5 Confirmation of specialist report appended.

(Refer to guideline)

There is no individual specialist reports of biodiversity impact assessment that is currently being conducted as part of the Prospecting period of the project.





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

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

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

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

Table 11-1: Occurrence and Severity

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

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

Table 11-2: Methodology for Impact Assessment

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



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

$$SP \text{ (Significance points)} = (\text{Magnitude} + \text{Duration} + \text{Scale}) \times \text{Probability}$$

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

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

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

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

Table 11-4: Impact 2 – Impact on vegetation

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

Table 11-5: Impact 3 – Dust from Road

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

Table 11-6: Impact 4 – Waste Disposal

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

Table 11-7: Impact 5 – Noise

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



Table 11-8: Impact 6 – Water uses

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

Assessment of potential cumulative impacts

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

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

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

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

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

Proposed mitigation measures to minimise adverse impacts.

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

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

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



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

Significant Impact	measures	Negative impacts on the environment be mitigated or managed
Dust	Low	Vehicle will be instructed to drive at low speeds Access roads will be swept regularly Prospect activities will mainly occur during season of low wind gust
Noise pollution	Low	All rigs are fitted with silencers to minimize noise Rigs will not be allowed to operate at night close to communities
Minor Exhaust Smoke	Medium	The machine will be services regularly to avoid minor smoke
Topsoil disturbance	Low	Topsoil is normally not disturbed in the process. Where topsoil is removed it is stored for later replacement i.e. for digging of drill sumps.
Oil spills	Low	Any spillage onto the ground will be dug and disposed of in designated landfill operation

**Associated list of appropriate technical or management options**

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

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

Topsoil



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

#### Dust control on the access roads

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

#### Noise

Work will only be performed during daylight hours. Proper design and maintenance of equipment, including silencers and mufflers. Regular checks on the noise emissions of equipment in operation should be performed. All equipment to be used during the construction and operational phases is to be kept in good working condition. This is of particular importance for the exhaust systems of the diesel earthmoving equipment. Should complaints about the noise be received from the community, the mine needs to assess the situation and make appropriate recommendations to reduce the noise impacts on nearby residents and, where necessary, a noise specialist.

#### Establishing the drilling site

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

Proper and frequent maintenance shall be done to minimize unnecessary spillage. In the case of long-term drilling operations, each drill hole shall have adequate measures to prevent pollution of groundwater, drainage systems or topsoil by effluent during the drilling operation. Separate pits shall be excavated and constructed for waste water and grease and oil polluted fluid. When excavating

these pits, the topsoil and the subsoil shall be stored separately. These pits shall be lined with an impermeable layer of concrete or PVC to prevent pollution. The pit shall be surrounded by an earth wall of at least 50mm in height and be constructed to withstand the impact of heavy rainfall. The contents of pits and drip pans must be disposed of at a recognized facility. Any spill should be cleaned up immediately by removing the spill together with the polluted soil and disposing of it at a recognized dumping facility. On completion of prospecting, the drilling site shall be rehabilitated. Pits shall be pumped dry and the contents disposed of as described above. Linings must be removed and disposed of in the same manner. After all foreign matter has been removed from the pits, the excavations shall be backfilled with subsoil, compacted and levelled with previously stored topsoil. No foreign matter such as cement or other rubble shall be introduced into such backfilling.

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

### **Waste disposal**

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

### **Surface Water**



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

Review the significance of the identified impacts

(After bringing the proposed mitigation measures into consideration)

All the significance impact identified has a low rating.

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

### **12.1 Positive impacts**

#### **12.1.1 Economic development**

- The Project will create an income stream for the business that operates within the proposed area and the surrounding areas and the beneficiaries of the project especially the Khathu residents as well as those of the municipalities around.
- 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.

#### **12.1.2 Job Creation**

- If the prospecting is granted, the applicant will lodge an application for a mining right or permit which will stimulate the following
- Communities will benefit from the selection, appointment of casual employment that will take place as a result of construction of the project.
- This employment will be executed in line with the necessary skills required during construction, from the beginning to the completion of construction. Labour-force requirements include (artisans, engineers, builders, plumbers, construction engineers, electricians, various trades men, etc.).

Permanent jobs shall be available at the completion of the Project, when the township is operational such as domestic work within households



## 12.2 Negative impacts

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

### For drilling phase

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

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

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

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

Mitigation measures that could be applied

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

## 14. Motivation where no alternative sites were considered

There has been an increase in mining activities in Gamagara Local Municipality. This has been brought about by investor confidence in mining and positive commodity prices. Iron ore, Manganese ore and Diamond mining is also an enormous economic contributor to the area, and promotes economic growth and employment creation in the town of Kuruman and Khathu.

The prospecting methods to be used will minimize potential impacts to the preferred site. Although the applicant has applied for a size approximately **2500 Ha** area, it is only the specified drilling points that will be disturbed. Some of the



prospecting methods will provide that drip pans be used in order to contain non-biodegradable oil and fuel spills for mobile drills to reduce spillages.

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

It is the most suitable site to prospect for Iron ore, Manganese Ore and Diamond on the proposed site. Geological setting of the area indicates that there is abundance of the mentioned reserve deposits around the area. Residences are located far from the proposed prospecting area, as a result impact on human beings will be minimal.

The prospecting area to be utilised is minimal and only specified site for drilling will be used or disturbed. Sensitive areas such as watercourses and wetlands will be avoided with buffers. As indicated above prospecting 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.

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

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

## 17. Assessment of each identified significant impact and risks

Table 17.1

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

<b>Drilling of prospecting boreholes</b>	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
<b>Rehabilitation</b>	Sedimentation of surface watercourses	Surface water	Decommission phase	Minimal negative impact	Rehabilitation of sumps	Negligible negative
	Soil compaction & erosion	Soils	Decommission phase	Minimal negative impact		Negligible negative
	Dust generation	Air quality	Decommission phase	Minimal negative impact	Dust management plan, vegetation	Negligible negative

## 18. Summary of specialists reports

Table 18.1

List of studies not 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
<b>Soil Impact Assessment</b>	Significance of impacts & Mitigation measures	x	Individual specialist reports were not conducted due to the minimal impacts of the proposed activities
<b>Fauna &amp; flora</b>	Significance of impacts & Mitigation measures	X	Individual specialist reports were not conducted due to the minimal impacts of the proposed activities
<b>Wetlands Impact Assessment</b>			



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



## 19. Environmental impact statement

### 19.1 Summary of the key finding of the environmental impact assessment

Table 19.1

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

## **Environmental impact statement**

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

### **Project Proposal:**

Addwatt (Pty) Ltd intends to apply for a prospecting right and environmental authorization on the remaining extent of farm Eildon 456 Kuruman Rd, situated within the jurisdiction of Gamagara Local Municipality, John Taolo Gaetsewe District in Northern Cape Province.

The prospecting methods will entail exploration drilling of the proposed footprint area. A chemical ablution facility will be present on the site. Potable water will daily be transported to site. The solid waste produced during the operational phase of the project will be transported from site to the registered landfill site. Approximately 6 workers will be employed at the Prospecting site. Prospecting will be done in daylight hours. Site vehicles will use the existing gravel farm roads on the proposed farms where the prospect drilling will also be conducted. To access the site, take the N14 road from Kuruman to Khathu.

### **LAND USE**

Addwatt will not have to compete with other land uses at the site. Upon closure of the prospecting area, the land will revert back to grazing land. Due to the remote location of the proposed project very little to no negative impacts on the community could be identified that were deemed to be of significant importance. The dust and noise impacts that may emanate from the prospecting area during the operational phase could have a negative impact on the surrounding community if the mitigation measures proposed in this document is not implemented and managed on-site.

### **FLORA AND SENSITIVE LANDSCAPES**

During vegetation disturbance (i.e. drilling and sampling). Addwatt should note that no protected tree may be damaged or disturbed without a valid protected plants permit. The upper fynbos vegetation type is classified as vulnerable and impacts on this vegetation must be avoided as far as possible. Addwatt would remove as little vegetation as possible by drilling in the current access roads. This will lessen the area to be managed for erosion and weed invasion purposes. Topsoil management must be implemented to ensure that topsoil is available upon rehabilitation of the area.

The results of the impact assessment indicate that although the impacts prior to



mitigation may potentially be Low to Medium, strict and effective implementation of mitigation measures will reduce the impact significance to medium-low, levels. In view of the fact that large portions of the study area and the catchment of the watercourse have already been impacted due to human activities such as construction of roads, dams, farmsteads, grazing pressures, etc. It is the opinion of the specialist that should the mitigation measures, be adhered to, the proposed prospecting activities may have a lower risk to the wetland or riparian resources or natural vegetation within the project site than without the mitigation measures.

## **FAUNA**

The fauna at the site will not be impacted by the proposed prospecting activity as they will be able to move away or through the site, without being harmed. Workers must be informed and managed to ensure that no fauna at the site is harmed. Upon commencement of the proposed prospecting activities, the fence surrounding the Property must be maintained to prevent large animals such as cows and goats entering the site.

## **AIR QUALITY**

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

## **NOISE**

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

## **ARCHAEOLOGICAL AND CULTURAL CHARACTER**

Addwatt (Pty) Ltd will make use of temporary infrastructure during the prospecting operations. Workers will be transported to and from the site daily. If the above



recommendations are adhered to, HCAC is of the opinion that the impact of exploration on heritage resources is low and that the project can continue. If during the any stage of the project, any archaeological finds are made (e.g. graves, stone tools, and skeletal material), the operations must be stopped, and the archaeologist must be contacted for an assessment of the finds. Due to the subsurface nature of archaeological material and graves the possibility of the occurrence of unmarked or informal graves and subsurface finds cannot be excluded.

## **EXISTING INFRASTRUCTURE**

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

## **VISUAL EXPOSURE**

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

## **19.2 Final site Map**

See attached final site Map **Appendix A**

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

Associated Positive Impacts – Temporary Infrastructure:

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

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

Significance includes:

- Clearance of site through removal of vegetation and topsoil Low to Med





- Exposed area become prone to soil erosion Low to Med
- Wetland deterioration Low to Med
- Disturbance of the geological strata Med-High
- Dust nuisance stemming from proposed project Low-Med
- Loss of and disturbance of surface archaeological sites Low-Med
- Contamination of area with hydrocarbons or hazardous waste materials Low-Med
- Potential for loss of soil and damage to soil characteristics Low -Med
- Potential for erosion, loss of soil characteristics, Compaction of soil & degradation through stockpiling Low-Med
- Loss of biodiversity Low-Med
- Alteration of topography Low-Med
- Visual intrusion due to the proposed project Low – Med
- Emissions from vehicles and drilling equipment on site Low-Med
- Potential disruption to graves (if found) Med
- Potential hydrocarbon contamination from leaks or spills leaching into the water table Low-Med
- Loss of food, nest sites and refugia for fauna Low-Med
- Potential hydrocarbon contamination which may reach downstream surface water bodies Low-Med
- Potential damage to or destruction of sensitive faunal habitats Low-Med
- Pans & watering points Low-Med

## 20. Proposed impact management objectives and impact management outcomes

Compilation of the Draft EMPr 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

Management Objectives	Role	Management outcomes
Visual Aspect	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</p> <p>Compliance to be monitored by the Environmental Control Officer</p>	<p>Ensure that the site have a neat appearance and is kept in good condition at all times.</p> <p>Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status</p>
Dust Handling	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer. Dust monitoring consultant to check dust results and provide guidelines.</p>	<p>Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. Limit speed on the access roads to 40km/h to prevent the generation of excess dust. Spray roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Assess effectiveness of dust suppression equipment. Re-vegetate all disturbed or exposed areas as soon as possible to prevent any dust source from being created. Thoroughly soak all stockpiles to ensure dust suppress</p>
Noise Handling	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer. Compliance to be monitored by the Noise Monitoring Specialist</p>	<p>Ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the prospecting area. Ensure that all prospecting vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Compliance with the appropriate legislation with respect to noise will be mandatory. Implement formal noise monitoring on a quarterly basis.</p>
Management of weed/invader	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the</p>	<p>Implement a weed and invader plant control management plan. Control declared invader or exotic species on the rehabilitated areas. Keep the</p>

plants	Environmental Control Officer	temporary topsoil stockpiles free of weeds
Topsoil management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer	Strip and stockpile the upper 500 mm of the soil and protect as topsoil. Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. Place topsoil stockpiles along the northern and western boundaries of the site. Topsoil heaps may not exceed 1.5m in order to preserve microorganism within the topsoil.
Protection of natural vegetation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	Contain all activities within the boundaries of the approved prospecting area. Demarcate, signpost and manage the 20m buffer area as no-go area around areas with natural vegetation.
Fauna Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	Ensure no fauna is caught, killed, harmed, sold or played with. Instruct workers to report any animals that may be trapped in the working area. Ensure no snares are set or nests raided for eggs or young
Management of health and safety risks	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	Ensure that workers have access to the correct PPE as required by law. Ensure all operations comply with the Occupational Health and Safety Act
Handling of Hazardous Materials and Substance	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer	Store all hazardous materials or substances in a closed storage facility with an impermeable floor. Storage area to meet the following conditions: Construct storage area on a level area. Floor of the storage area should be impermeable. Storage area should be outside the 1:100-year flood line or further than 100m from the edge of a watercourse, whichever is greatest. Access to the materials/substances may only take place with the prior

		<p>notification of the site manager. Fuel storage tanks should have an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. The bund capacity should be sufficient to contain 110% of the tank's maximum capacity. Consider the distance and height of the bund wall relative to that of the tank to ensure that oil does not spout beyond the confines of the bund. Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. Inspection should be at least weekly and any accumulated rainwater should be removed. All valves and outlets should be checked to ensure that they are intact and closed securely. Slope the bund base towards a rainwater sump of sufficient size. Contain contaminated water until it can be collected by a registered hazardous waste handling contractor or be disposed of at a registered hazardous waste handling facility. Ensure availability of drip trays underneath all stationary equipment or vehicles</p>
Waste management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	<p>Ensure no waste storage area is established outside the boundaries of the prospecting area. Ensure vehicle maintenance only take place within the service bay area of the off-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litre closed container/bin inside the emergency service area. Ensure diesel bowser is equipped with a drip tray at all times. Use drip trays during each and every refuelling event. Ensure the nozzle of the bowser rests in a sleeve to prevent dripping after refuelling. Keep drip trays clean. No dirty drip trays may be used on site. Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised</p>

		<p>facility. Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility. File proof on site. Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. Place all used oils, grease or hydraulic fluids therein and remove these receptacles from the site on a regular basis for disposal at a registered or licensed hazardous disposal facility. Store non-biodegradable refuse such as glass bottles, plastic bags etc., in a container with a closable lid at a collecting point. Collection should take place on a regular basis and disposed of at the recognised landfill site. Prevent refuse from being dumped on or in the vicinity of the prospecting area. Biodegradable refuse to be handled as indicated above.</p>
Management of access roads	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer.	Maintain newly constructed access roads so as to minimise dust, erosion or undue surface damage. Divert storm water around the access roads to prevent erosion. Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. Repair rutting and erosion of the access roads caused by the proposed activities
Protection of Cultural or Heritage Artefacts	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer.	Maintain newly constructed access roads so as to minimise dust, erosion or undue surface damage. Divert storm water around the access roads to prevent erosion. Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. Repair rutting and erosion of the access roads caused by the proposed activities. Protection of Cultural or Heritage Artefacts Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. Notify Heritage and the

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



## **21. Aspect for inclusion as conditions of authorisation**

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

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

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

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

### **23.1 Reasons why the activity should be authorized or not**

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

### **23.2 Conditions that must include in the authorisation**

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

## **24. Period for which the environmental authorisation is required**

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

## 25. Undertaking

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

## 26. Financial provision

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

### 26.1 Explain how the aforesaid amount was derived

#### 26.2 Quantum calculations

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

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

#### 26.2.1 Commodity type and saleable mineral by-product

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

Commodity type	Iron ore, Manganese ore and Diamond
Saleable mineral by-product	Same as above

#### 26.2.2 Risk ranking

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

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



### 26.2.3 Environmental sensitivity of the prospecting area

#### According to Table B.4

Environmental sensitivity of the prospecting area	Low
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### 26.2.4 Level of information

#### According to Step 4.2:

Level of information available	Limited
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### 26.2.5 Identify closure components

#### According to Table B.5 and site-specific conditions

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

9	Rehabilitation of subsided areas		No
10	General surface rehabilitation, including grassing of all denuded areas	Yes	
11	River diversions		No
12	Fencing		No
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)		No
14	2 to 3 years of maintenance and aftercare		No

### 26.2.6 Determine weighting factors

#### According to Tables B.7 and B.8

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

### 26.2.7 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 35 854,86 (see Appendix E)**

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

The amount of financial provision will be paid by Addwatt immediately after the Environmental Management Plan has been approved.

## **27. Specific information required by the competent authority**

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

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

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

Visual exposure:

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

Air Quality:

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



of the proposed prospecting area the potential impact of dust nuisance on the surrounding environment is deemed to be of low significance.

Noise:

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

Existing Infrastructure:

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

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

Heritage sites within the proposed prospecting area have not been identified in consultation with the landowners.

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

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

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

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

a. The use of temporary Infrastructure will entail the use of machinery that is either track-based or can be removed without difficulty. Temporary Infrastructure to be



used in the prospecting mining method will entail some temporary offices, storage facility and chemical toilet, with servicing of vehicles and equipment being done off-site at the existing workshop on the applicant's farm.

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

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

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

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

**No-go Alternative:**

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

# Environmental Management Programme Report



## 28. Details of EAP

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

## 29. Description of the aspect of the activity

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

## 30. Composite Map

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

## 31. Description of the impact management objectives including management statement

### 31.1 Determination of closure objectives

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

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

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

- a) The facilitation of the re-establishment of the land use and capability to as close as reasonably to the original conditions;
- b) Removal of all infrastructure and material introduced to site
- c) Removal of all wastes and their and their related disposal; and
- d) And promotion of the rapid re-establishment of natural vegetation and the restoration of site ecology.

The disturbed areas shall be rehabilitated to ensure that:

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



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

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

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

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

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



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

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

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

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

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

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

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

### **31.2 Volume and rate of water use required**

Water usage will be limited to the following activities

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

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

### **31.3 Has a water use licence been applied for ?**

Water use licence has not been applied for due to the fact that site specific drill points are still to be determined. Water will be brought to site every day for use on site. In addition, Diamond drilling does not require water, as the RC drilling works with air pressure. Potable water would be bought locally and supplied to site.



## 32. Impact to be mitigated in their respective phase

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

Table 32.1

Activities	Phase	Size and scale	Time period for implementation	Compliance with standards	Mitigation measures
DEMARCATON OF SITE	Operational	4766 Ha	Life of the activity	Degradation of the gravel access road: • NRTA, 1996 The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.	All intersections with main tarred roads will be clearly signposted. Drivers will be enforced to keep to set speed limits. Trucks will be road-worthy condition. A fund will be set aside to maintain the serviceability of the road verge where the trucks approach or depart from the main road. Ensure directional floodlights are utilized that focus light on the necessary areas and reduce light pollution to surrounding environment.

<p>Establishment of the temporal infrastructure within the mining site</p>	<p>Operational</p>	<p>1.5m2</p>	<p>Construction / Site Establishment phase Throughout operational and decommissioning phases</p>	<p>Land use zoning: • Northern cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.</p> <p>Dust Handling: • NEM:AQA, 2004 Regulation 6(1)</p>	<p>Portable toilets are to be emptied and cleaned regularly. Ensure reputable contractors are utilize for management of facilities. Portable toilets will be managed by a reputable contractor and inspected daily for any potential leaks. Water should not be released into the surrounding environment unless relevant permission obtained from DWS</p> <p>Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&amp;AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.</p> <p>Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly, especially during times of high dust generation.</p> <p>Emission Handling: All vehicles will be regularly services to ensure</p>
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				<p>Noise Handling: NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987</p> <p>Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004</p> <p>Contamination of surface or groundwater due to</p>	<p>they are in proper working condition and to reduce risk of excessive emissions.</p> <p>Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the prospecting area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&amp;AP complaints are received.</p> <p>Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds</p> <p>Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on</p>
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			<p>hazardous spills not cleaned:</p> <ul style="list-style-type: none"> <li>• NWA, 1998</li> <li>• NEM: WA, 2008</li> <li>• Every precaution must be taken to prevent contamination. The precautionary principal must apply.</li> </ul> <p>Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999</p> <p>Negative impact on fauna that may enter the area:</p> <ul style="list-style-type: none"> <li>• NEM:BA, 2004</li> <li>• Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.</li> </ul>	<p>equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal.</p> <ul style="list-style-type: none"> <li>• Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility.</li> <li>• Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed.</li> <li>• Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste.</li> <li>• Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area.</li> <li>• Biodegradable refuse generated must be handled as indicated above.</li> </ul> <p>Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity. Should graves be observed on site during activity progress then all activity should be ceased and the area demarcated as a no-go zone. A specialists will need to be consulted and responsible action considered, whether grave relocation or ceasing activity</p> <p>Inform staff, contractors and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal</p>
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				<p>Not applicable as these are mobile and will be removed during rehabilitation and closure of the site</p>	<p>biodiversity. Negative impact on fauna that may enter the area: • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young.</p> <p>Ensure advertising is limited to local and regional areas, and only specifically advertise for Jobs nationally if skills are not available. Ensure that all power-related structures are adequately marked with relevant signs and warnings and fenced off.</p>
<p><b>Stripping and Stockpiling of topsoil</b></p>	<p>Operational</p>	<p>1.5m2</p>	<p>Throughout operational and decommissioning phases</p>	<p>Land use zoning: • Northern cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as</p>	<p>Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&amp;AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit</p>



				<p>primary use.</p> <p>Dust Handling: • NEM:AQA, 2004 Regulation 6(1)</p> <p>Noise Handling: NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987</p> <p>Management of weed- or invader plants: • NEMBA (Act</p>	<p>are lit. screens will be considered if I&amp;AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.</p> <p>Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly, especially during times of high dust generation.</p> <p>Emission Handling: All vehicles will be regularly serviced to ensure they are in proper working condition and to reduce risk of excessive emissions.</p> <p>Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&amp;AP complaints are received.</p> <p>Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb</p>
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				<p>No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004</p> <p>Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999</p> <p>Contamination of surface or groundwater due to hazardous spills not cleaned:</p>	<p>surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.</p> <p>Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity. Should graves be observed on site during activity progress then all activity should be ceased and the area demarcated as a no-go zone. A specialists will need to be consulted and responsible action considered, whether grave relocation or ceasing activity.</p> <p>Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive</p>
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					<p>periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.</p>
<p><b>Drilling of prospecting boreholes</b></p>				<p>Land use zoning: • Northern cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.</p> <p>Dust Handling: • NEM:AQA, 2004 Regulation 6(1)</p>	<p>Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&amp;AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&amp;AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.</p> <p>Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the</p>



				<p>Noise Handling: NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987</p> <p>Contamination of surface or groundwater due to hazardous spills not cleaned:</p> <p>The Occupational Health and safety act in conjunction with the Mine Health and</p>	<p>generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly, especially during times of high dust generation.</p> <p>drilling alternatives will be considered to reduce noise and associated vibrations</p> <p>Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will be called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile banded containers fitted with taps. Banded area will have adequate capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.</p> <p>Ensure baseline photographs are taken of all structures which may be impacted for photographic evidence prior to any drilling Ensure procedures in place to compensate for damage. Ensure that all power-related structures are adequately marked with</p>
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			<p>Safety act as mitigation measure.</p> <ul style="list-style-type: none"> <li>• MHSa, 1996</li> <li>• OHSa, 1993</li> </ul> <p>Negative impact on fauna that may enter the area:</p> <ul style="list-style-type: none"> <li>• NEM: BA, 2004</li> <li>• Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.</li> </ul> <p>Management of weed- or invader plants:</p> <ul style="list-style-type: none"> <li>• NEMBA (Act No. 10 of 2004).</li> <li>• Alien and Invasive Species Regulation GNR 598 and 599 of 2014.</li> </ul> <p>Negative impact on biodiversity of the area (Site Alternative 1):</p> <ul style="list-style-type: none"> <li>• NEM:BA, 2004</li> </ul>	<p>relevant signs and warnings and fenced off.</p> <p>Inform staff, contractors and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity. Negative impact on fauna that may enter the area:</p> <ul style="list-style-type: none"> <li>• The site manager must ensure that no fauna is caught, killed, harmed, sold or played with.</li> <li>• Workers must be instructed to report any animals that may be trapped in the working area.</li> <li>• No snares may be set or nests raided for eggs or young.</li> </ul> <p>Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants:</p> <ul style="list-style-type: none"> <li>• A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014.</li> <li>• Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods</li> </ul>
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					can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.
<b>Rehabilitation</b>	Decommissioning phase	1.5m2	Throughout decommissioning phase	<p>Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1):</p> <ul style="list-style-type: none"> <li>• NEM:BA, 2004</li> <li>• NWA, 1998</li> </ul> <p>The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure.</p> <ul style="list-style-type: none"> <li>• MHSA, 1996</li> <li>• OHSA, 1993</li> </ul> <p>Negative impact on fauna that may enter</p>	<p>Rehabilitate disturbed areas with natural indigenous flora. Monitor for cover abundance.</p> <p>Monitor area for erosion and pooling and rehabilitate if necessary. Continue with Surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season.</p> <p>Ensure that all staff are made aware of all working conditions on site Inform staff, contractors and visitors to not harm fauna in the area.</p> <p>Conduct annual surveys to monitor faunal biodiversity.</p>

				<p>the area: • NEM:BA, 2004</p> <ul style="list-style-type: none"> <li>• Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.</li> </ul> <p>Land use zoning: • Northern cape LUPA</p> <ul style="list-style-type: none"> <li>• Local Municipality: Land Use Planning Bylaws</li> <li>• The property is zoned for agriculture as primary use.</li> </ul> <ul style="list-style-type: none"> <li>• Every precaution must be taken to prevent contamination. The precautionary principal must apply</li> </ul>	<p>Keep mining in footprint. Excavation areas will be sloped during rehabilitation to even out depressions. Monitor, especially after first heavy rain falls to ensure adequate surface water drainage</p> <p>The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&amp;AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&amp;AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.</p> <p>Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA. Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.</p>
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### 33. Impact management outcomes and actions

Table 33.1

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



	wetlands				
	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination	Soil	Establishment phase	Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.
	If the infrastructure is established within the boundaries of the approved mining area, no impact could be identified.	N/A	Establishment phase	N/A	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.

Stripping and Stockpile of Topsoil	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational	Implementation of proper housekeeping	<ul style="list-style-type: none"> <li>• Northern cape LUPA</li> <li>• Local Municipality: Land Use Planning Bylaws</li> <li>• The property is zoned for agriculture as primary use</li> </ul>
	Dust nuisance caused by the disturbance of soil, Emissions caused by vehicles and equipment	Emissions will be contained within the property boundaries and will therefore affect only the landowner		Dust suppression and Emission	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
	Sedimentation and contamination of surface water resources	Surface water	Establishment Phase , Operational Phase	Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998
	Groundwater	Groundwater	Establishment Phase	Proper site management.	Contamination of surface or



	contamination				groundwater due to hazardous spills not cleaned:
	Noise generation	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Establishment Phase, Decommissioning Phase	Noise control measures	Noise Handling: NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Flora	Operational phase	Implementation of weed control and weed/invaser plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004
	Soil contamination and degradation	Soil	Operational Phase, Decommissioning Phase	Site Management Soil Management	• The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil

	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Land use	Operational	Fire	<ul style="list-style-type: none"> <li>• Every precaution must be taken to prevent contamination. The precautionary principal must apply.</li> </ul>
<b>Drilling of Prospecting Boreholes</b>	Alternation of visual environment	Topography and Visual Environment	Operational Phase	Implementation of proper housekeeping	Land use zoning: <ul style="list-style-type: none"> <li>• Northern cape LUPA</li> <li>• Local Municipality: Land Use Planning Bylaws</li> <li>• The property is zoned for agriculture as primary use</li> </ul>
	Health and Safety Risk by Drilling Activities. Potential danger to surrounding communities	The Unsafe working conditions should only impact the applicant. Safety measures will be implemented	Operational	Implementation of safety control measures	The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. <ul style="list-style-type: none"> <li>• MHSA, 1996</li> <li>• OHSA, 1993</li> </ul>
	Noise nuisance generated by drilling equipment	The noise impact should be contained within the boundaries of the property, and	Operational	Noise Control Measures	Noise Handling: NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road

		will represent the current noise levels of the farm.			Transport Act, 1987
	Soil compaction	Soils	Operational Phase	Site Management Soil Management	<ul style="list-style-type: none"> <li>The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un-vegetated areas:</li> <li>NEMBA (Act No. 10 of 2004).</li> <li>NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.</li> </ul>
	Sedimentation of surface water resources	Surface Water	Operational Phase	Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS	NWA, 1998
	Elusive dust generation from drilling and excavation	Air Quality	Decommissioning Phase	Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)



## 34. Financial provision

### 34.1 Determination of the amount of financial provision

#### 34.1.1 Alignment of rehabilitation with the closure objectives

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

The following closure objectives will be applicable for rehabilitation:

- Remove all temporary infrastructure and waste from the site as per the requirements of this EMPR and of the Provincial Department of Mineral Regulation;
- Demolish / rehabilitate all roads with no post -prospecting use potential;
- Clear all carbonaceous material from site;
- Clear boulders from site;
- Remove all waste from site;
- Any wetlands in the area should not be compromised or destructed;
- Future public health and safety are not compromised;
- Ensure that no threat to surface and underground water quality remains;
- Ensure that all permanent changes in topography are sustainable and do not cause erosion or the damming up of runoff;
- Shape and contour all disturbed areas in compliance with the EMPR;
- The stockpiled topsoil will be spread over the disturbed area to a depth of at least 500 mm;
- Make safe any dangerous excavations or subsidence on the surface;
- Rehabilitate all disturbed areas in compliance with the EMPR and of the Provincial Department of Mineral Regulation;
- Ensure that all rehabilitated areas are safe, stable and self-sustaining in terms of vegetation;
- Control of weeds and alien invasive plant species is an important aspect after topsoil replacement and seeding has been done in an area;
- The applicant will comply with the minimum closure objectives as prescribed by DMR;
- Any adverse socio-economic impacts are minimised; and
- All socio-economic benefits are maximised.
- Land disturbed will be rehabilitated to a stable and permanent form suitable for subsequent land use. The final land use will be agriculture, forestry or

subsistence farming, depending on where the prospecting site is located within the project area.

- There will be no adverse environmental effect outside the disturbed area and the affected area will be shaped to ensure effective drainage.
- The disturbed area will not require greater maintenance than that in or on surrounding land after closure.
- It is required that all exploration holes be re- rehabilitated, which is conducted on an ongoing basis.
- Boreholes sunk in agricultural lands will have the casings removed, or cut to a minimum depth of 2m below surface, then a plug inserted at a minimum of 5m below surface and filled with concrete to 2m below surface.
- The remainder of the hole will be filled with top soil.
- Boreholes outside agricultural lands will be rehabilitated similarly and marked with a concrete beacon.

#### **34.1.2 Confirm specifically that the environmental objectives in relation to closure have been consulted with the landowners**

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

#### **34.1.3 Provide a rehabilitation plan that describes and shows the aerial extent of the main mining activities**

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

- The drill rig and core will be removed from site
- The sumps will be pumped empty and the oil and sludge disposed of at a registered disposal facility
- The 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;

#### **34.1.4 Explain why the rehabilitation is compatible with the closure objectives**

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

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

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- The topsoil will be placed back as a growth medium and the sides of the excavation will be sloped with acceptable contours to prevent soil erosion.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- Photographs of the camp and office sites, before and during the prospecting mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.

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

Final rehabilitation:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding and maintenance, and weed / alien clearing.
- All Temporary Infrastructures, equipment, plant, temporary housing and other items used during the prospecting mining period will be removed from the site.
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the prospecting mining area and disposed of at a recognized landfill facility, proof of this removal will be kept on file at the applicant’s office. It will not be permitted to be buried or burned on the site.
- Weed / Alien clearing will be done in a sporadic manner during the life of the prospecting activities.
- Species regarded as the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.

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

**Quantum calculations**

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

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

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



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

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

**Table 35.1:** Environmental sensitivity of mine area

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

Provision to be made

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

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

**34.1.6 Confirm that the financial provision will be provided as determined**

The amount of financial provision will be paid by Addwatt immediately after the BAR and Environmental Management Plan has been approved.

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

**34.1.7 Monitoring of Impact Management Actions**

**List of Identified Impacts Requiring Monitoring Programmes**





The identified impacts that require monitoring programmes includes the following:

- Site clearing and establishment:
- Removal of vegetation; and
- Soil erosion.
- Drilling:
- Soil erosion;
- Dust and noise;
- Water generated; and
- Groundwater levels and quality.
- Heritage landscape;
- Hydrocarbon spillages;
- Domestic waste; and Fires.
- Wetlands, pans and dams will be avoided during the prospecting activities

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

- Monitoring of Impact Management Actions
- Monitoring and reporting frequency
- Responsible persons
- Time period for implementing impact management actions
- Mechanisms for monitoring compliance

Activity	Impacts requiring monitoring programme	Functional requirements for monitoring	Roles and Responsibilities	Monitoring and Reporting frequency and time periods for implementing impact management impact
Prospecting: Closure and Rehabilitation Phase	Successful rehabilitation of impacted area	Follow-up site inspection of rehabilitated prospecting areas to be conducted until the applicable areas have been successfully revegetated or cultivated by the landowner (whichever comes first)	Prospect manager to keep 6 monthly photographic record of rehabilitated sites until closure certificate have been obtained. Independent environmental consultant or specialist to conduct follow-up site inspection during closure and decommissioning and provide additional rehabilitation recommendations if required.	Management and maintenance is expected to continue until the landowner cultivates the areas impacted by prospecting or after the closure certificate is issued (whichever comes first). Maintenance will be focused on erosion prevention and removal of weed and alien vegetation species on the prospecting area. In terms of monitoring the EMP requirements states that six monthly photographic records of all rehabilitated sites must be kept by the Prospect Manager ("PM") until the Closure Certificate have been obtained. Currently all sites have been rehabilitated by means of infilling excavated materials, replacing excavated topsoil and shaping the impacted area according to surrounding contours. No signs of erosion or depressions are currently visible at the rehabilitated sites, but not all sites have been replanted/ revegetated with pastures as yet and therefore erosion might still occur after heavy rains. It is therefore recommended that the rehabilitated sites be revisited for a follow-up inspection by an external environmental consultant or specialist and if signs of erosion or alien/weed encroachment are visible at the sites suitable recommendations for alien/weed

				eradication, soil stabilising and preventative measures must be provided and implemented. Additional follow-up inspections may also be required/ recommended. Reports should be made available to the Competent Authority if required in the form of a follow-up rehabilitation performance report.
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### 35. Indicate the frequency of the submission of the performance assessment/environmental audit report

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

### 36. Environmental Awareness Plan

#### 36.1 Employee communication process

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

The purpose of this section is to outline the methodology that will be used to educate the mine's employees and contractors of any environmental risks associated with their work and the manner in which these risks must be dealt with so as to avoid pollution and minimize the degradation of the environment. Once prospecting of the proposed area starts, a copy of the Basic Assessment Report and Environmental Management Programme report will be handed to the site manager during the site establishment meeting. Issues such as topsoil handling, site clearance, fire principals and hazardous waste handling will be discussed. An induction meeting will be held with all the site workers to inform them of the Basic Rules of Conduct with regard to the environment. The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments. An Environmental Control Officer needs to check compliance of the prospecting activities to the management programmes described in the EMPR.

#### Training Needs

A training needs analysis will be performed through all levels of the organization including those within the administration, plant and prospecting worker sectors. Each of the categories / levels of the organization have different responsibilities and roles, accordingly different knowledge requirements are applicable. After the training needs have been identified, it is the responsibility of the SHE Office to ensure that personnel attend the relevant identified training. Training will also address the specific measures and actions as listed in the EMPR. This Environmental Awareness Plan (EAP) is intended to supplement the Safety, Health and Environmental (SHE) training and awareness requirements. Issues such as topsoil handling, site clearance, fire principals and waste handling will be discussed with the manager to ensure that he understands the goals as set out in the EMPR. An

induction meeting will also be held with all the site workers to inform them of the basic steps towards environmental awareness with regard to the environment.

### Specialized Skills

The Training Department in conjunction with the SHE Officer are responsible for ensuring job specific training for personnel performing tasks, which can cause significant environmental and social impacts (e.g. receipt of bulk hazardous chemicals/fuel, hazardous materials handling, responding to emergency situations etc.). The Prospecting Right Manager with the assistance of the SHE Officer must identify relevant personnel and training courses. On the job training is an essential tool in environmental awareness. Employees must be given details of the expected environmental issues and concerns specifically related to their occupation. Employees must be trained on how to respond if an environmental problem or source of environmental pollution arises.

The training will be on-going, and all new employees will be provided with the same standard of training as existing employees. Review of Training Material Effectiveness of the environmental management training will be done by the management through task observations and during internal and external audits. All training material for presentation to personnel and contractors will be reviewed annually to ensure consistency with organizational requirements and best practice guidelines. In addition to this, annual monitoring reports, audit results and all incident reports will be reviewed, any short comings and non-compliance will be highlighted and management measures incorporated or improved upon within the training material. Records from the implementation of this EAP will be kept and controlled in accordance with the SHE Management System Control of Records Procedure, which is required to be implemented so as to provide evidence of conformity and effective operation of the relevant requirements of the SHE management system.

(2) Manner in which risk will be dealt with in order to avoid pollution or the degradation of the environment. The operations manager must ensure that he/she understands the EMPR document and its requirements and commitments before any prospecting takes place. An Environmental Control Officer needs to check compliance of the prospecting activity to the management programmes described in the EMPR.

## EMERGENCY RESPONSE PLAN AND PROCEDURES

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As part of its management tools, a mine must have an Emergency Response Plan. These plans will be disseminated to all employees and contractors in the event of an emergency. In the case of a medical accident or problem, the mine has first aid kits available at various points and an emergency room. A First Aid officer will be on duty at all times. In the event of an emergency the checklist of emergency response units must be consulted and the relevant units notified. Communication is vital in an emergency and thus communication devices, such as mobile phones, two-way radios, pagers or telephones, must be placed around the mine. Should the emergency have the potential to affect the surrounding communities, they will be alerted via alarm signals or contacted in person.

Emergency services will be sourced from the nearest main town, wherever possible. Contact details for the emergency services and local authorities will be displayed on site and made available to all employees and contractors.

### 36.2 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 table 8-1 overleaf shows general prospecting activity risk table

**Table 37.1:** General prospecting activity risks table

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





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

**37. 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.

## 38. 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**

**06 December 2022**

Date: \_\_\_\_\_

## 38.1 The following Appendixes are attached

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