REPORT

# BASIC ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR PAN AFRICAN MINERALS DEVELOPMENT COMPANY (PTY) LTD (PAMDC).

**DMR REF NO: NC30/5/1/1/2/12534 PR**

**NOVEMBER 2020**


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mineral resources

Department:
Mineral Resources
**REPUBLIC OF SOUTH AFRICA**

**PREPARED FOR:**

Pan African Minerals Development Company (Pty) Ltd

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CEF House, Block C, Upper Grayston Office Park, 152 Ann Crescent, Strathavon, Sandton, 2031.

**PREPARED BY:**

Joan Consulting (Pty) Ltd

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

**IMPORTANT NOTICE**

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

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

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

**It is therefore an instruction that** the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

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

## OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;

(b) identify the alternatives considered, including the activity, location, and technology alternatives;

(c) describe the need and desirability of the proposed alternatives,

(d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:

  (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and

  (ii) the degree to which these impacts;

    (aa) can be reversed;

    (bb) may cause irreplaceable loss of resources; and

    (cc) can be managed, avoided or mitigated;

(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—

  (i) identify and motivate a preferred site, activity and technology alternative;

  (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and

  (iii) identify residual risks that need to be managed and monitored.

**ACRONYMS**

| | |
|---|---|
| BAR | Basic Assessment Report |
| CBA | Critical Biodiversity Area |
| CITIES | Convention on International Trade in Endangered Species |
| DEA | Department of Environmental Affairs |
| DMR | Department of Mineral Resources |
| DWS | Department of Water and Sanitation |
| DAFF | Department of Agriculture Forestry and Fisheries |
| EMF | Environmental Management Framework |
| EMP | Environmental Management Plan |
| PAMDC | Pan African Mineral Development Company |
| EIR | Environmental Impact Report |
| EAP | Environmental Assessment Practitioner |
| ECO | Environmental Control Officers |
| ESA | Ecological support area |
| EAP | Environmental Assessment Practitioner |
| GDP | Gross Domestic Product |
| IAPs | Interested and Affected Parties |
| IDP | Integrated Development Plan |
| MPRDA | Mineral and Petroleum Resources Development Act |
| m | Meter |
| NEMA | National Environmental Management Act |
| NEMBA | National Environmental Management Biodiversity Act, 10 of 2004 |
| NWA | National Water Act, Act 36 of 1998 |
| PM | Project Manager |
| JTGDM | John Taolo Gaetsewe District Municipality |
| SDF | Spatial Development Framework |
| SAHRA | South African Heritage Resource Agency |
| SANBI | South African National Biodiversity Institute |
| SFSD | Strategic Framework for Sustainable Development |

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**PART A**:

**SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT**

## 1. Contact person and correspondence address

### 1.1 Details of the EAP

#### i) Details of the EAP:

**Table 1: Details of EAP**

| **Appointed Consultant** | **Joan Consulting (Pty) Ltd** |
|---|---|
| **Report compiled by (EAP)** | Mugovhani Phindulo<br>076 105 1124<br>phindulo@joanprojects.co.za |
| **Report Reviewed by;** | Mukondeleli Makoya<br>063 331 0620<br>makoya@joanprojects.co.za |
| **Report Approved by (Principal EAP)** | Lufuno Mutshathama<br>lufuno@Joanprojects.co.za<br>073 912 0800 |
| **Postal address:** | P O Box 4147, Honeydew,2040 |
| **Physical address:** | 09 Loerie Road, Randpark ridge, Randburg, Johannesburg |
| **Telephone:** | 011 791 5032 |
| **Fax:** | 086 235 5142 |

#### ii) Details of Applicant

**Table 2: Details of Applicant**

| **ITEM** | **CONTACT DETAILS** |
|---|---|
| **Applicant Name** | Pan African Minerals Development Company (Pty) Ltd |
| **Contact Person** | Emmanuel Mulenga |
| **Cellphone** | 073 092 4801 |
| **Telephone** | 011 201 8121 |
| **Fax** | 011 201 8112 |
| **Email Address** | emmanuelm@pamdc-za.co.za<br>mulenga1970@yahoo.com |
| **Postal Address** | P.O. Box 786141<br>Sandton<br>2146 |
| **Physical Address** | CEF House, Block C, Upper Grayston Office Park, 152 Ann Crescent, Strathavon, Sandton, 2031, Johannesburg South Africa. |

### iii) Expertise of the EAP

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

Mugovhani phindulo-BSc Mining and Environmental Geology (hons)-University of Venda

Lufuno Mutshathama-Bachelor of Environmental Science-University of Venda

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

| EAP | Experience |
|---|---|
| Mugovhani Phindulo | Mugovhani Phindulo is an Environmental Officer at Joan Consulting (Pty) Ltd specialising in Geology, Mining and Environmental Management. Phindulo has experience in compiling Prospecting Work Programs, Environmental Authorisations, Basic Assessment Reports, Environmental Audits, Environmental Management Plan (EMP) and conducting Public Participation Process (PPP). |
| Lufuno Mutshathama-Senior EAP | Lufuno Mutshathama is an Environmental Scientist by profession, and registered as a Certificated Natural Scientist with the South African Council of Natural Scientific Professionals (SACNASP Reg: 114437). She holds a Bachelor of Environmental Sciences degree and has 11 years collective experience working in the mining industry specialising in mine environmental management and mineral licensing. Of the 12 years, 3 years were spent at the Department of Mineral Resources (DMR) as an Environmental Officer, 1.5 years were spent working at a JSE listed mining company as the Group Environmental Officer and the 6 years to date were spent as a founder and Principal Consultant at Joan Consulting (Pty) Ltd, an environmental management and mineral licensing firm. Lufuno has extensive experience in mining environmental management areas such as water management, Environmental Management Programme (EMP) implementation, waste management, environmental audits, financial provision estimations and revision, mine rehabilitation and assessments such as Environmental Impact Assessment (EIA), Basic Assessment (BA), scoping, closure plans and environmental risk assessment. Mineral licensing which entails obtaining prospecting and mining rights, their variations and cessions (including environmental due diligence) is also a speciality service offering. |

### 1.2 Location of the overall activity

The proposed area is situated approximately 20 km South of Ditshilabeleng village and 30km South of Tsamaros village which are the closest residential areas to the proposed site. The location of the site in relation to the nearest towns is 110km North of Hozatel and 50km North of Kuruman town in the Northern Cape province of South Africa. The site can be accessed through the R371 and R372 roads. The site falls within the Ga-Segonyana Local Municipality under the John Taolo District Municipality.

**Table 3: Property details**

| | |
|---|---|
| Farm Name: | **Chester 199, Chakana 200, Gamahaoudi 122** |
| Application area (Ha) | The prospecting area is 10930 hectares in extent. |
| Magisterial district: | Kuruman Magisterial District |
| Distance and direction from nearest town | Approximately 100 km North of Hotazel town and 40 km from Kuruman town. |
| 21-digit Surveyor General Code for each farm portion | C04100000000012200000<br>C04100000000019900000<br>C04100000000020000000 |

## 1.3 Locality map

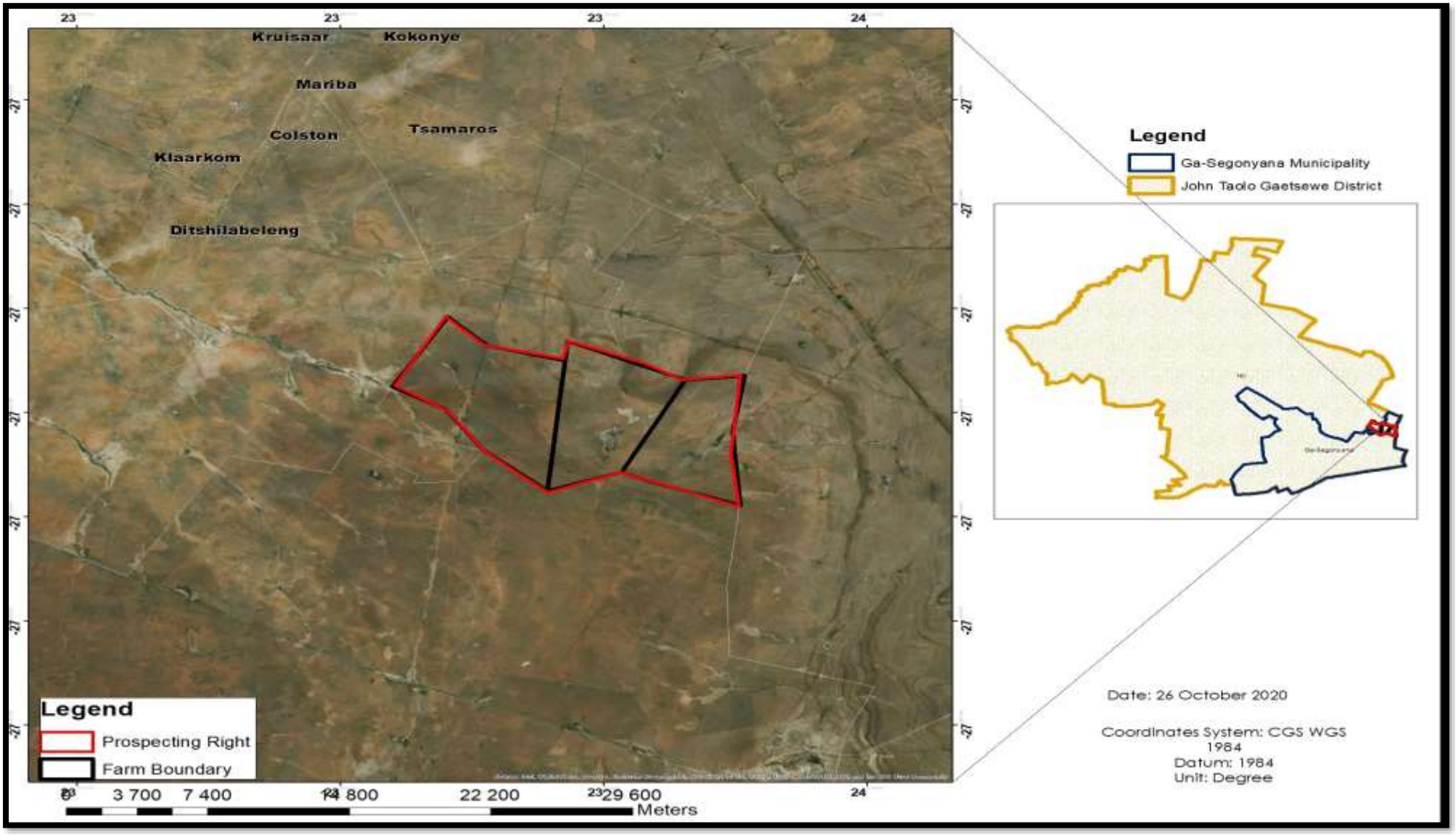


**Figure 1: Proposed prospecting area**

## 1.4 Description of the scope of the proposed overall activity. (Site Plan)

*(Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site)*

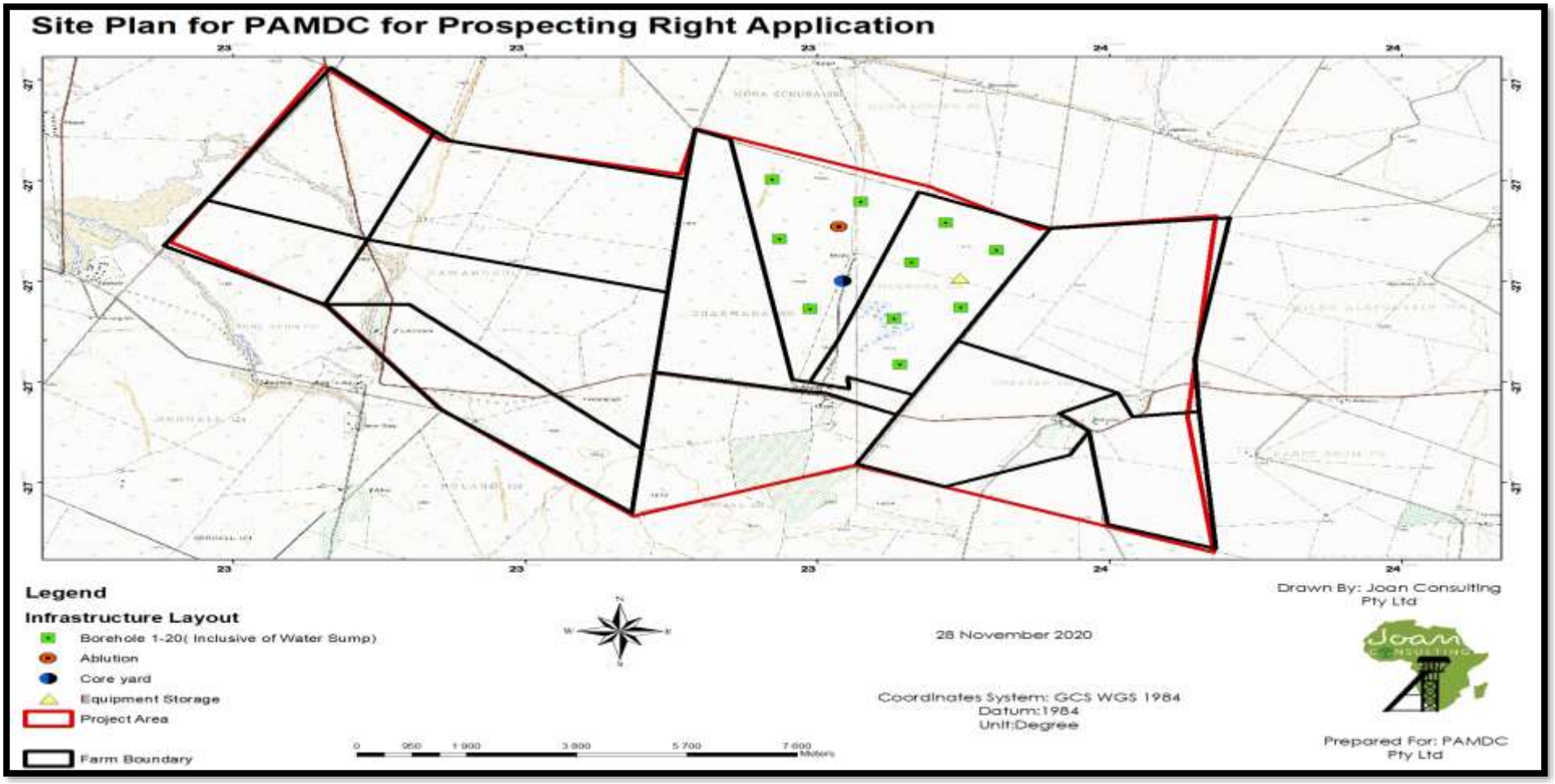


**Figure 2: Site Plan for the proposed site.**

**(NB: The site plan is subject to change depending on the findings of the desktop study, geophysical study and geochemical survey)**

## (i) Listed and specified activities

**Table 4: NEMA triggered activities**

| **NAME OF ACTIVITY**<br>**E.g. For prospecting** - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc**.**<br><br>**E.g. For mining** - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc.) | **Aerial extent of the Activity Ha or m²** | | **LISTED ACTIVITY**<br>Mark with an X where applicable or affected. | **APPLICABLE LISTING NOTICE**<br>(GNR 544, GNR 545 or GNR 546) |
|---|---|---|---|---|
| Establishment of Drill site (Drilling) | 2000 m² | 0.2ha | X | Activity 20 GNR R327 of 2017 |
| Site Establishment<br>• Workshop Area<br>• Storage Yard | 2000 m² | 0.2ha | X | Activity 20 GNR R327 of 2017 |
| Access road (Existing) | _ | _ | | N/A |
| Water Sump | 80m$^2$ x 4m$^2$ x 10 holes | 0.032ha | X | N/A |
| Total Vegetation removed | 4000 m² | 0.4ha | X | Activity 20 GNR R327 of 2017 |

### (ii) Description of the activities to be undertaken

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

Pan African Minerals Development Minerals Company (Pty) Ltd is applying for a prospecting right and Environmental authorisation which is triggering Basic Assessment process of the EIA regulations. The minerals which are being prospected for include;

- Limestone,
- Manganese (Mn),
- Cobalt (Co)
- Copper (Cu)
- Zinc (Zn)
- Iron (Fe)
- Lead, (Pb)

The prospecting process will not involve or include bulk sampling. The only method that will employed for this prospecting application will be drilling. Only 10 boreholes will be drilled to recover core log from the underground. Each drill site will be approximately 150m$^2$ each. Every drill site will comprise a borehole, drill rig and a sump.

In preparation of drilling process, a small portion of land within 150m$^2$ will be cleared of vegetation for the purpose of creating a water sump which collects water from a drill rig. The collection of water in a sump is conducted to avoid any run off into the environment. A drill rig will recover a core at a depth between 150m to 200m below the earth surface, which is sampled, logged and measured for lab preparation. And all recovered cores will be taken from each 10 borehole to the lab for further mineral assessing. This process will continue to all 10-drill site. Each drill site will be rehabilitated concurrently with the drilling process. All dug holes will be capped and all water sumps will be drained of water and closed off. Any compacted area will be ripped off to allow revegetation to take place.

This prospecting works is divided into 3 phases which are explained in details below;

**PHASE 1**

This phase will comprise of four activities. However, some of these activities may or may not be conducted depending on the outcome/ progression prospecting process.

**Literature review:**

Literature survey is a comprehensive review of published and unpublished work from secondary data sources. Re-evaluation of previously explored areas of similar nature is very important at this stage to build conceptual geological model. This review will be conducted as an expectation guide of the field.

**Geological Mapping:**

The area will be geologically mapped to update already existing information. All gathered information will be integrated with the existing information acquired during literature review assist with informed site planning.

**Geochemical Sampling & Anomaly Screening:**

The target mineralization identified during the desktop study and mapping exercise would be further defined using surveyed line/grid based traversing geochemical soil / stream sediment and grab / float sampling activities.

**Geophysical Surveys:**

Various methods of geophysical applications will be applied on the target areas if need be and this may include: ground magnetics, gravity and radiometric traversing on irregular grids.

**PHASE 2- CONSTRUCTION AND OPERATIONAL**

This phase entails the construction, operation and rehabilitation activities of the project, and they are explained in detail below;

**Reconnaissance/Stratigraphical Drilling:**

Phase 2 will commence with reconnaissance / stratigraphical drilling. The construction part entails the site preparation of clearing the site and bringing the equipment such as the drill rig and chemical toilets on site. Five (5) reconnaissance diamond drill holes are planned at this stage. These holes will serve to establish the stratigraphy of the project area and to establish mineralized portions within the stratigraphy. The boreholes will be drilled approximately 50m from the outcrop position (based on the geological map) and will be drilled to a depth of approximately 200m.

The two boreholes will be correlated to establish the preliminary stratigraphical column.

Secondly, the boreholes will be sampled and analyzed for mineral content and the results of the sampling will be used as a basis for the next phase of exploration drilling.

**Resource Diamond Drilling:**

Drilling targets for this phase of drilling will be based on the results of the five (5) boreholes drilled during the reconnaissance phase coupled with the conceptual geological / structural model to be established from the geophysical studies and associated interpretation. If mineralized horizons are intersected, five (5) follow-up boreholes will be drilled.

These Five (5) boreholes will also be sampled, analyzed and the results of the sampling will be used as a basis for Phase 3 resource definition / exploration drilling.

If economically viable reef is intersected in all the 5 boreholes drilled during reconnaissance and resource drilling campaigns, then a drill grid will be established as Phase 3 drilling. This follow-up exploration drilling program will be conducted as the source for gaining ground truth information of the potential ore body and to prove continuity in the third dimension in detail, addressing reef facies, structure and metallurgical parameters.

This drilling phase will define the orientation and shape of the ore body and also define the grade and tonnage and improve the geological confidence.

Any follow up and infill boreholes will be planned and those will have to be drilled at a grid of 200m. It is estimated that the depth of each borehole will range from 50 – 200m.

Drill core will be logged (structure, lithology and facies), sampled and analyzed for Manganese, Iron, Copper, Zinc, Cobalt, Limestone, and Lead. Additional hole-deflections or holes will be drilled for value verification and to ascertain variance in metallurgical and mineralogical parameters.

The current planning suggests that a total of 10 initial exploration boreholes are planned. This drilling Programme should lead into a maiden inferred to indicate resource definition.

**Decommissioning and Rehabilitation**

Upon completion of the drilling and logging process, the drilling equipment and all machineries will be removed from site. The drilled boreholes will be closed with a steel casing to suitable depth and a concrete cap will be placed on top with the exception of locations where boreholes will be drilled on cultivated land. Topsoil that will be removed from drill sites will also be replaced, and all disturbed areas (including roads) will be ripped and allowed to return to the natural state. The denuded area will be re-vegetated by spreading a seed mixture that represent the local vegetation.

**PHASE 3**

**Pre-Feasibility Study:**

A multi-disciplinary pre-feasibility study will be done based on the geological model and Indicated Resource outlined in the previous phases.

The outcome of the pre-feasibility Study will be a complete mine and plant design, together with a preliminary EMP for the operations. The associated infrastructure, human resourcing, and social and labour plan will have been completed to a lesser accuracy. Should this prove positive, feasibility study work will commence.

**Other Activities listed on table 3 are outline below:**

- Diesel power source vehicles and machineries will be used for the proposed activities.
- There are currently existing roads that give access to the proposed site, which are the R370 and R372.
- It is mandatory under the health and safety act that ablution facilities are made available where people will be undertaking any activities. Chemical toilets will be erected on site for the sanitation purposes.
- Temporary contractor's yard will be erected on site and will entail site offices, ablution facilities as well as parking areas. No workers will stay on site.
- Storage and handling of hydrocarbons which is limited to fuel (diesel) and a minimum of less than $30m^3$ will be stored on site powering the machineries.
- Water for prospecting purposes will be brought to site. Portable water for contractors will be provided and will be stored on site.

## 1.5 Policy and Legislative Context

**Table 5: Applicable legislation to this Application**

| APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT | REFERENCE WHERE APPLIED | HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT? |
|---|---|---|
| Minerals and Petroleum Resources Development Act (No 28 of 2002). | Prospecting Right Application | Regulations in terms of Section 107 (1) of the Act were published in Government Notice No, R 526 on the 23rd of April 2004. The regulations provide details of the procedures to be followed in applying for or renewing mining and prospecting rights and permits and for the closure of mining operations as provided and described in the Mineral and Petroleum Resources Development Act (M&PRDA). The applicant lodged a Prospecting right as per the legislation |
| National Environmental Management Act, 1998 [Act 107 Of 1998], as Amended | Environmental Authorisation Application and BAR | The prospecting right application requires a Basic Assessment to be Conducted in terms of the NEMA Regulations of 2014 as amended in April 2017. The NEMA regulations identify DMR as the Competent Authority and details out the Basic Assessment process to be followed. The Environmental Authorisation application has been lodged and the Basic Assessment report requirement is fulfilled by this report. |
| Environmental Impact Assessment (EIA) Regulations, 2014 | Environmental Authorisation Application and BAR | This regulation gives guidelines in terms of methodology to be followed in terms of the requirement by NEMA and the content of the report thereof. This report forms part of the Basic Assessment of the EIA being undertaken and the EA application is lodged. |

| APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT | REFERENCE WHERE APPLIED | HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT? |
|---|---|---|
| National Environmental Management: Biodiversity Act 2004 (ACT NO. 10 OF 2004) | Vegetation clearance | BGIS LUDS has been consulted when determining the baseline environmental conditions for the areas impacted by proposed surface activities. |
| National Environmental Management: Waste Act, 2008 (Act No.59 of 2008) | Prospecting Activities | The principles of the NEM: WA will be applied to all aspects of the activities covered by this application. This will take in account all measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development. |
| National Water Act, 1998 (ACT NO. 36 OF 1998) | Drilling Phase | The principles of the NWA will be applied to all physical activities implemented as part of ongoing drilling. The purpose of the National Water Act of 1998 (Act no.36 of 1998) is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in a manner that promotes equitability, efficiency and sustainability for present and future generations. To do so, the National Water Act regulates the following water uses: Water Use Authorisation and The Water Use License |
| National Heritage Resources Act, 1999 (ACT NO. 25 OF 1999) | Prospecting Activities | All activities covered by this application will avoid any identified heritage resource to prevent the destruction or unsympathetic alteration of heritage resources that have either Formal or General Protection. |
| Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013) | Prospecting Activities | Land use selected is compatible to the local spatial land use and all the principles of spatial development frame work will be applied. This is necessary, to maintain economic unity, equal opportunity and equal access to government services given the Republic’s past racial inequalities and divisions in terms of planning |

| APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT | REFERENCE WHERE APPLIED | HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT? |
|---|---|---|
| The Mine Health and Safety Act, 1996 (No 29 of 1996) | Prospecting Activities | The Mine Health and Safety Act, 1996 (No 26 of 1996) provides for the protection of health and safety of employees and other persons at mines and serves-<br>• To promote a culture of health and safety;<br>• To provide for the enforcement of health and safety measurements;<br>• To provide for appropriate systems for employee, employer and state participating to provide effective monitoring systems and inspections, investigations and inquiries to improve health and safety;<br>• To promote training and human resource of development;<br>• To regulate employers' and employees' duties to identify hazards and eliminate, control and minimise the risk to health and safety;<br>To entrench the right to refuse to work in dangerous conditions |
| South African National Biodiversity Institute (SANBI) Biodiversity GIS (bgis.sanbi.org) | Baseline environmental description | Used during desktop research to identify sensitive environments within the right area. |
| Conservation of Agricultural Resources Act 1983(ACT NO. 43 OF 1983) | Prospecting Activities | The Act provides for control over the utilisation of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invade plants; and for matters connected therewith. |

| APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT | REFERENCE WHERE APPLIED | HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT? |
|---|---|---|
| | | All invader species classified in terms of the Conservation of Agricultural Resources Act 1983 (Act 43 of 1983) within the road reserve should be identified and eradicated in an ecologically sensitive manner during the construction phase |

### 1.6 Need and desirability of the proposed activities.

*(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).*

In order to determine the presence, nature, location and extent of the proposed within the prospecting area, it is necessary that prospecting be undertaken. Prospecting will also determine if whether any geological features exist on site which have any detrimental impact on the economic extraction of interested minerals. As such, a prospecting right is required to allows PAMDC to survey or investigate the area of land for the purpose of identifying an actual or probable mineral deposit.

Obtained data from the prospecting activities will be necessary to determine how and where the minerals will be extracted and how much economically viable mineral reserves are available within the proposed prospecting area. Should the proposed minerals be found in the project area, available reserves will be used to extend to the life of mine, which will in turn contributes to the socio-economic development through job creation and local business expansion.

Given the nature of the proposed drilling project, all impacts identified and discussed below, will be limited to the footprint of the drill sites, in this regard, boreholes will be planned away from homesteads/ villages so that people's health and wellbeing will not be impacted and all mitigation measures proposed in the EMPr will be adhered to.

According to the Spatial development plans of the John Taolo Gaetsewe District Municipality, PAMDC falls within an area classified as agriculture according to the spatial planning categories and a mining focus area according to the industrial areas spatial vision. The mining focus area is aligned with the planned prospecting activities which can be conducted concurrently with existing agricultural land uses due to its minimal environmental impacts.

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

The site has been selected based on its geological and presence of minerals of interest. Therefore, no alternative site locations were assessed as the preliminary drill hole areas are based on the expected mineral resources located within that area, however, alternative sites may be determined once the desktop studies and geophysical surveys have been completed and the exact position and number of target drill sites are confirmed.

The preliminary drill hole areas, with the exception of the drill hole area on the proposed area are not in proximity to any sensitive environmental features, therefore, limiting the potential negative environmental impacts. The footprint of activities will be kept to a minimum, and disturbed areas are to be utilised where possible, minimising the environmental impact. It is however recommended that prospecting activities within the CBA, ESA and within 500 m of any wetlands be avoided. The

preliminary drill hole areas are also not in proximity to any communities or residences, therefore, limiting the potential negative social impacts.

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

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

### 1.8.1 Details of the development footprint alternatives considered.

*(The location of the activity, the type of the activity, the design or layout plan and operational aspects of the activity were all determined by the type of the mineral, availability and positioning*)

**(i) <u>The property on which or location where it is proposed to undertake the activity;</u>**

The application property area is being guided by the presence of higher potential underlying Manganese, limestone, cobalt, copper, zinc, iron, and lead Ore as well as the geology of the area, thus not any location or property is suitable for the proposed activity. The proposed property is situated approximately 50 km away from Kuruman.

**(ii) <u>The type of activity to be undertaken</u>;**

A two-phased prospecting approach has been chosen as the preferred method in order to avoid unnecessary environmental impacts as well as unnecessary costs. This prospecting process will not involve or include bulk sampling. The only method that will employed for this prospecting application will be drilling. Only 10 boreholes will be drilled to recover core log from the underground. Each drill site will be approximately 150$m^2$ each, meaning that is 10 boreholes multiply 150$m^2$. Every drill site will comprise a borehole, drill rig and a sump. No any other alternative activities were considered for this application.

**(iii) <u>The design or layout of the activity;</u>**

Since exploration is temporary in nature, no permanent structures will be constructed and or erected on site. Negotiations and agreements will be made with the farm owners to use any existing infrastructure; therefore, design layout alternative was not assessed and not deem necessary.

**(iv) The technology to be used in the activity;**

The preferred prospecting method (drilling) is a proven prospecting method for this type of minerals. This prospecting method is also considered to have a low environmental impact if managed correctly, therefore No technology alternatives where considered.

**(v) The operational aspects of the activity;**

The operational aspect of the activity alternative was assessed, but no alternatives for the road, mineral and design were considered.

**(vi) The option of not implementing the activity.**

The option of not undertaking prospecting activities on the project site assumes the site remains in its current state, therefore the option of not implementing would result in no impacts on the social and biophysical environment. However, the option of not implementing the activity will result in a loss of valuable information regarding the minerals status present on the affected properties. In addition to this, should economical reserves be present and the applicant does not have the opportunity to prospect, the opportunity to utilise the reserves will be lost.

### 1.8.2 Details of the Public Participation Process Followed

*(Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land).*

The section below details the process of public participation which is going to take place on the proposed project.

- **Objectives of public participation Process**
  - Provide I&APs with sufficient and accessible information to assist them to raise comments and make recommendations which are included in the EIA process.
  - Provides I&APs with the opportunity of suggesting ways of reducing or mitigating negative impacts of an activity and for enhancing positive impacts;
  - Provides I&APs with the opportunity of suggesting ways of reducing or mitigating negative impacts of an activity and for enhancing positive impacts;
  - Provides I&APs with the opportunity of suggesting ways of reducing or mitigating negative impacts of an activity and for enhancing positive impacts.

The following steps have been undertaken to satisfy and meet the public consultation process as required by the NEMA regulations.

- **Identification of Interested and affected parties**

The NEMA Regulations requires identification of and consultation with interested and affected parties (I&Aps). The term I&AP generically refers to persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively. A register of I&AP's in terms of Section 42 of the EIA Regulations (GN R 326 of 2017 as amended) is compiled and attached to this report as appendix D3. The I&AP database include, amongst others; landowners, communities, regulatory authorities and other specialist interest groups. This regulation requires the register with full contact details of registered I&APs to be submitted to the competent authority.

- **Notification and register of Interested and affected parties**

As part of notification, all farm owners and registered interested and affected parties (I&Aps) are notified via emails and letters. A draft BAR sent to all registered and interested parties. The following notification process will be followed in order to notify I&APs about the project that will be happening in their area:

- ✓ Newspaper advertisement;
- ✓ Site Notices
- ✓ Registered letters, emails and Facsimiles are composed and are sent to the identified authorities, adjacent landowners, ward councilors and I&Aps including Ga-segonyana local municipality

- **Availability of BID and Draft Basic Assessment Report**

Basic Assessment Report is available to the registered interested and affected parties upon request for a period of 30 days. This is accompanied by a background information document which summarize the application process as well the impacts associated with the proposed project. To date, the following organs of state have received Basic Assessment Report for Comments; Agri-Kuruman Forum and Other stakeholders includes Ga-Segonyana Local Municipality.

- **Public Meeting**

A public participation plan has been submitted for approval to the department of mineral resources and energy in Northern Cape province. This plan has been approved and exempted Joan Consulting to conduct any public meeting except meetings with committees, due to the covid-19 circumstances. This is done to reduce risks of exposure to the virus.

Covid-19 measures were followed for a meeting requested by various farmers unions held at Doorndraai famers hall on the 26th of November 2020 at 10:00 am. Please refer to the minutes of the meeting attached as appendix D5.

### 1.8.3 Summary of issues raised by I&APs

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

**Table 6: Summary of issues raised by I&Aps.**

| **Interested and Affected Parties**<br>List the names of persons consulted in this column, and<br>Mark with an X where those who must be consulted were in fact consulted. | **Date comments received** | **Issues raised** | **EAPs response to issues as mandated by the applicant** | **Section and paragraph reference in this report where the issues and or response were incorporated.** |
|---|---|---|---|---|
| **Please refer to the minutes of the meeting on appendix D5** | | | | |

### 1.8.4 The Environmental attributes associated with the alternatives.

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

**(1) Baseline Environment**

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

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

This section is intended to provide environmental information which is interlinked with the proposed site. It will identify all environmental aspects within the site that will need special consideration during all the phases of the projects with the intent to minimize impacts.

**Climate**

- **Temperature**

According to climate.org the mean annual minimum/maximum temperatures in the district range between 8°C and 28°C. As alluded to above, the harsh climate is accompanied by high evaporation rates due to the high summer temperatures, which limits the contribution of precipitation to the water reserves in the area.

- **Rainfall**

Kuruman receives between 400mm annual rainfall in the south-eastern part and 200mm in the north-western part of the district. This is below the generally accepted average of 500mm per annum for dry land cropping. The already low precipitation is often concentrated in a few downpours, which have a tendency to occur towards the end of the summer season (notably in February) when temperatures and evaporation are high.

**Air quality**

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.

Site-specific air quality and emissions data is not available for the prospecting area or the town of Kuruman, however, baseline conditions are expected to be reflective of those experienced at the provincial level due to similar sources, drivers and landscapes.

**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.

**Cultural and Heritage**

This project area yielded one known burial site located near the farmstead. The burial site contains 8 graves of which 6 of them are marked by oval shaped stone piles and 2 are marked by tombstones with inscribed headstones. The burial site is fenced, and the graves are arranged in rows. The recorded graves without tombstones are difficulty to determine their ages conclusively. It looks like the burial site is younger than 60 years. However, whether the graves are older or your than 60 years they are all significant and sacred and must not be tempered with during prospecting. As part of extended public participation, landowners and workers must be requested to declare known graves in their farms to avoid any accidental damage to graves during prospecting. However, since most workers know the burial sites in their farms, it is less likely that any burial site is going to be affected during prospecting. Landowners and workers must be engaged about location of graves before any prospecting.

The field survey recorded farm buildings whose age could not be established during the survey. It should be noted that at prospecting stage no buildings will be affected because DMR prohibits drilling and blasting within 500m radius of any buildings or homesteads.

**Fauna and Flora**

The JTDM falls entirely within the Savanna Biome. More specifically, the broad vegetation types for the area have been listed as Kalahari Thornveld, Kalahari Plains Bushveld/Shrubby Kalahari Dune Bushveld and Eastern Kalahari Bushveld. The ecological richness of the different “regions” in the area is located on the lower end of the national spectrum. On a finer grading scale, only the Mafikeng Bushveld is classified as ‘Vulnerable’. In a recent environmental assessment of the area (EMF 2011) it was noted that none of the conservation targets for the vegetation types present in JTGDM have been achieved. It was also noted that 25% of the Mafikeng Bushveld (located in the south east of the study area) has been transformed, mainly for cultivation and urban development purposes.

The majority of the larger mammals that occur in the study area cannot be considered as free-roaming, as they are confined to the private game reserves, lodges and hunting farms. Species that are free-roaming, such as the Kudu, have been hunted out, or displaced by stock farming.

Twenty-seven Red Data Listed mammal species have been recorded in the study area as free-roaming mammals, as well as in the game reserves, lodges and hunting farms. The primary threats to these mammal species are (1) habitat destruction/transformation; and (2) fragmentation by urban development, agriculture and mining activities. See **Figure 9** for vegetation map.

**Surface water**

The Lower Vaal Water Management Area (WMA) covers a catchment area of 51,543 $km^2$. 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 $m^3/a$. The prospecting area is situated next to the Kuruman River but does not contain rivers within its boundaries. The hydrology map is attached as **Figure 3** below.

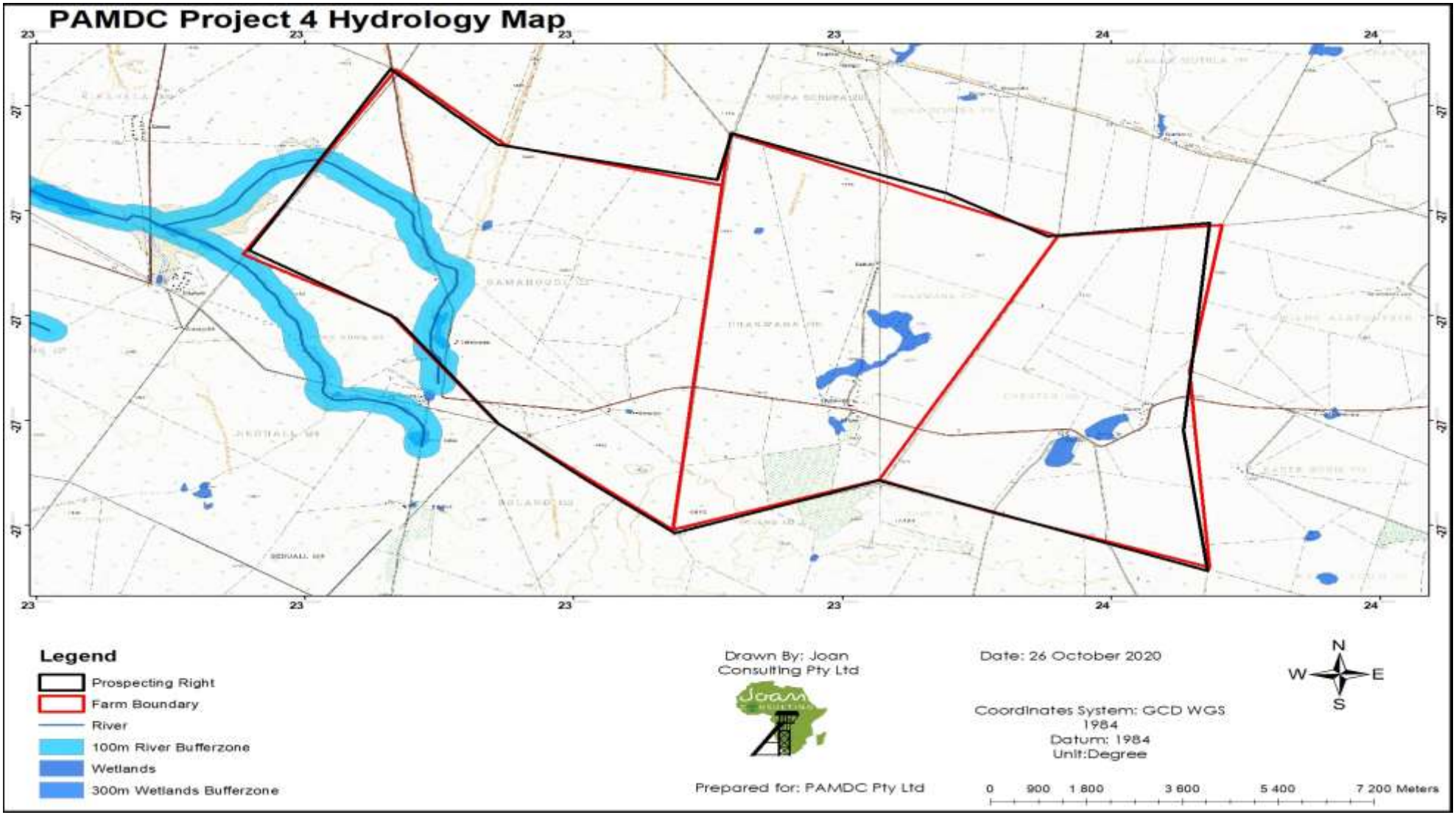


**Figure 3: Hydrology Map of the area.**

## Geology

Most of the PAMDC concession area is covered by the Kalahari sediments and as a result, the outcrop is extremely scarce. Economic and sub-economic industrial minerals known to occur in the region include asbestos (long prohibited because of its dangerous health effect and is unlikely to be of use), building sand and aggregate, limestone, kieselgur(diatomite) and salt. Majority of these known deposits/occurrence are found outside the PAMDC concession arears, but this appears to be related to a lack of proper exploration and hence the PAMDC concession can be considered to have some potential of hosting these deposits. Similarities in geology of the PAMDC concession to the surrounding arears that contains these mineralization supports in contention

PAMDC Pb- Zn deposits are characterized by the Mississippi Valley Type. These deposits are widespread in the carbonate rocks of Ghaap and Chniespoort Group of the Transvaal Supergroup. Pb-Zn mineralization in the region of the present area of study is represented by Bushy Park and Pering deposits hosted by the carbonates of the Campbellrand Subgroup are wide spread in the applied farms and the possibilities of Pb-Zn mineralization in these farms as exemplified by the pering deposits. Among the deposits described the nearest to the PAMDC area are the deposits/ occurrence at Bushy Park and Griqua town area. The deposits occur in the brecciated zones in isolated pockets of the Carbonates rocks of the Transvaal Supergroup. The nature of the mineralization, namely the occurrence as isolated pockets of mineralization is not encouraging for the Pb-Zn potential of these farms.

Several million tonnes of calcrete crus are abundantly developed over extensive portions in the Kuruman and the Vryburg District. Grooves samples of calcite material collected by Martini (1987) between Kuruman and Vryburg returned disappointing results between 59 to 79% mainly due to high silica content. Ehlers and Wilson (2001) stated that better quality calcrete may exist in certain localized area but a systematic sampling programme will have to be conducted to delineate such material. Outside the PAMDC concession area Nel (1972) stated that a 2.5mt of limestone is available southwest of the settlement of Maropeng in the Lower Kuruman Reserve.

Large limestone deposits are mined from arears approximately 100km to the south of Kuruman in the vicinity of lime acres. These large deposits are situated close to the Kimberly- Postmasburg railway line. This area is the largest producer of limestone in the country. Most deposits are contained in the upper part of the Campbell Rand Subgroup that extends from the Griqua town in the south to North of Kuruman.

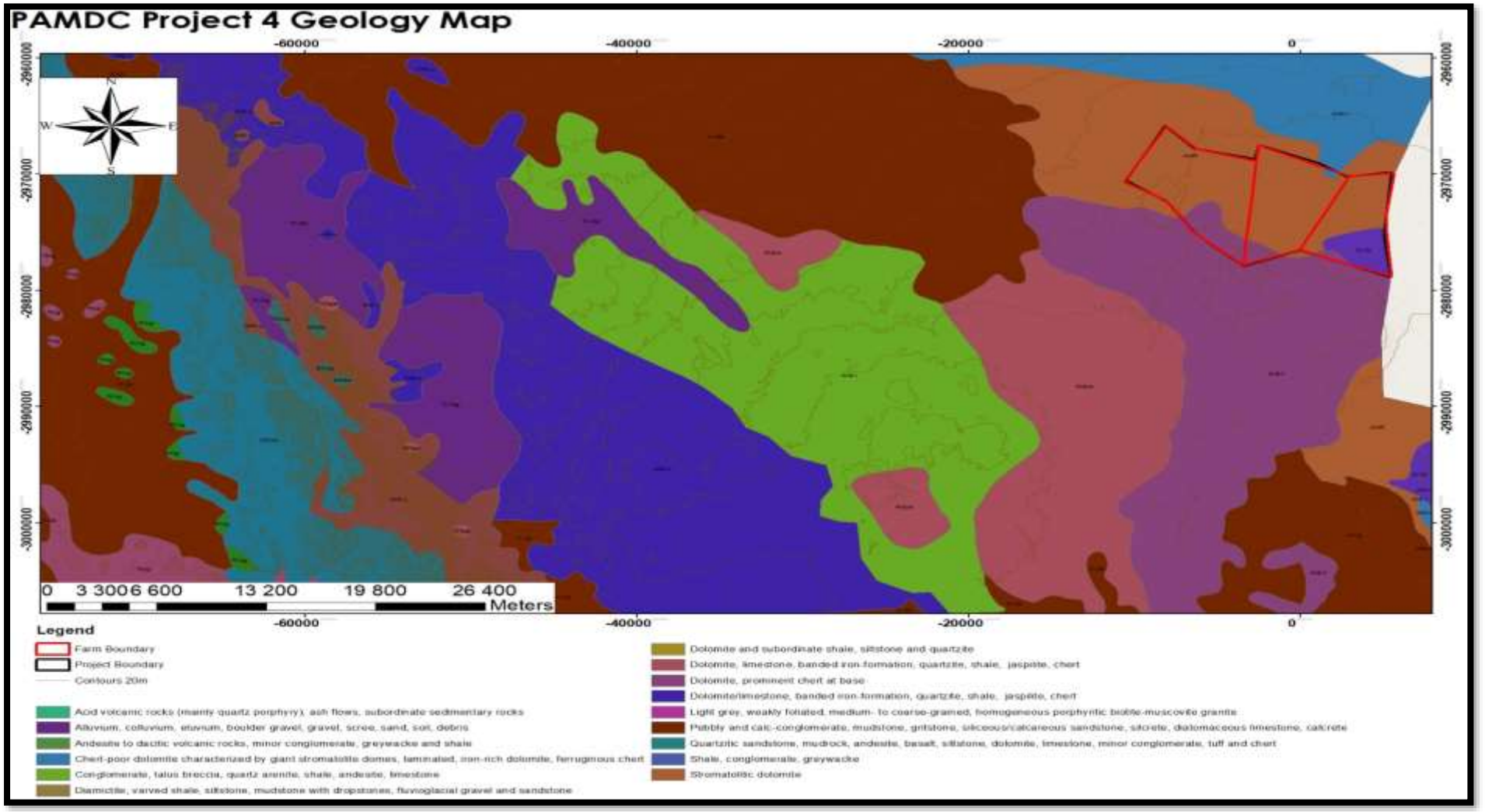


**Figure 4: Geology map of the area.**

**Socio Economic Conditions**

According to the 2017-2022 Kuruman IDP, the population of the John Taolo Gaetsewe District Municipality has had an increase of about 224 799 in 2011 to 242 264 in 2016. The increase of the population in the District is evident in the local municipalities of Ga-Segonyana (11.49) and Gamagara (28.93). There has been a major decline of about 6.3% in the population of Joe Morolong Local Municipality; this is mainly due to the out-migration from the municipality to the Ga-Segonyana and Gamagara Local Municipalities. As a result, the proposed prospecting project will contribute to the local economy through the creation of jobs as well as the purchase of goods and services from the local community.

- **Settlement Density**

There is a total number of 186 settlements in the JTGDM area. The Ga-Segonyana Local municipality consists of 34 residential areas of which 20% is constituted of urban and peri-urban areas and 80% is rural areas. The municipality covers an area of 4 491km2. The table below indicates the settlement densities for the JTGDM and its respective local municipalities.

| **Table 5: Settlement densities within the area** | | | | |
|---|---|---|---|---|
| | **DC45: John Taolo** | **NC451: Joe Morolong** | **NC452: Ga-Segonyan** | **NC453: Gamagara** |
| Density of people per square km | 8.2 | 4 | 21 | 16 |

- **Population of Ga-Segonyana Local Municipality**

Table 6 shows an increase in the population of Ga-Segonyana, from 70 392 people in 2001 to 104 408 persons in 2016. The number of females increased by 20 926 persons, from 37 174 in 2001 to 53 925 in 2016. Males increased by 21 515 persons, from 33 218 in 2001 to 50 483 in 2016. Gender proportions show that there are more females than males in the municipality.

**Table 7: Population status in Ga-Segonyana Local Municipality**

| 2001 | | | 2011 | | | 2016 | | |
|---|---|---|---|---|---|---|---|---|
| **male** | **Female** | **Total Population** | **Male** | **Female** | **Total Population** | **Male** | **Female** | **Total Population** |
| 33 218 | 37 174 | 70 392 | 44 994 | 48 658 | 93 651 | 50 483 | 53 925 | 104 408 |

- **Education**

**Table 8** below shows an improvement in the level of education in Ga-Segonyana Local Municipality over the period from 1996 to 2016, where there was a decline in the number and proportion of people with no schooling from 23.1% in 1996 to 7.2% in 2016. There is an improvement in the number and proportion of people with a higher education, from 5.2% to 5.9% over the same period. A significant increase observed in the proportion of persons who have grade 12/standard 10.

**Table 8: Level of education for people in the municipality from 1996-2016**

| | 1996 | 2001 | 2011 | 2016 |
|---|---|---|---|---|
| | | | | |
| No Schooling | 7 108 | 7 210 | 5 124 | 4 221 |
| Some Primary | 7 349 | 8 312 | 9 124 | 7 672 |
| Completed primary | 2 224 | 2 287 | 2 590 | 2 554 |
| Some Secondary | 8 772 | 10 154 | 18 014 | 23 015 |
| Grade 12/Std 10 | 3 706 | 6 633 | 12 474 | 17 715 |
| Higher Education | 1 607 | 2 218 | 5 241 | 3 432 |
| Total | 30 766 | 36 814 | 52 568 | 58 609 |

- **Waste Water sewage Management**

The municipality strives to create a better life through sustainable development for its people by involving the community in the affairs of decision-making about LED. In order to further boost the economy, the municipality will improve economic development opportunities in coordination with all LED stakeholders, review the LED Strategy and market Ga-Segonyana as an investment destination. It will furthermore, ensure that commonage farms and grazing camps are fully utilized to promote emerging farmers. (Global Insight, 2013).

- **Employment Status**

The employment rate was higher than the unemployment rate in 2002 and 2012 while in terms of race Africans, Asians, Whites and Coloured experienced a decreased in unemployment for the same period. The mining industry had the highest year-on-year increase in employment between 2002 and 2012. The electricity industry recorded the highest year-on-year growth in remuneration for the period under review. (Global Insight, 2019).

- **Accessibility**

An existing road networks are found throughout Ga-Segonyana Municipal area, with the state thereof ranging between very well-maintained tar roads, such as the N14, to gravel roads in the rural areas that are not in a very good condition. The N14 forms the major access road to the core of the economic development, where it crosses through Kuruman in an east/ west direction. In the centre of Kuruman the N14 conjuncts with the Hotazel/ Daniëlskuil road. R380 road passes through the proposed area, thus there will no construction of road taking place.

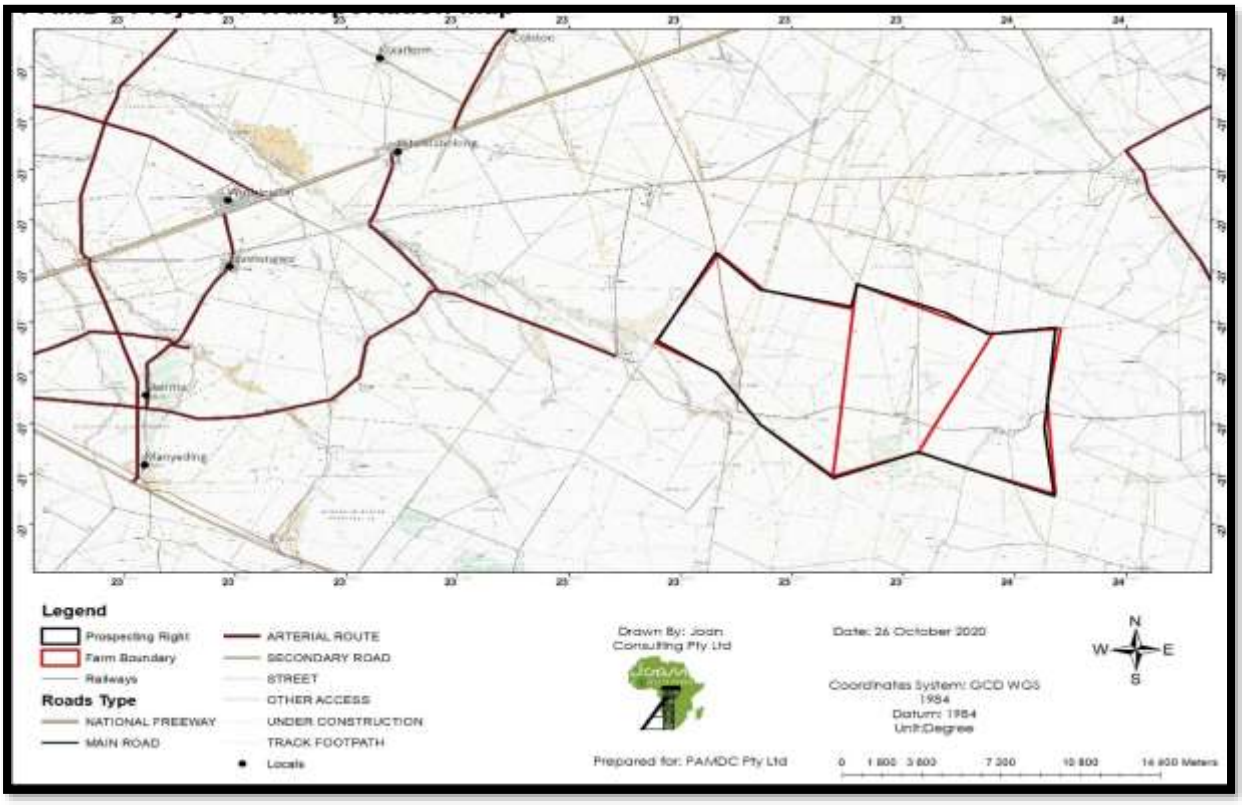


**Figure 5: Accessibility Map**

## (b) Description of the current land uses

Land use is defined as the operations that are occurring on land, as carried out by humans, with the intention to obtain products and/or benefits through using land resources. Land use therefore refers to the purpose the land serves, such as recreation, natural or agriculture. From the site visit which was undertaken, the dominant land use associated with the prospecting area is Game

farming, livestock farming, residential use, and game lodges. The table below summarizes the percentage of every land use in the area.

**Table 9: Current land use in the area**

| Land Use | Percentage |
|---|---|
| Agriculture | 0.5% |
| Livestock Farming | 50% |
| Residential areas | 33% |
| Game Lodges | 15% |
| Recreational facilities | 0.5% |

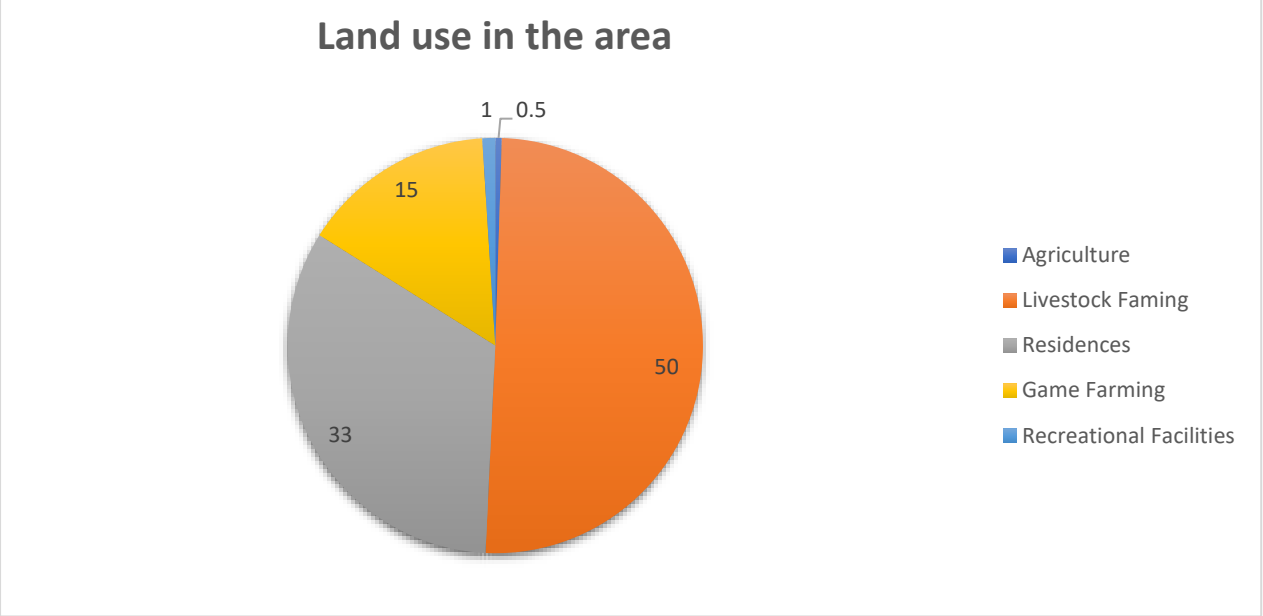


**Figure 6: Land use activities in the area**

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

Specific environmental features and / or infrastructure occur within the site include:

- Agricultural land
- Eskom Power cables
- Farm buildings
- Non-Perennial river
- Public gravel road (R372)
- Reservoirs
- Water boreholes
- Windmills

## (d) land use and Infrastructure map

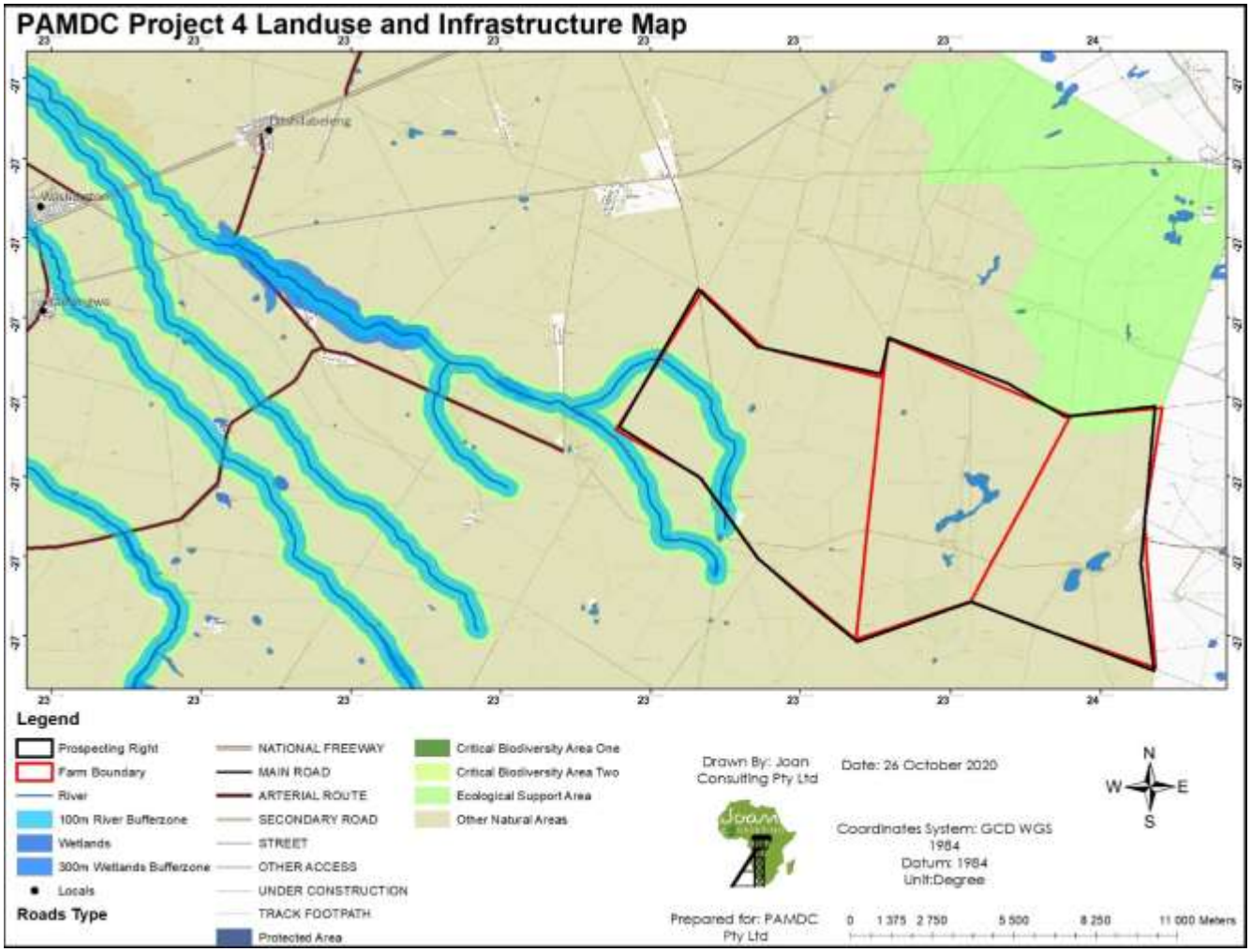


**Figure 7: Land use and infrastructure map**

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

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

This section provides the detailed methodology used for the assessment of the significance of potential environmental impacts in the study. This methodology allows for the identified potential impacts to be analysed in a systematic manner, with significance rating (from insignificant to very high) assigned to each potential impact. The significance of an impact is defined as a combination of the consequence of the impact occurring and the probability that the impact will occur. The criteria used to determine impact consequence include extent, intensity and duration of the impact and are presented below.

**Table 10: Methodology used in Determining and Ranking the Nature, Significance, Consequences, Extent, Duration and Probability of Potential Environmental Impacts and Risks.**

| **Nature of the Impact (N)** | | |
|---|---|---|
| Positive | **+ (ve)** | Impact will be beneficial to the environment (a benefit). |
| Negative | **- (ve)** | Impact will not be beneficial to the environment (a cost). |
| Neutral | **0** | Where a negative impact is offset by a positive impact, or mitigation measures, to have no overall effect. |
| **Magnitude (M)** | | |
| Minor | 2 | Negligible effects on biophysical or social functions/processes. Includes areas/environmental aspects which have already been altered significantly, and have little to no conservation importance (negligible sensitivity*). |
| Low | 4 | Minimal effects on biophysical or social functions/processes. Includes areas/environmental aspects which have been largely modified, and/or have a low conservation importance (low sensitivity*). |
| Moderate | 6 | Notable effects on biophysical or social functions/processes. Includes areas/environmental aspects which have already been moderately modified, and have a medium conservation importance (medium sensitivity*). |
| High | 8 | Considerable effects on biophysical or social functions/processes. Includes areas/environmental aspects which have been slightly modified and have a high conservation importance (high sensitivity*). |
| Very high | 10 | Severe effects on biophysical or social functions/processes. Includes areas/environmental aspects which have not previously been impacted |

| | | |
|---|---|---|
| | | upon and are pristine, thus of very high conservation importance (very high sensitivity). |
| **Extent (E)** | | |
| Site only | 1 | Effect limited to the site and its immediate surroundings. |
| Local | 2 | Effect limited to within 3 - 5 km of the site. |
| Regional | 3 | Activity will have an impact on a regional scale. |
| National | 4 | Activity will have an impact on a national scale. |
| International | 5 | Activity will have an impact on an international scale. |
| **Duration (D)** | | |
| Immediate | 1 | Effect occurs periodically throughout the life of the activity. |
| Short term | 2 | Effect lasts for a period 0 to 5 years. |
| Medium term | 3 | Effect continues for a period between 5 and 15 years. |
| Long term | 4 | Effect will cease after the operational life of the activity either because of natural process or by human intervention. |
| Permanent | 5 | Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient. |
| **Probability of Occurrence (P)** | | |
| Improbable | 1 | Less than 30% chance of occurrence. |
| Low | 2 | Between 30 and 50% chance of occurrence. |
| Medium | 3 | Between 50 and 70% chance of occurrence. |
| High | 4 | Greater than 70% chance of occurrence. |
| Definite | 5 | Will occur, or where applicable has occurred, regardless or in spite of any mitigation measures. |

Once the impact criteria have been ranked for each impact, the significance of the impacts will be calculated using the following formula:

**Significance Points (SP) = (Magnitude + Extent + Duration) x Probability**

The significance of the ecological impact is therefore calculated by multiplying the severity rating with the probability rating. The maximum value that can be reached through this impact evaluation process is 100 SP (Points). The significance for each impact is rated as High (SP ≥ 60), Medium (SP = 31 - 60) and Low (SP < 30) significance as shown in the below.

**Table 11: Significance rating of positive and negative impacts.**

| **Significance of Predicted NEGATIVE Impacts** | | |
|---|---|---|
| Low | 0 - 30 | Where the impact will have a relatively small effect on the environment and will require minimum or no mitigation and as such have a limited influence on the decision |
| Medium | 31 - 60 | Where the impact can have an influence on the environment and should be mitigated and as such could have an influence on the decision unless it is mitigated. |
| High | 61 - 100 | Where the impact will definitely have an influence on the environment and must be mitigated, where possible. This impact will influence the decision regardless of any possible mitigation. |
| **Significance of Predicted POSITIVE Impacts** | | |
| Low | 0 - 30 | Where the impact will have a relatively small positive effect on the environment. |
| Medium | 31 - 60 | Where the positive impact will counteract an existing negative impact and result in an overall neutral effect on the environment. |
| High | 61 - 100 | Where the positive impact will improve the environment relative to baseline conditions. |

### 1.8.6 Impacts and risks identified including the nature, significance consequence, extent, duration and probability of the impacts, including the degree of these impacts.

**Table 12: Summary of potential impacts and mitigation measures.**

| Activity | Impact | Aspect | Nature | Magnitude | Extent | Duration | Probability | Significance Before Mitigation | Mitigation measures | Magnitude | Extent | Duration | Probability | Significance After Mitigation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | | | | | | | | |
| Clearing of vegetation and movement of vehicles for site establishment | Generation of Dust | Air quality | - (ve) | 6 | 2 | 4 | 5 | 60 | • Dust suppression using water will be under taken to manage dust emitting from vegetation removal<br>• Footprint earmarked for vegetation removal must be clearly marked | 2 | 1 | 2 | 5 | 25 |
| Clearing of vegetation and movement of vehicles for site establishment | Increased noise levels from movement of vehicles | Noise | - (ve) | 2 | 2 | 1 | 5 | 25 | • Trucks, machinery, and equipment must be regularly serviced to reduce noise levels<br>• Work should be conducted during day time only to minimise | 4 | 1 | 1 | 2 | 16 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | disruption of neighbours and animal life | | | | | | |
| Clearing of vegetation and movement of vehicles for site establishment. | Disturbance of graves | Cultural Heritage | - (ve) | 6 | 2 | 4 | 3 | 36 | • Although none were found, the possibility of encountering unmarked graves is very high | 6 | 2 | 4 | 3 | 36 |
| Clearing of vegetation and movement of vehicles for site establishment. | Destruction of archaeological remains | Cultural heritage | (-ve) | 6 | 1 | 4 | 5 | 55 | • Chance find procedure apply | 6 | 2 | 4 | 3 | 36 |
| Clearing of vegetation and movement of vehicles for site establishment | Disturbance of buildings and structures older than 60 years old | Cultural heritage | (-ve) | 4 | 1 | 2 | 2 | 14 | • Adhere to DMR Regulations regarding drilling and blasting near buildings and heritage sites | 4 | 1 | 2 | 2 | 14 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clearing of vegetation and movement of vehicles for site establishment | • Disruption and destruction of animal life<br>• Disturbance to animals on site | Fauna | - (ve) | 6 | 1 | 2 | 2 | 18 | • Do not disturb nests, breeding sites or young ones. Do not attempt to kill or capture snakes unless directly threatening the safety of employees.<br>• Dogs or other pets are not allowed to the worksite as they are threats to the natural wild animal<br>• No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site.<br>• Severe contractual fines must be imposed and immediate dismissal on any contract employee who is found attempting to snare or otherwise harms remaining faunal species | 4 | 1 | 1 | 2 | 12 |
| Clearing of vegetation and movement of vehicles for site establishment | • Destruction of protected plant species<br>• Removal of the natural vegetation | Flora | - (ve) | 6 | 1 | 2 | 3 | 27 | • Due to the sensitivity of the areas it is advised that areas designated for vegetation clearing should be identified and visibly marked off and also approved as part of final drilling map<br>• Vegetation clearing areas should be kept to a | 4 | 1 | 1 | 2 | 12 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | minimum and restricted to the proposed drilling sites.<br>• Exposed areas should be rehabilitated with indigenous plants to the project area as soon as construction is finished<br>• Use already available farm roads to avoid trampling red listed plant species | | | | | |
| Clearing of vegetation and movement of vehicles for site establishment | Loss of fertile topsoil | Soil, Land Use and Land Capability | - (ve) | 8 | 2 | 3 | 3 | 39 | • The construction footprint should be kept as small as possible Keep as much original land cover as possible<br>• Stripped soils should be stockpiled surrounding the disturbed area | 4 | 1 | 1 | 2 | 12 |
| Clearing of vegetation and movement of vehicles for site establishment | Soil Compaction | Soil, Land Use and Land Capability | - (ve) | 8 | 2 | 3 | 3 | 39 | • Avoid creating many access routes<br>• Keep the speed limit to minimum to reduce the tire contractions on the soil | 4 | 1 | 1 | 2 | 12 |
| Clearing of vegetation and movement | Soil contamination from hydrocarbon spills | Soil, Land Use and Land Capability | - (ve) | 6 | 3 | 3 | 3 | 36 | • Clean all hydrocarbon spills from machinery immediately, and | 4 | 1 | 1 | 2 | 12 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| of vehicles for site establishment | | | | | | | | | • Dispose contaminated soils at a permitted site<br>• Drip trays are to be watertight, and must be emptied regularly and before rain events<br>• The contents of drip trays are to be treated as hazardous waste<br>• Only emergency and essential repairs of vehicles and equipment may take place on site | | | | | |
| Clearing of vegetation and movement of vehicles for site establishment | Uncontrolled soil erosion and change in the area topography | Topography | - (ve) | 6 | 1 | 1 | 3 | 24 | • Demarcate construction footprint and limit activities to within this footprint as far as possible<br>• Keep the clearance area as small as possible<br>• Keep as much original land cover as possible | 4 | 1 | 1 | 2 | 12 |
| Clearing of vegetation and movement of vehicles for site establishment | Increased sedimentation, surface runoff and Soil Erosion | Surface Water Resources | - (ve) | 6 | 1 | 1 | 3 | 24 | • Limit the development footprint to reduce high-sediment runoff<br>• Avoid clearing the site during the rainy seasons<br>• Rehabilitate the area by re-using stockpiled soil within as short a period of time. | 4 | 1 | 1 | 2 | 12 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clearing of vegetation and movement of vehicles for site establishment | Surface water contamination from hydrocarbon spills | Surface Water Resources | - (ve) | 6 | 3 | 3 | 3 | 36 | • Clean all hydrocarbon spills from machinery immediately<br>• Dispose contaminated soils at a permitted site<br>• Drip trays are to be watertight, and must be emptied regularly and before rain events<br>• The contents of drip trays are to be treated as hazardous waste. | 2 | 1 | 1 | 2 | 08 |
| Clearing of vegetation and movement of vehicles for site establishment | Increased visual levels such as dust and infrastructures | Visual Aspect | - (ve) | 6 | 1 | 2 | 3 | 27 | • The development footprints and disturbed areas should be kept as small as possible<br>• Construction activities should be restricted to daylight hours to limit the need to bright floodlighting and the potential for skyglow<br>• Dust suppression should be carried throughout, whenever dust emanates | 4 | 1 | 1 | 2 | 12 |
| Clearing of vegetation and movement of vehicles for site | On Game Lodges, Lodges & Guest Houses:<br>• Dust Generation | Air Quality<br>Noise | - (ve) | 8 | 3 | 2 | 4 | 52 | • Dust suppression using water will be under taken to manage dust emitting from vegetation removal | 6 | 2 | 1 | 2 | 18 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| establishment | • Noise Generation | | | | | | | | • Footprint earmarked for vegetation removal must be clearly marked<br>• Trucks, machinery, and equipment must be regularly serviced to reduce noise levels<br>• Work should be conducted during day time only to minimise disruption of neighbours and animal life | | | | | |
| Clearing of vegetation and movement of vehicles for site establishment | On Game Lodge<br><br>• Dispersing and disruption of animals | Fauna | - (ve) | 6 | 2 | 2 | 2 | 20 | • No wild animal may under any circumstance be handled, removed or be interfered with<br>• No wild animal may be fed on site<br>• No wild animal may under any circumstance be hunted, snared, captured, injured or killed<br>• No wild animal may under any circumstance be hunted, snared, captured, injured or killed | 4 | 1 | 1 | 2 | 12 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clearing of vegetation and movement of vehicles for site establishment | On Settlement and Residential<br>• Negatively impacting on residents' livelihoods | Social | - (ve) | 8 | 2 | 2 | 5 | 60 | • The applicant must consult with the affected parties on which times are favourable for them before undertaking the activities which could negatively impact their livelihood. | 4 | 1 | 1 | 3 | 18 |
| Clearing of vegetation and movement of vehicles for site establishment | Fear of farm attacks by farmers due to strangers in the area | Safety and Security | - (ve) | 6 | 3 | 2 | 4 | 44 | • Notify the local farmer's forum (Agri-Kuruman and affected forums)<br>• Comply with all the local safety requirements | 2 | 1 | 1 | 1 | 04 |
| Prospecting works | Generation of waste | Impact all environmental Aspects | - (ve) | 6 | 1 | 1 | 4 | 32 | • Dedicate a storage area on site for the collection of wastes<br>• Litter bins must be equipped with a closing mechanism to prevent their contents from over following blowing out by wind<br>• Empty litter bins regularly to avoid overflow<br>• Proper ablution facilities on site must be provided. | 4 | 1 | 1 | 2 | 18 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Prospecting works | Work injury - impacting on the wellbeing of employees | Social, Health & Safety Aspect | - (ve) | 6 | 2 | 2 | 4 | 40 | • Proper protective equipment must be allocated to all personnel working with high risk equipment (drill rig)<br>• Tool box talk must be conducted to address the risk associated with the proposed project. | 2 | 1 | 1 | 2 | 08 |
| **Operational Phase** | | | | | | | | | | | | | | |
| Borehole drilling, construction of water sump and movement of vehicles | Generation of Dust | Air quality | - (ve) | 6 | 1 | 1 | 3 | 24 | • Dust suppression using water will be under taken to manage dust emitting from vegetation removal. | 4 | 1 | 1 | 2 | 12 |
| Borehole drilling, construction of water sump and movement of vehicles | Increased noise levels from movement of vehicles | Noise | - (ve) | 6 | 1 | 1 | 3 | 24 | • Trucks, machinery, and equipment must be regularly serviced to reduce noise levels | 4 | 1 | 1 | 2 | 12 |
| Borehole drilling, construction of water sump and | Destruction public monuments and plaques | Cultural Heritage | - (ve) | 2 | 1 | 1 | 1 | 4 | • Mitigation is not required because there are no public monuments within the mining right application site | 2 | 1 | 1 | 1 | 4 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| movement of vehicles | | | | | | | | | | | | | | |
| Borehole drilling, construction of water sump and movement of vehicles | Disruption and destruction of animal life | Fauna | - (ve) | 6 | 1 | 2 | 2 | 18 | • No wild animal may under any circumstance be handled, removed or be interfered with<br>• No wild animal may be fed on site<br>• No wild animal may under any circumstance be hunted, snared, captured, injured or killed<br>• No wild animal may under any circumstance be hunted, snared, captured, injured or killed<br>• Remove and dispose of any snares or traps found on or adjacent to the site | 4 | 1 | 2 | 2 | 14 |
| Borehole drilling, construction of water sump and movement of vehicles | Disruption and destruction of vegetation | Flora | - (ve) | 6 | 1 | 2 | 4 | 36 | • Do not disturb, deface, destroy or remove plants or natural features outside the demarcated area<br>• No open fires are permitted under trees and no vegetative matter may be removed for firewood<br>• Locate construction camps on the outside fringe of the riparian vegetation zone | 4 | 1 | 2 | 2 | 14 |

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| | | | | | | | | | • Where damage to protected plants and natural features is a problem, then these should be fenced for protection | | | | | |
| Borehole drilling, construction of water sump and movement of vehicles | Loss of fertile topsoil | Soil, Land Use and Land Capability | - (ve) | 6 | 1 | 2 | 2 | 18 | • The construction footprint should be kept as small as possible<br>• Keep as much original land cover as possible<br>• Stripped soils should be stockpiled surrounding the disturbed area | 4 | 1 | 2 | 2 | 14 |
| Borehole drilling, construction of water sump and movement of vehicles | Soil Compaction | Soil, Land Use and Land Capability | - (ve) | 6 | 1 | 2 | 3 | 27 | • Avoid creating many access routes<br>• Keep the speed limit to minimum to reduce the tire contractions on the soil. | 4 | 1 | 2 | 2 | 14 |
| Borehole drilling, construction of water sump and movement of vehicles | Soil contamination from hydrocarbon spills | Soil, Land Use and Land Capability | - (ve) | 4 | 1 | 1 | 3 | 18 | • Clean all hydrocarbon spills from machinery immediately<br>• Dispose contaminated soils at a permitted site<br>• Drip trays are to be watertight, and must be emptied regularly and before rain events | 4 | 1 | 1 | 2 | 12 |

| | | | | | | | | | | | | | | |
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| | | | | | | | | | • The contents of drip trays are to be treated as hazardous waste<br>• Only emergency and essential repairs of vehicles and equipment may take place on site | | | | | |
| Borehole drilling, construction of water sump and movement of vehicles | Uncontrolled soil erosion and change in the area topography | Topography | - (ve) | 6 | 1 | 1 | 2 | 16 | • Demarcate construction footprint and limit activities to within this footprint as far as possible<br>• Keep the clearance area as small as possible Keep as much original land cover as possible | 4 | 1 | 1 | 2 | 12 |
| Borehole drilling, construction of water sump and movement of vehicles | Increased sedimentation, surface runoff and Soil Erosion | Surface Water Resources | - (ve) | 4 | 1 | 2 | 2 | 14 | • Limit the development footprint to reduce high-sediment runoff; Avoid clearing the site during the rainy seasons<br>• Rehabilitate the area by re-using stockpiled soil within as short a period of time | 4 | 1 | 1 | 2 | 12 |
| Borehole drilling, construction of water sump and movement of vehicles | Surface water contamination from hydrocarbon spills | Surface Water Resources | - (ve) | 4 | 1 | 1 | 3 | 18 | • Clean all hydrocarbon spills from machinery immediately<br>• Dispose contaminated soils at a permitted site<br>• Drip trays are to be watertight, and must be | 4 | 1 | 1 | 2 | 16 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | emptied regularly and before rain events;<br>• The contents of drip trays are to be treated as hazardous waste. | | | | | |
| Borehole drilling, construction of water sump and movement of vehicles | Increased visual levels such as dust and infrastructures (drill rig) | Visual Aspect | - (ve) | 6 | 1 | 1 | 3 | 24 | • The development footprints and disturbed areas should be kept as small as possible<br>• Construction activities should be restricted to daylight hours to limit the need to bright floodlighting and the potential for skyglow<br>• Dust suppression should be carried throughout, whenever dust emanates | 4 | 1 | 1 | 2 | 12 |
| Storage of Hydrocarbons | Soil and Land Capability and Surface Water | Land and Water Contamination | - (ve) | 8 | 1 | 1 | 4 | 40 | • Clean all hydrocarbon spills from machinery immediately<br>• Dispose contaminated soils at a permitted site<br>• Drip trays are to be watertight, and must be emptied regularly and before rain events<br>• The contents of drip trays are to be treated as hazardous waste | 6 | 1 | 1 | 2 | 16 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | • The bund must be able to accommodate at least the full volume of one of the containers<br>• Do not locate any hydrocarbons within the 1:100-year flood line, or 100m of a watercourse, drainage line or identified wetland | | | | | |
| Prospecting Works | Generation of waste | Impacts all environmental aspects | - (ve) | 6 | 1 | 1 | 4 | 32 | • Dedicate a storage area on site for the collection of wastes<br>• Litter bins must be equipped with a closing mechanism to prevent their contents from over following blowing out by wind<br>• Empty litter bins regularly to avoid overflow<br>• Proper ablution facilities on site must be provided | 4 | 1 | 1 | 2 | 12 |
| Prospecting Works | Work injury- impacting on the wellbeing of the employees | Social, Health & Safety Aspect | - (ve) | 6 | 1 | 1 | 4 | 32 | • Proper protective equipment must be allocated to all personnel working with high risk equipment (drill rig)<br>• Tool box talk must be conducted to address the | 4 | 1 | 1 | 2 | 12 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | risk associated with the proposed project | | | | | |
| Borehole drilling, construction of water sump and movement of vehicles | On Game Lodges, Lodges & Guest Houses:<br>• Dust Generation<br>• Noise Generation | Air Quality<br>Noise | - (ve) | 8 | 3 | 2 | 4 | 52 | • Dust suppression using water will be under taken to manage dust emitting from vegetation removal<br>• Footprint earmarked for vegetation removal must be clearly marked<br>• Trucks, machinery, and equipment must be regularly serviced to reduce noise levels<br>• Work should be conducted during day time only to minimise disruption of neighbours and animal life. | 6 | 2 | 1 | 2 | 18 |
| Borehole drilling, construction of water sump and movement of vehicles | On Game Lodge<br>• Dispersing and disruption of animals | Fauna | - (ve) | 6 | 2 | 2 | 2 | 20 | • No wild animal may under any circumstance be handled, removed or be interfered with<br>• No wild animal may be fed on site;<br>• No wild animal may under any circumstance be hunted, snared, captured, injured or killed | 4 | 1 | 1 | 2 | 12 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | • No wild animal may under any circumstance be hunted, snared, captured, injured or killed. | | | | | |
| Borehole drilling, construction of water sump and movement of vehicles | On Settlement and Residential<br>• Negatively impacting on residents' livelihoods | Social | - (ve) | 8 | 2 | 2 | 5 | 60 | • The applicant must consult with the affected parties on which times are favourable for them before undertaking the activities which could negatively impact their livelihood | 4 | 1 | 1 | 3 | 18 |
| Borehole drilling, construction of water sump and movement of vehicles | Fear of farm attacks by farmers due to strangers in the area | Safety and Security | - (ve) | 6 | 3 | 2 | 4 | 44 | • Notify the local farmer's forum (Agri-Kuruman and affected forums)<br>• Comply with all the local safety requirements | 2 | 1 | 1 | 1 | 04 |
| **Decommissioning Phase** | | | | | | | | | | | | | | |
| Decommissioning | Dust generated from removal of site infrastructures and from spreading of topsoil | Air Quality | - (ve) | 6 | 1 | 1 | 4 | 32 | • Topsoil must be spread during less windy days<br>• Vegetation cover must be introduced as soon as possible to avoid soil erosion<br>• Implement dust suppression measures to minimize dust | 4 | 1 | 1 | 2 | 12 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Revegetation must be done during rainy season | | | | | |
| Decommissioning | Hydrocarbons spillages and wildlife deaths from Vehicles | Fauna and Flora | - (ve) | 6 | 1 | 2 | 3 | 27 | • Protect vegetation and soil by avoiding hydrocarbon spillages<br>• Vehicles must make use of existing roads to avoid destruction of vegetation | 4 | 1 | 2 | 2 | 14 |
| Decommissioning | Rehabilitation activities (spreading of topsoil, removal of infrastructures and rehabilitation of access roads) will assist to reduce the negative visual impact of mining on the receiving environment. | Visual | + (ve) | 8 | 1 | 5 | 4 | 56 | • All unnecessary infrastructure must be removed from the site<br>• Spread topsoil over the rehabilitated area<br>• Surface water and drainage lines must be rehabilitated to create a free-draining topography<br>• Re-vegetate the rehabilitated areas; Ensure that the all boreholes are closed with a steel cap | 8 | 1 | 5 | 4 | 56 |
| Decommissioning | Increase of ambient noise levels from vehicles movements | Noise | - (ve) | 6 | 1 | 1 | 3 | 24 | • Trucks, machinery, and equipment must be regularly serviced to ensure noise levels are not exceeded<br>• Reduce the vehicles speed limits<br>• Switch off equipment when not in use | 4 | 1 | 1 | 2 | 12 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decommissioning | Restoration of the surrounding land and its land use | Soil, Land Use and Land Capabilities | + (ve) | 8 | 1 | 5 | 5 | 70 | • No mitigation measure is required for this impact as is positive and land is reinstated back to the state prior prospecting activities | 8 | 1 | 5 | 5 | 70 |
| | Soil and Land contamination from Hydrocarbons spillages | Soil, Land Use and Land Capabilities | + (ve) | 8 | 1 | 4 | 4 | 52 | • Protect vegetation and soil by avoiding hydrocarbon spillages<br>• Vehicles must make use of existing roads to avoid destruction of vegetation<br>• Alien invasive control program must be adhered to | 8 | 1 | 4 | 4 | 52 |

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

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

**Table 13: Positive and Negative Impacts of the Project**

| Positive Impacts from the proposed activity | Negative Impacts from the proposed activity |
|---|---|
| **Discovery of new resources:** This project will assist in expanding information of available resources within the area. | **Noise**: through the movement of vehicles and operation of machineries. |
| **Local Market Boost**: Contractors on site will rely on local market for materials, beverages and food | **Removal of vegetation:** for the purpose of site establishment and during drilling |
| **Good environmental management**: All potential impacts that will be generated from the development of the project will be managed through the implementation of the EMP | **Habitat destruction:** by removing the vegetation |
| | **Change in land capability:** Prospecting activities will not have so much impact on the land capability, however, this impact cannot be ruled out completely. |
| | **Generation of Dust**: due to the nature of the road that will be used (gravel), there will be minimal dust that will be generated. |
| | **Groundwater Contamination;** drill rig will be used to intersect different rock layers underneath the earth surface, should it get into contact with the acquirer layers it may have an impact of the underground water resources. |
| | **Waste generation** Solid waste such as waste rock and litter will be generated and may be deposited in and around the site if not properly managed. |

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

*With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).*

Please refer **Table 9** above for a full description of the Impact Assessment including mitigation measures.

### 1.8.9 Motivation where no alternative sites were considered.

The selected/preferred site, activities and technology to be used is chosen based on the attributes and characteristics of the underlying geology of the area.

### 1.8.10 Statement motivating the alternative development location within the overall site

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

The preferred site is based on the desktop analysis of the geology of the area. The site is potentially underlain by reserves of the minerals to be prospected for, it is for this reason why prospecting activities are to be carried out to verify the availability of minerals and the feasibility of mining them in future.

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

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

The potential impacts were identified during the site visit and through literature review of the same activities. The receiving environment and its surrounds were assessed and studied to understand all natural (and social) features that would be affected by the proposed development. The generic criteria and systematic approach used to identify, describe and assess impacts as outlined in this report is stated in the above section, this was done in order to determine the significance of each activity rated. The following parameters were used to calculate the impact rating:

**Table 14: parameters were used to calculate the impact rating**

| Parameter | Description | |
|---|---|---|
| **Nature of Impact (N)** | Positive (+) | Impact will be beneficial to the environment (a benefit). |
| | Negative (-) | Impact will not be beneficial to the environment (a cost). |
| | Neutral (0) | Where a negative impact is offset by a positive impact, or mitigation measures, to have no overall effect. |
| **Magnitude (M)** | The magnitude of an impact on an environmental value is an assessment of the geographical extent, duration and severity that the impact will have. These are rated from Minor (2) - Negligible effects, Low (4) - Minimal effects, Moderate (6) - Notable effects, High (8) - Considerable effects, and Very High (10) - Severe effects on biophysical or social functions/processes. Includes areas/environmental aspects which have already been altered significantly, and have little to very high conservation importance. | |
| **Extent (E)** | Refers to the geographical extent of the resultant impact, whether local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high). | |
| **Duration (D)** | Refers to the duration that the resulting impact will last, whether<br>• The lifetime of the impact will be of a very short duration (0 - 1 years) - assigned a score of 1;<br>• The lifetime of the impact will be of a short duration (0 - 5 years) - assigned a score of 2;<br>• Medium-term (5 - 15 years) - assigned a score of 3;<br>• Long term (> 15 years) - assigned a score of 4;<br>• Permanent - assigned a score of *5* (the impact is irreversible) | |
| **Probability (P)** | Refers to the probability/chances of the impact to happen. Probability will be estimated on a scale of 1 - 5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures). | |

Once the impact criteria have been ranked for each impact, the significance of the impacts will be calculated using the following formula:

**Significance Points (SP) = (Magnitude + Extent + Duration) x Probability**

Significance Points: Significance points are the points assigned to the impact based on its importance in affecting the surrounding environment. Significance points of 0 - 30 are assigned to each impact, where 0 - 30 is considered to be of Low significance, 31 - 60 is considered to be of Medium significance and 61 - 100 is considered to be of High significance.

**Table 15: Positive and Negative impacts**

| | | |
|---|---|---|
| **Significance of Predicted NEGATIVE Impacts** | | |
| Low | 0 - 30 | Where the impact will have a relatively small effect on the environment and will require minimum or no mitigation and as such have a limited influence on the decision |
| Medium | 31 - 60 | Where the impact can have an influence on the environment and should be mitigated and as such could have an influence on the decision unless it is mitigated. |
| High | 61 - 100 | Where the impact will definitely have an influence on the environment and must be mitigated, where possible. This impact will influence the decision regardless of any possible mitigation. |
| **Significance of Predicted POSITIVE Impacts** | | |
| Low | 0 - 30 | Where the impact will have a relatively small positive effect on the environment. |
| Medium | 31 - 60 | Where the positive impact will counteract an existing negative impact and result in an overall neutral effect on the environment. |
| High | 61 - 100 | Where the positive impact will improve the environment relative to baseline conditions. |

**Significance Points (Without Mitigation) = (Magnitude + Extent + Duration) x Probability**

These are the points assigned to suggested mitigation measures for each impact without the mitigation measures and are ranked in the same procedure that has been explained above, where 0 - 30 is assigned to low risk impact on the environment, 31 - 60 is assigned to medium risk impact on the environment and 61 - 100 is assigned to high risk impact on the environment.

**Significance Points (After Mitigation) = (Magnitude + Extent + Duration) x Probability**

These are the points assigned to suggested mitigation measures for each impact. The mitigation efficiency measures are ranked in the same procedure that has been explained above, where 0 - 30 is assigned to very efficient impact mitigation measures, 31 - 60 is assigned to medium efficient mitigation measures and 61 - 100 to highly inefficient impact mitigation measures.

## 1.10 Assessment of each identified potentially significant impact and risk

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

Refer to **table 9** above for the Identified Potentially Significant Impacts and Risks.

## 1.11 Summary of specialist reports.

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

**Table 16: Summary of Specialist Reports**

| LIST OF STUDIES UNDERTAKEN | RECOMMENDATIONS OF SPECIALIST REPORTS | SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT **(Mark with an X where applicable)** | REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED. |
|---|---|---|---|
| Biodiversity Assessment study | • The removal of natural vegetation is unavoidable but the area should be rehabilitated with indigenous plant located in and around the proposed project area;<br>• All ablution facilities must be provided to the of 1 is to 15 employees;<br>• Prospecting should take place 50 meters away from the watercourses | **X** | The recommendations have also been included on section 1.12.1. |
| Heritage and Archaeological Study | • The proposed prospecting may be approved to proceed as planned under observation that project work does not extend beyond the surveyed site.<br>• Any additional information regarding occurrence of sensitive heritage sites must be included in the updated heritage report.<br>• Should any unmarked burials be exposed during construction, potential custodians must be trekked, consulted and relevant rescue/ relocation permits must be obtained from SAHRA and or Department of Health before any grave relocation can take place. Furthermore, a professional archaeologist must be retained to oversee the relocation process in accordance with the National Heritage Resources Act 25 of 1999.<br>• The recorded burial site must be marked to avoid any accidental damage during prospecting.<br>• Should chance archaeological materials or human burial remains be exposed during subsurface construction work on any section of the proposed prospecting laydown sites, work should cease on the | **X** | The recommendations have also been included on section 1.12.1. |

| | | | |
|---|---|---|---|
| | affected area and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimize disruption in construction scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the NHRA regulations.<br>• If during development, operational or closure phases of this project, any person employed by the applicant, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance, work must cease at the site of the find and this person must report this find to their immediate supervisor, and through their supervisor to the site manager.<br>• The Site Manager must then make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area before informing ISS<br>• In the event that archaeological materials are unearthed, all prospecting activities within a radius of at least 20m of such indicator should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist should be contacted immediately<br>• It is the responsibility of the applicant to protect the site from publicity (i.e., media) until a mutual agreement is reached.<br>• Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement by SAHRA<br>• The findings of this report, with approval of the SAHRA, may be classified as accessible to any interested and affected parties within the limits of the laws<br>• The chance finds process will be implemented when necessary especially when archaeological materials and burials are encountered during subsurface construction activities. | | |

## 1.12 Environmental impact statement

### 1.12.1 Summary of the key findings of the environmental impact assessment;

#### I. Biodiversity Study

Based on Mucina & Rutherford's (2006) classification of South Africa's vegetation, the proposed project area falls within a least threatened ecosystem. A site survey was conducted (on a selected farm portions) and the floral and faunal composition of the area determined and it was concluded that major impacts associated with the development are likely to occur during the prospecting phase of the development. All of the prospecting phase impacts can be fully mitigated as they are unavoidable consequences of the development, but they can be mitigated accordingly.

Important mitigation recommendations associated with the proposed development would include ensuring that the disturbed footprint is kept to a minimum and ensuring compliance to the recommended mitigation measures by any contractors (project proponent) used on the project.

It is recommended that the management measures stipulated in this report be included into the proposed projects official EMP and that these are assessed for efficacy during all phases of the project and adapted accordingly to ensure minimal disturbance of the study areas' ecology.

#### II. Heritage and Archeological Study

The study did not find any permanent barriers to the proposed prospecting right application. It is the considered opinion of the author that the proposed prospecting may proceed from a heritage resources management perspective, provided that mitigation measures are implemented if and when required. The following recommendations are based on the results of the AIA/HIA research, cultural heritage background review, site inspection and assessment of significance.

The following recommendations must be adopted for the prospecting right:

- The proposed prospecting may be approved to proceed as planned under observation that project work does not extend beyond the surveyed site.

- The recorded burial site must be marked to avoid any accidental damage during prospecting.

- Any additional information regarding occurrence of sensitive heritage sites must be included in the updated heritage report.

- Should any unmarked burials be exposed during construction, potential custodians must be trekked, consulted and relevant rescue/ relocation permits must be obtained from SAHRA and or Department of Health before any grave relocation can take place.

### 1.12.2 Site Map

See **Figure 2** for the site map.

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

All the positive and negative impacts pertaining to the proposed project has been outlined in detail in Table 10 above.

## 1.13 Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

*(Based on the assessment and where applicable the recommendations from the specialist, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation)*

The objective of the identified mitigation measures is to ensure that the impacts are minimised or avoided, where impacts cannot be avoided, rehabilitation measures are to be implemented upon closure, and as part of the closure objectives of the project. All the potential (negative) impacts identified have been assessed and found to be of high to medium high in significance and after applying the mitigation measures, the impacts were lower.

The EMPr addresses the environmental impacts associated with the project during Construction, Operational, Decommissioning and Post Closure Phases of the proposed project. The objectives of the EMPr will be to provide detailed information that will advise the planning and design of prospecting activities in order to avoid and/or reduce impacts that may be detrimental to the environment.

## 1.14 Aspects for inclusion as conditions of Authorisation.

*(Any aspects which must be made conditions of the Environmental Authorisation).*

- Existing access routes must be used to access the point of interest. The access routes should be maintained to ensure that other users are not affected by the use of routes for the development.
- Ensure that the access roads are well maintained and sprayed with water when necessary to suppress dust emissions/generation.
- Disturbed areas must be rehabilitated to a quality that matches or replicates the surrounding area,
- All wastes generated must be disposed of at an appropriate registered landfill and disposal certificate be kept on site;

### 1.15 Description of any assumptions, uncertainties and gaps in knowledge.

*(Which relate to the assessment and mitigation measures proposed)*

It is assumed that information obtained from Kuruman Museum, regarding sensitivities, biodiversity, climatic condition, heritage and any other related information is a true flection of the existing condition of the site.

### 1.16 Reasoned opinion as to whether the proposed activity should or should not be authorised

#### 1.16.1 Reasons why the activity should be authorized or not.

The applicant is applying for a prospecting right which will be undertaken through drilling of only 10 boreholes which has low impact on the environment. Should the mitigation measures and monitoring programmes proposed in this document be implemented on site, no fatal flaws could be identified that were deemed as severe as to prevent the activity from continuing. In addition to this, while the area is marked as a CBA type 2, the area is no longer pristine, but has activities such as the waste treatment site, informal dwellings, shopping mall at the border and residential houses. These activities are more damaging than the proposed prospecting activities.

#### 1.16.2 Conditions that must be included in the authorisation.

The management objectives should be considered for inclusion in the environmental authorisation. The EMPr of this proposed project must form part of the contractual agreement and be adhered to by both the contractors and the applicant. The applicant must also ascertain that there is representation of the applicant on site at all times to, ensure compliance with the conditions of the EMPr. Speed limits must be maintained on all roads.

### 1.17 Period for which the Environmental Authorisation is required.

The authorisation is required for the duration of 5 years from the date of granting of the prospecting right.

### 1.18 Undertaking

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

An undertaking is provided at the end page of this report.

### 1.19 Financial Provision

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

The financial provision estimated is **R76,559.45.**

#### 1.19.1 Explain how the aforesaid amount was derived.

The amount was derived from using the 2020 Master Rates with the determination of the quantum for closure, it must be assumed that the infrastructure had no salvage value (clean closure).

#### 1.19.2 Confirm that this amount can be provided for from operating expenditure.

*(Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining work programme, Financial and Technical Competence Report*).

It is confirmed that this amount can be provided for, from the operating expenditure.

### 1.20 Specific Information required by the competent Authority

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

**a. Impact on the socio-economic conditions of any directly affected person.**

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

The proposed prospecting is within a private land, drilling operation is normally a short to medium term in duration, creating short term job opportunity and potential to improve local economy. The proposed activity will have very minimal socio-economic impact to the farm owners as only 10 boreholes will be drilled. Groundwater resources pollution potential and extent is very low.

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

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

The Archaeological and Heritage study was conducted and the findings is included in this report under section 1.11(summary of specialist conducted).

### 1.21 Other matters required in terms of sections 24(4) (a) and (b) of the Act.

*(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible*

*alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as Appendix).*

No other matters required in terms of sections 24(4) (a) and (b) of the Act

## PART B

## ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

### 1. ENVIRONMENTAL MANAGEMENT PROGRAMME.

### 1.1 Details of the EAP,

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

It is confirmed that the requirements for the provision of the details and expertise of the EAP are already included in PART A, **section (i).**

### 1.2 Description of the Aspects of the Activity

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

It is confirmed that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (ii).

### 1.3 Composite Map

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

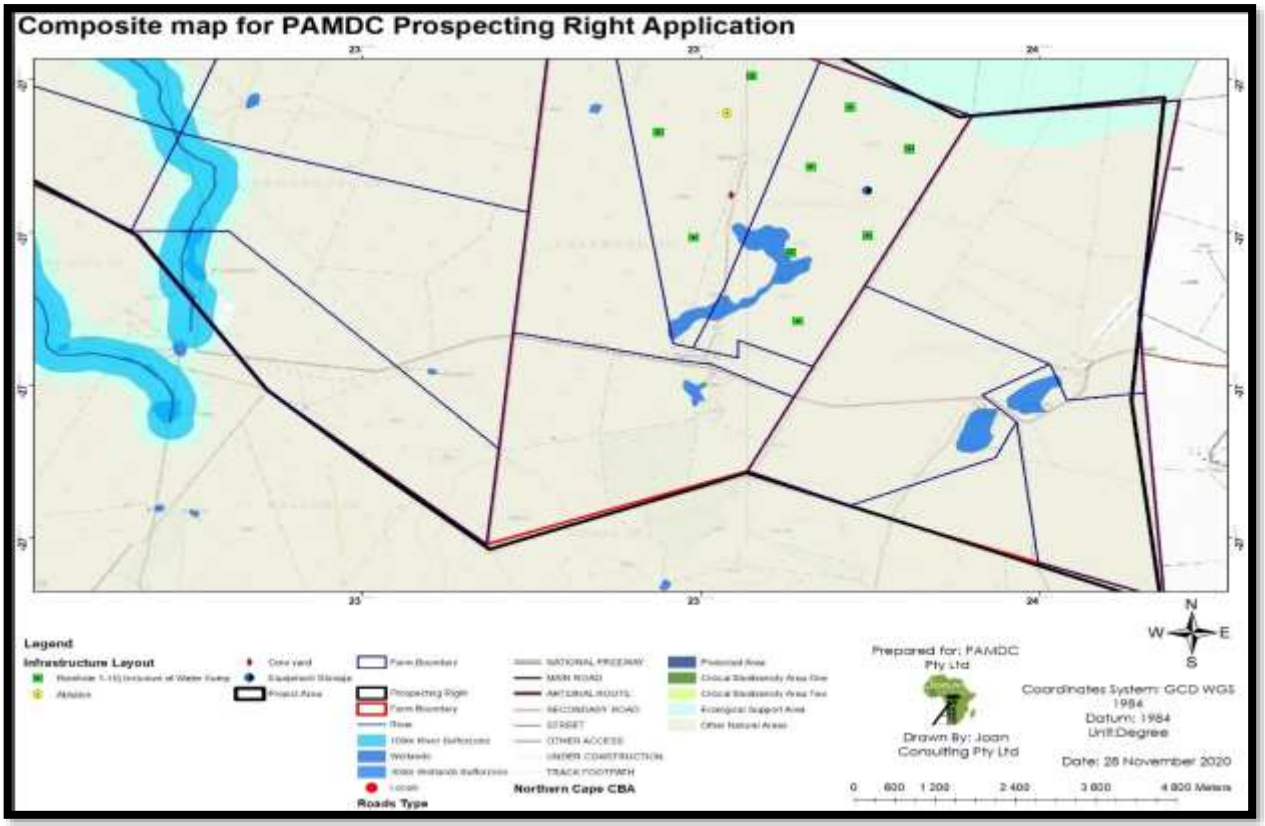


**Figure 8:Composite map of the area.**

## 1.4 Description of Impact management objectives including management statements.

### 1.4.1 Determination of closure objectives.

(Ensure that the closure objectives are informed by the type of environment described*)*

The main objective will be to rehabilitate and return the borehole drill areas, access tracks and any areas affected as a result of invasive prospecting activities (including temporary infrastructure) to resemble the surrounding landscape (natural/ open) with no remaining infrastructure or potential hazards to people or the environment.

Further environmental objectives include:

- Ensure that no temporary infrastructure is left on-site and ensure environmental and safety risks are minimised;
- Rehabilitate areas disturbed by prospecting activities;
- Rehabilitated areas must not pose a safety hazard to humans and animals;
- Establish a self-sustaining and stable vegetation cover over the area disturbed by the prospecting activities;
- Minimise the establishment of alien vegetation;
- Ensure the rehabilitated landform is free draining;
- Protect drainage lines and watercourses; and
- Ensure adherence to local, provincial and national regulatory requirements.

The overall goal for closure of the prospecting site is to, ensure that the land is stable and safe in the long-term. For post closure, the disturbed area will be rehabilitated.

The closure will involve removal of all machinery/equipment from site. All material stockpiles will be removed from the site or levelled. All alien vegetation will be removed, if any established.

All waste types will be removed and disposed properly. No rubble or domestic waste will be left lying in and around the site.

### 1.4.2 Volumes and rate of water use required for the operation.

The estimated water required to cool down the drill rig is approximately 250 litres per day. The Applicant will purchase water from the local municipality which will be delivered using the tanker to use on site. The water will be used for dust suppression, cooling the rig and any other use onsite.

### 1.4.3 Has a water use license has been applied for?

A water use licence is not required for the project because of the following reasons;

- The Applicant will make use of water obtained from a legal source/purchase water to use on site and not commission a new abstraction point;
- No waste or water containing waste will be disposed in a manner which may result in pollution;
- No waste or water containing waste will be discharged into the environment.
- No activities which may result in pollution will take place within a regulated area of a watercourse.

### 1.4.4 Impacts to be mitigated in their respective phases

**Table 17: Measures to rehabilitate the environment affected by the undertaking of any listed activity**

| Activity | Impact | Aspect | Phase | Size and scale | Mitigation measures | Compliance with standards | Time period for implementation | Standard to be Achieved |
|---|---|---|---|---|---|---|---|---|
| Clearing of vegetation and movement of vehicles for site establishment | On Game Lodges, Lodges & Guest Houses:<br>• Dust Generation<br>• Noise Generation | • Air Quality<br>• Noise | Construction | 0.4 | • Dust suppression using water will be under taken to manage dust emitting from vegetation removal<br>• Footprint earmarked for vegetation removal must be clearly marked<br>• Trucks, machinery, and equipment must be regularly serviced to reduce noise levels | Compliance with Ambient air and noise quality Standards | Throughout the life cycle of the prospecting | To remain within air quality ambient level |
| Clearing of vegetation and movement of vehicles for site | Impacts on Game Lodge<br>Dispersing and disruption of animals | Fauna | Construction | 0.4 | • No wild animal may under any circumstance be handled, removed or be interfered with<br>• No wild animal may be fed on site<br>• No wild animal may under any circumstance be hunted, snared, | Compliance with conservation of wild life Standards | Throughout the life cycle of the prospecting work | Prevent and protect and conserve the lives of fauna |

| Activity | Impact | Aspect | Phase | Size and scale | Mitigation measures | Compliance with standards | Time period for implementation | Standard to be Achieved |
|---|---|---|---|---|---|---|---|---|
| establishment | | | | | captured, injured or killed<br>• No wild animal may under any circumstance be hunted, snared, captured, injured or killed<br>• Remove and dispose of any snares or traps found on or adjacent to the site | | | |
| Clearing of vegetation and movement of vehicles for site establishment | Impact on Settlement and Residential Negatively impacting on residents' livelihoods | Social | Construction | 0.4 | • The applicant must consult with the affected parties on which times are favourable for them before undertaking the activities which could negatively impact their livelihood | Compliance with standards within the IDP | Throughout the life cycle of the prospecting work | Prevent and protect the livelihood of farmers owners and local residence |

| Activity | Impact | Aspect | Phase | Size and scale | Mitigation measures | Compliance with standards | Time period for implementation | Standard to be Achieved |
|---|---|---|---|---|---|---|---|---|
| Clearing of vegetation and movement of vehicles for site establishment | Fear of farm attacks by farmers due to strangers in the area | Safety and Security | Construction | 0.4 | • Notify the local farmer's forum (Agri-Kuruman and affected forums)<br>• Comply with all the local safety requirements | Compliance with health and safety standards | Throughout the life cycle of the prospecting work | Safety of all I&AP's |
| Borehole drilling, construction of water sump and movement of vehicles | Increased noise levels from movement of vehicles | Noise | Operational | 0.4 | • Trucks, machinery, and equipment must be regularly serviced to reduce noise levels | Compliance with health and safety standards | Throughout the life cycle of the prospecting work | Safety of all I&AP's |

| Activity | Impact | Aspect | Phase | Size and scale | Mitigation measures | Compliance with standards | Time period for implementation | Standard to be Achieved |
|---|---|---|---|---|---|---|---|---|
| Borehole drilling, construction of water sump and movement of vehicles | Disruption and destruction of animal life | Fauna | Operational | 0.4 | • No wild animal may under any circumstance be handled, removed or be interfered with<br>• No wild animal may be fed on site<br>• No wild animal may under any circumstance be hunted, snared, captured, injured or killed. | Compliance with conservation of wild life Standards | Throughout the life cycle of the prospecting work. | Prevent and protect and conserve the lives of fauna |
| Borehole drilling, construction of water sump and movement of vehicles | Disruption and destruction of vegetation | Flora | Operational | 0.4 | • Do not disturb, deface, destroy or remove plants or natural features outside the demarcated area<br>• No open fires are permitted under trees and no vegetative matter may be removed for firewood | Compliance with conservation of wild life Standards | Throughout the life cycle of the prospecting work. | Prevent and protect and conserve the lives of flora |

| Activity | Impact | Aspect | Phase | Size and scale | Mitigation measures | Compliance with standards | Time period for implementation | Standard to be Achieved |
|---|---|---|---|---|---|---|---|---|
| Clearing of vegetation and movement of vehicles for site establishment. | On Game Lodges, Lodges & Guest Houses:<br>• Dust Generation<br>• Noise Generation | Air Quality<br>Noise | Operational | 0.4 | • Dust suppression using water will be under taken to manage dust emitting from vegetation removal<br>• Footprint earmarked for vegetation removal must be clearly marked<br>• Trucks, machinery, and equipment must be regularly serviced to reduce noise levels | Compliance with health and safety standards | Throughout the life cycle of the prospecting work. | Safety of all I&AP's |
| Decommissioning | Hydrocarbons spillages and wildlife deaths from Vehicles | Flora and Fauna | Decommissioning | 0.4 | • Protect vegetation and soil by avoiding hydrocarbon spillages<br>• Vehicles must make use of existing roads to avoid destruction of vegetation | Compliance with conservation of wild life Standards | Throughout the life cycle of the prospecting work. | Prevent and protect and conserve the lives of flora |

### 1.5 Impact Management Outcomes

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

All the above requirements are addressed in **Table 17** above

### 1.6 Impact Management Actions

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

All the above requirements are addressed in **Table 17** above.

## 1.7 Financial Provision

### 1.7.1 Determination of the amount of Financial Provision.

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

Closure and rehabilitation will be done with reference to the closure objectives. The closure objectives include:

- Rehabilitate the disturbed area back to its natural state as close as possible.
- Leave no remnant impacts on the neighbouring farmers and rehabilitate to allow re-vegetation.
- Leave no open borehole on site. Close the drill holes with caps.
- Removing all the mobile infrastructure and all other items used during operation
- All waste types will be removed and be disposed properly.
- Final rehabilitation will be completed within specified period as guided by the Regional Manager.
- To safeguard the safety and health of humans and animals on the site.
- To limit and manage the visual impact of the Prospecting activities.
- To manage and limit the impact to the surface and groundwater aquifers in such a way that an acceptable water quality and yield can still be obtained, when a closure certificate is issued.
- The closure objectives are to minimise disturbance whenever possible so that normal land use can continue after closure.

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

Land owners will be given an opportunity during the 30 days consultation period to bring forth any environmental issue that they might be aware which might have been omitted from the report.

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

During rehabilitation, all drilled 10 boreholes will be closed with caps to prevent surface water to flow inside and contaminate ground water. All infrastructure will be removed, and surface cleaned up.

**Table 18: Rehabilitation measures**

| Activity | Extent Before Closure | Area After Rehabilitation and Closure |
|---|---|---|
| Boreholes | 0.032 ha | Area completely rehabilitated- boreholes closed with caps. |
| Mobile office and ablution facilities | 0.2ha | Area completely rehabilitated- all infrastructure removed. |
| Disturbed surfaces drilling | 0.2ha | Clean, rip and fertilize |
| Total area to be disturbed. | 0.4 ha | Area completely rehabilitated- all infrastructure removed |

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

The closure objectives are aligned with the site and the rehabilitation that must be done. The closure objectives are aimed at leaving the project site in a state which is safe and which will allow natural succession. The rehabilitation plan responds to these closure objectives and aims to carry out tasks that will ensure that the closure objectives are met.

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

Financial Provision for Rehabilitation for **year 1** is calculated on **table 15** below;

**Table 19: Financial Provision for Rehabilitation for year 1.**

| Applicant: | **Pan African Mineral Development Company (Pty) Ltd (PAMDC)** | | | | **Ref: NC30/1/1/2/12534PR** | | |
|---|---|---|---|---|---|---|---|
| Evaluators: | **Lufuno Mutshathama** | | | | **Date: November 2020** | | |
| **No.** | **Description** | **Unit** | **A** | **B** | **C** | **D** | **E=A*B*C*D** |
| | | | **Quantity** | **Master** | **Multiplication** | **Weighting** | **Amount** |
| | | | | **Rate 2020** | **factor** | **factor 1** | **(Rands)** |
| 1 | Dismantling of processing plant and related structures (including overland conveyors and power lines) | $M^3$ | 0 | 17.32 | 1 | 1 | 0.00 |
| 2 (A) | Demolition of steel buildings and structures | $M^2$ | 0 | 241.33 | 1 | 1 | 0.00 |
| 2 (B) | Demolition of reinforced concrete buildings and structures | $M^2$ | 0 | 355.65 | 1 | 1 | 0.00 |
| 3 | Rehabilitation of access roads | $M^2$ | 0 | 43.18 | 1 | 1 | 0.00 |
| 4 (A) | Demolition and rehabilitation of electrified railway lines | m | 0 | 419.16 | 1 | 1 | 0.00 |
| 4 (B) | Demolition and rehabilitation of non-electrified railway lines | m | 0 | 228.63 | 1 | 1 | 0.00 |
| 5 | Demolition of housing and/or administration facilities | $M^2$ | 0 | 482.67 | 1 | 1 | 0.00 |
| 6 | Opencast rehabilitation including final voids and ramps | ha | 0 | 245,652.01 | 1 | 1 | 0.00 |
| 7 | Sealing of shafts adits and inclines | $M^3$ | 0 | 129, 56 | 1 | 1 | 0.00 |
| 8 (A) | Rehabilitation of overburden and spoils | ha | 0 | 168,679.36 | 1 | 1 | 0.00 |
| 8 (B) | Rehabilitation of processing waste deposits and evaporation ponds (basic salt producing waste) | ha | 0 | 210,087.09 | 1 | 1 | 0.00 |
| 8 (C) | Rehabilitation of processing waste deposits and evaporation ponds (acidic metal-rich waste) | ha | 0 | 610,192.47 | 1 | 1 | 0.00 |
| 9 | Rehabilitation of subsided areas | ha | 0 | 141,243.55 | 1 | 1 | 0.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 | General surface rehabilitation | ha | 0.4 | 133,622.49 | 1 | 1 | 53,448.996 |
| 11 | River diversions | ha | 0 | 133,622.49 | 1 | 1 | 0.00 |
| 12 | Fencing | m | 0 | 152,42 | 1 | 1 | 0.00 |
| 13 | Water management | ha | 0 | 50,807.03 | 1 | 1 | |
| 14 | 2 to 3 years of maintenance and aftercare | ha | 0.4 | 17,782.47 | 1 | 1 | 7,112.99 |
| 15 (A) | Specialist study | Sum | 1 | 0.00 | 1 | 1 | 0.00 |
| 15 (B) | Specialist study | Sum | 1 | 0.00 | 1 | 1 | 0.00 |
| | | | | | **sum** | | **60,516.99** |
| | | | subtotal 1 | **weighting factor 2** | 1 | | 60,516.99 |
| 1 | Preliminary & General | | 10% | | | | 6,056.12 |
| 1 | Contingencies | | 10% | | | | 6,056.12 |
| | | | Subtotal 2 | | | | 66, 573.45 |
| | | | VAT (15%) | | 15% | | 9,986.02 |
| | | | | **Grand Total** | | | **76,559.45** |

**vi. Confirm that the financial provision will be provided as determined.**

The financial provision will be provided as determined upon request by the competent authority.

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

### 1.8 Monitoring of Impact Management Actions.

Monitoring of the impact management actions will be done by the Environmental Control Officer and the project manager. The ECO will be based on site to ensure that all management actions are implemented where required. Should, under any circumstance, the contractor's activities pose any damage on the environment and not comply with measures and impact management actions as stipulated in the EMP, the contractor will be held responsible for any such non-compliance. It is therefore the responsibility of the contractor to ensure that all relevant measures are taken to rectify such damage, at the contractor's expense. It is the duty of the ECO to monitor compliance with the EMP, and report and notify the contractor of any non-compliance, highlighting the following:

- Details of the nature of the non-conformance;
- The actions to be taken to correct the situation; and
- The date by which each corrective action should be executed.

The contractor will also be liable to produce a Corrective Action Plan, within which he/she will detail how the required corrective actions will be implemented. This plan will be submitted to the ECO and Project Manager for approval prior to implementation and the corrective measures have been carried out, the ECO will then be required to sanction the success or failure of the corrective action.

### 1.9 Monitoring and reporting frequency

Monitoring will be done monthly and the reporting to the competent authority will be done annually. Any non-compliances will be recorded and plans of actions documented.

### 1.10 Responsible persons

For this EMP to be implemented effectively, all role players involved in this project need to comply with the directives set out. A concise description of impacts and their mitigation/management measures will be provided and understood by all role players responsible for the implementation and monitoring of the mitigation measures

This project will comprise of the following responsible role players:

- Lead Authority (DMR- Northern Cape Regional)
- The Environmental Control Officer;

- The Contractor;
- The project manager and
- The Developer (Permit holder).

These parties will ensure that all conditions stated on the right are adhered to and that all environmental management requirements are met. Each person's responsibility is detailed in the Table below.

**Table 20: Responsible Persons for the Project**

| Functions | Responsibility |
|---|---|
| Prospecting right Holder | Ensuring compliance to the EMP and conditions contained in the Environmental Authorisation (EA). Contracting the Environmental Control Officer as an independent appointment to objectively monitor and implement the applicable environmental legislation. |
| Project Manager | Complete responsibility of the whole project and any contracted parties and ensuring that all environmental management facets are adhered to. The Project Manager will be supported by the ECO, with the following roles and responsibilities during the operations;<br>• Review the annual reports compiled by the Environmental Control Officer (ECO);<br>• Identify the need for remedial measures with regard to proposed works;<br>• Communicate directly with the Contractors; and<br>• Issue non-conformance notifications to Contractors that do not comply with the requirements as set out in the EMP. |
| Environmental Control Officer | • Objectively monitor, implement applicable environmental legislation, conditions of Environmental Authorisations (EA's) and the EMP.<br>• Conduct audits on compliance to applicable environmental legislation, conditions of EA's and the EMP. Including size and sensitivity of the development (on grounds of the EIA).<br>• Liaison between the relevant authorities and project team. Any changes in environmental conditions, registration and updating of all EMP documentation should be communicated and carried out by the ECO<br>• Develop environmental awareness training for all new site personnel (e.g. posters, tool box talks, signage); |

| Functions | Responsibility |
|---|---|
| | • Undertake visual inspections of the activities of employees with regard to implementation of the requirements outlined in the EMP;<br>• Immediately notify the Project Manager of any non-compliance with the EMP, or any other complaints or issues of environmental concern;<br>• and Ensure that all environmental monitoring programmes (sampling, measuring, recording etc.) are carried out according to protocols and schedules |
| Lead Authority (DMRE) | The department responsible for approving the Environmental Authorisation application. Ensuring that the monitoring and adherence to EMPs is carried out, by going through/reviewing audit reports submitted by the ECO and conducting regular site visits. |
| Contractor | A Contractor will be employed by the developer for different components of the project. The Contractor's primary responsibilities are to construct the works and ensure compliance with the EMP whilst carrying out the work. |

### 1.11 Time period for implementing impact management actions

The impact management actions must be implemented immediately or within a day of being approved.

### 1.12 Mechanism for monitoring compliance

**Table 21: Mechanisms for monitoring compliance.**

| Associated Potential Impacts | Functional Requirements for Monitoring | Roles and Responsibilities | Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions |
|---|---|---|---|
| **CONSTRUCTION & OPERATIONAL PHASE** | | | |
| Noise Generation | Maintain a complaint register that is made accessible to the locals | ECO and Project Manager | Monitor Monthly |
| | Safety inspection to ensure all workers are wearing protective ear plugs during drilling | ECO and Project Manager | • Reporting Daily |
| Soil contamination by oil spills from vehicles and machinery. | • Daily inspection of operational equipment<br>• Service vehicles timeously<br>• Defective vehicles should be provided with drip tray | ECO and Project Manager | • Daily Inspection<br>• Weekly Reporting |
| Dust | • Safety inspections to ensure all workers are wearing protective gears (dust mask) during operation<br>• Dust suppression inspection on the access roads<br>• Maintain a complaint register | • ECO and Occupational Hygienist<br>• Project Manager | • Monthly Monitoring<br>• Monthly Reporting<br>• Monthly reporting/ Daily Monitoring |

| Associated Potential Impacts | Functional Requirements for Monitoring | Roles and Responsibilities | Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions |
|---|---|---|---|
| | that is made accessible to the locals | | |
| Safety and hazards | Maintain an incident register for any accidents or safety incidences. | ECO & Project Manager | Monthly Reporting |
| Soil erosion | Ensure concurrent rehabilitation (backfilling, fertilisation and or re-vegetation) is implemented throughout the life of the project | ECO and Project Manager | Monthly Reporting |
| Safety and hazards | Maintain an incident register for any accidents or safety incidences | ECO and Project Manager | Monthly Reporting |
| Solid waste such as debris and litter may be generated and deposited in and around the site. This may attract nuisance and affect the natural scenery/aesthetic quality of the site. | Inspection of waste storage and ablution facilities and the general site inspection for any oil spillages and debris from drilling | ECO and Project Manager | • Weekly Monitoring<br>• Monthly Reporting |
| Contamination of soil and underground water by spills from mobile ablution facilities. | | ECO and Project Manager | • Weekly Monitoring<br>• Monthly Reporting |

| Associated Potential Impacts | Functional Requirements for Monitoring | Roles and Responsibilities | Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions |
|---|---|---|---|
| **REHABILITATION PHASE** | | | |
| ➢ Recovery and restoration of the Natural Habitat<br>➢ Dust dispersal<br>➢ Rehabilitation of the disturbed and contaminated areas<br>➢ Re-vegetation<br>➢ Removal of all mobile infrastructure on site | ➢ Inspection of rehabilitation on site and comparison of rehabilitation progress against the rehabilitation plan<br>➢ Continuous monitoring of rehabilitation process and objectives. | • ECO & Competent Authority<br>• Safety Officer/Occupational Hygienist | Monthly, quarterly & annual inspection and reporting |

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

The performance assessment/ audit report will be submitted annually**.**

### 1.14 Environmental Awareness Plan

An environmental control officer will undertake awareness of different environmental aspect and will train the employees on how to deal with emergency situations and how to remediate such emergencies.

**(I) Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work**.

The environmental control officer will have monthly meetings to conduct environmental awareness with all the employees. There will also be a monthly environmental topic of which the notices will be pasted at the site office for the employees to see every morning as they clock- in.

**(II) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.**

The EMP details commitments in order to avoid pollution or the degradation of the environment. Compliance with the EMP commitments will form part of the contractors' contract. Employees will also be briefed regarding the EMP commitments prior to the commencement of operations. The ECO will monitor that the commitments are being adhered to by the contractors and employees.

### 1.15 Specific information required by the Competent Authority

*(Among others, confirm that the financial provision will be reviewed annually).*

The financial provision will be reviewed annually as per the requirements of Section 24(P)(3) of NEMA. The Applicant commits to conduct EMP performance assessments as required in terms of Regulation 55 of the MPRDA on a biennial basis and external environmental audits of the EMP and Environmental Authorisation as per the NEMA EIA Regulations.

## 2. UNDERTAKING

The EAP herewith confirms

**2.1** The correctness of the information provided in the reports ☒

**2.2** The inclusion of comments and inputs from stakeholders and I&APs; ☒

**2.3** The inclusion of inputs and recommendations from the specialist reports where relevant; ☒ and

**2.4** That the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected. Parties are correctly reflected herein. ☒

**Signature of the environmental assessment practitioner.**

Joan Consulting (Pty) Ltd

**Name of company:**

November 2020

**Date**

**-END-**