



BASIC ASSESSMENT REPORT & ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

PREPARED FOR: PAN AFRICAN MINERALS DEVELOPMENT
COMPANY (PTY) LTD

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DMR REF: NC30/5/1/1/2/12531 PR

DATE: NOVEMBER 2020

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Company registration No: 2011/142803/07





mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORISATIONS 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 AMMENDED.

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REF NUMBER:	NC30/5/1/1/2/12531 PR

DOCUMENT SUMMARY DATA

Project: Pan African Minerals Development Company (Pty) Ltd Prospecting Right

Client: Pan African Minerals Development Company (Pty) Ltd

Contact Person: Mr Emmanuel Mulenga

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Prepared By: Mercury Shivambu

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COMPILED BY:	CHECKED & APPROVED BY:
Mercury Shivambu	Lufuno Mutshathama
DATE: November 2020	DATE: November 2020

NO.	DATE:	CLIENT REVIEW BY:	SIGNATURE:
1	November 2020		

EXECUTIVE SUMMARY

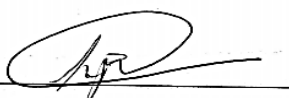
Pan African Minerals Development Company (Pty) Ltd has lodged an application for a Prospecting Right and an Environmental Authorisation to the Northern Cape Department of Mineral Resources in order to prospect for Manganese, Lead, Zinc, Limestone, Cobalt, Copper and Iron. The Prospecting Right application was assigned the reference number of NC30/5/1/1/2/12531 PR. The proposed project will aim to prospect the area of interest for the above-mentioned mineral resources. In order to undertake the prospecting activity, Pan African Minerals Development Company (Pty) Ltd requires a Prospecting Right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

Pan African Minerals Development Company (Pty) Ltd is also required to obtain an Environmental Authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998). The application process involves the submission of a Basic Assessment Report, an Environmental Management Programme and the undertaking of a Public Participation Process. Joan Consulting (Pty) Ltd has been appointed by Pan African Minerals Development Company (Pty) Ltd as the independent Environmental Assessment Practitioner to assist in complying with these requirements and regulations.

DECLARATION OF INDEPENDENCE

I, **Lufuno Prescilla Mutshathama**, declare that:

- I act as the independent environmental practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity
- I will take into account, to the extent possible, the matters listed in Regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I will ensure that information containing all relevant facts in respect of the application is distributed to the interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority;
- I will keep a register of all interested and affected parties that participated in a public participation process;
- I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F

A handwritten signature in black ink, appearing to be "Lufuno Mutshathama", written over a horizontal line.

Signature

Joan Consulting (Pty) Ltd

Company Name

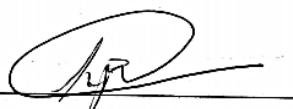
November 2020

Date

DISCLOSURE

I, **Lufuno Prescilla Mutshathama**, declare that:

- Joan Consulting (Pty) Ltd undertakes to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and will provide the competent authority with access to all information at its disposal regarding the application, whether such information is favourable to the applicant or not.
- Joan Consulting (Pty) Ltd undertakes to disclose that the company does not have and will not have any interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations

A handwritten signature in black ink, appearing to be 'L. Mutshathama', written over a horizontal line.

Signature

Joan Consulting (Pty) Ltd

Company Name

November 2020

Date

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 the 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) of the EIA Regulations, 2014, any report submitted as part of the 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 considered 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 the applications for an environmental authorisation for listed activities triggered by an application for a right or 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 environmental authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner (EAP) 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.

OBJECTIVES OF THE BASIC ASSESSMENT REPORT

The objectives of the basic assessment process are 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 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 the 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

PAMDC	Pan African Minerals Development Company
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
EIR	Environmental Impact Report
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officers
ESA	Ecological support area
EAP	Environmental Assessment Practitioner
GDP	Gross Domestic Product
I&APs	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
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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1 PART A: SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1.1 Contact Person and Correspondence Address

(a) Details of the EAP

(i) Details of the EAP

Table 1: Details of the EAP who Prepared the Report

Name of the Consultant	Joan Consulting (Pty) Ltd
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Telephone	011 791 5032
Fax	086 235 5142

(ii) Expertise of the EAP that Prepared the Report

Mercury Shivambu is an environmental and mineral licensing officer at Joan Consulting (Pty) Ltd. He holds a degree in Environmental Science from the University of Venda. Mercury Shivambu has an expertise in a wide range of environmental disciplines, including Environmental Impact Assessment (EIA), Environmental Management Programmes and Co-ordination and facilitation of the Public Participation Process. Drafting of informed recommendations on NEMA S24G applications. Mercury Shivambu has over twenty-two (22) months of experience in the field of Environmental Management, with an understanding of the South Africa's mining sector.

(iii) Expertise of the Supervising EAP

Lufuno Mutshathama is an Environmental Scientist by profession, she holds a Bachelor of Environmental Sciences degree. She is a certificated natural scientist registered with the South African Council of Natural Scientific Professionals (SACNASP Reg: 114437). She has 10 years collective experience working in the mining industry specialising in mine environmental management and mineral licensing. Of the 10 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 5 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. The EAP's resume (with past experience) is attached as (Appendix 1)

(b) Location of the Overall Activity

The project site is located in the Northern Cape Province in South Africa. It is situated at approximately 84.62 km North-West of the Hotazel and 133.75 km North-West of Kuruman and it is located south of the border of Botswana. This area falls within the Kuruman Magisterial District in the John Taolo Gaetsewe District Municipality (previously known as Kgalagadi) and under Joe Morolong Local Municipality.

Table 2: Property Details

Farm Name	Farm 703
Application Area (Ha)	151 237 Ha
Magisterial District	Magisterial District of Kuruman
Distance and Direction from Nearest Town	The farm is located at approx. 84.62 km North-West of the Hotazel and 133.75 km North-West of Kuruman
21-Digit Surveyor General Code for Each Farm Portion	C0410000000003500030
	C0410000000003500031
C0410000000003500019	C0410000000003500002
C0410000000003500044	C0410000000003500033
C0410000000003500018	C0410000000003500034
C0410000000003500017	C0410000000003500032
C0410000000003500043	C0410000000003500050
C0410000000003500016	C0410000000003500003
C0410000000003500015	C0410000000003500039
C0410000000003500023	C0410000000003500036
C0410000000003500022	C0410000000003500057
C0410000000003500021	C0410000000003500004
C0410000000003500045	C0410000000003500062
C0410000000003500064	C0410000000003500060

C0410000000003500027
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C0410000000003500010
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(c) Locality Map

See Overleaf for a Locality Map

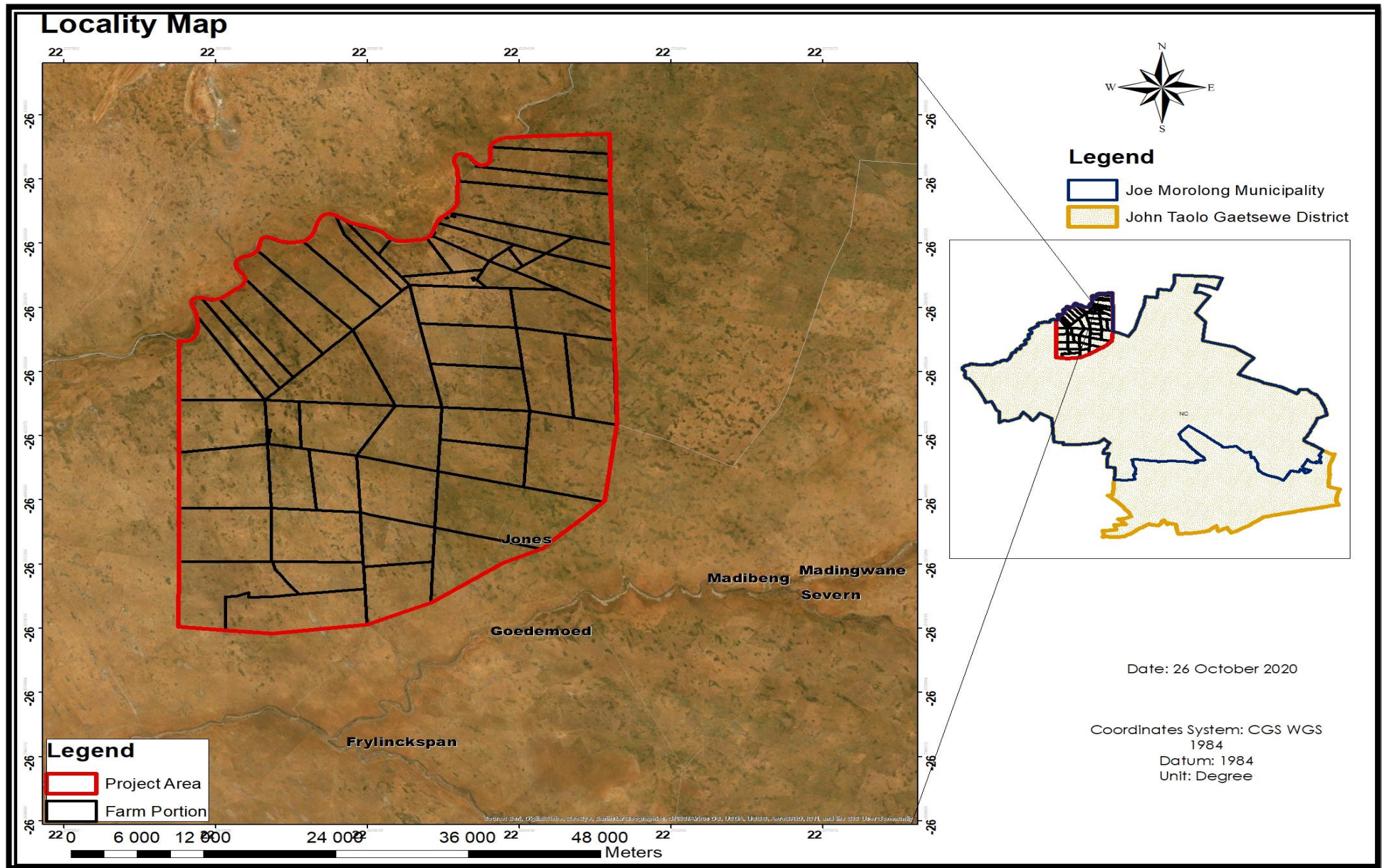
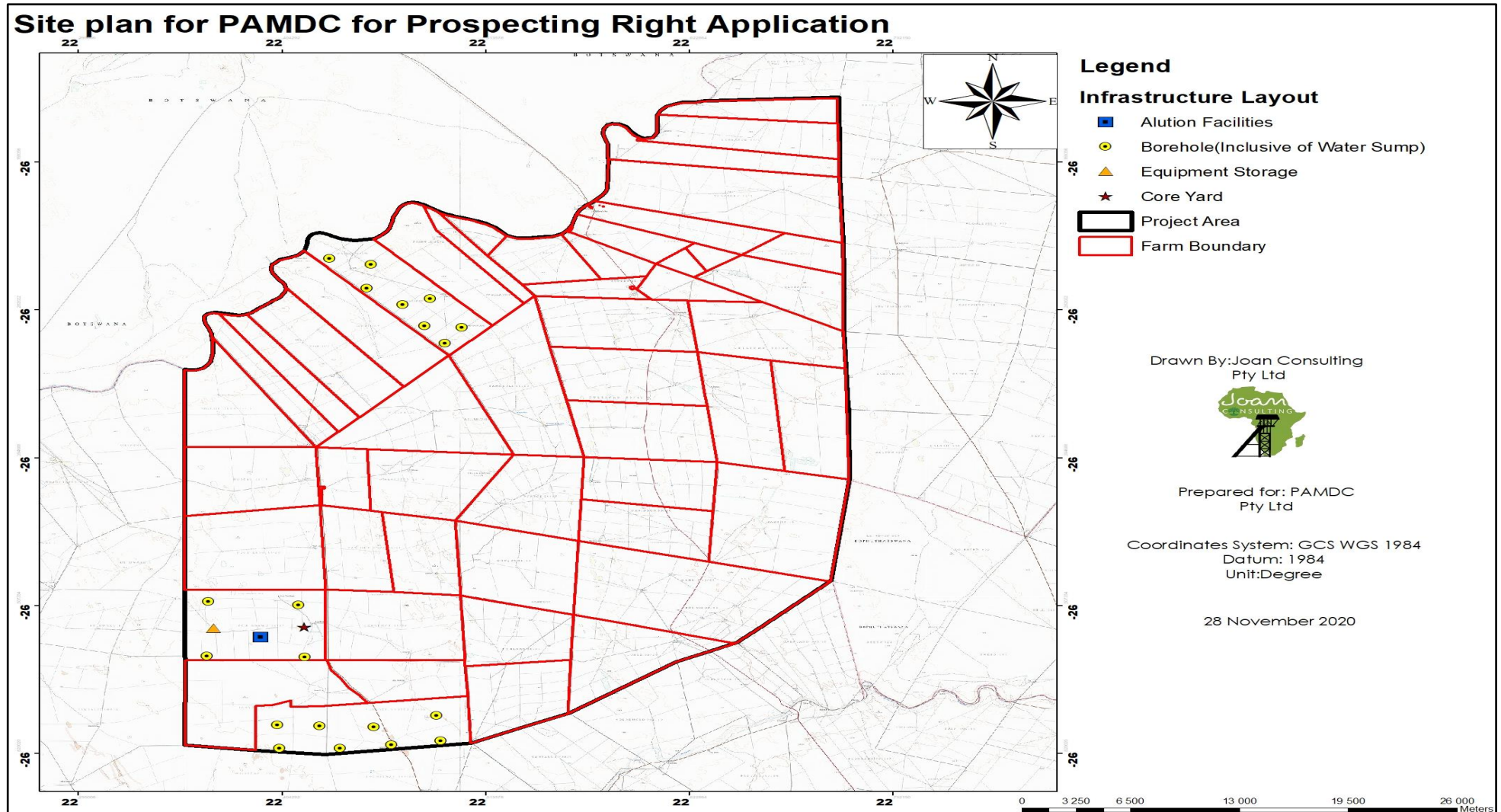


Figure 1: Locality Map

1.2 Description 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, ad infrastructure to be placed on site)



NB: This is a conceptual site plan which is subject to change depending on the findings of the desktop study, geophysical and geochemical survey

Figure 2: Site Plan

(i) Listed and Specified Activities

Table 3: NEMA Triggered Activities

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc.	Aerial extent of the Activity m ² or Ha		LISTED ACTIVITY (Mark with an X where applicable or affected).	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 or GNR 546)
Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002),	151 237 Ha		X	Activity that falls under Activity 20 - GNR R327 of 2017
Establishment of Site Office & Ablution	2000 m ²	0.2 ha	X	N/A
Establishment of Drill Sites (Drilling)	2000 m ² (100 m ² x 20 sites)	0.2 ha	X	Activity that falls under Activity 20 - GNR R327 of 2017
Access Road (Existing)	–	–	X	N/A
Water Sump	80 m ² (4 m ² x 20 holes)	0.008 ha	X	N/A
Workshop	500 m ²	0.05 ha	X	N/A
Storage Yard	500 m ²	0.05 ha	X	N/A
Total Vegetation Removed	500 m ²	0.05 ha	X	N/A

(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 Company (Pty) Ltd has lodged a prospecting right application for Manganese, Lead, Zinc, Limestone, Cobalt, Copper and Iron. The prospecting method that will be used is drilling, using the drill rig and no bulk sampling will be undertaken. The development will primarily entail drilling a total of twenty (20) boreholes. Each drill site will be about 100m². The drilled boreholes will be between 50 m and 150 m deep and a having diameter of about 0.8 m to 1.5 m. Each site will comprise of a borehole, drill rig site and a water sump. Recovered cores will be taken from each borehole to test for the targeted minerals at the laboratory.

Besides the drilling of holes which is the invasive method, there are also other prospecting activities to be undertaken which are non-invasive, thus methods that do not have physical contact with the environment. Non-invasive methods will be undertaken in phase 1 and invasive methods in phase 2 and phase 3 as explained below. The invasive activities will be undertaken as a result of the positive outcome of phase 1. The intended phases and the full description of what each phase entails are indicated below in a sequential order;

PHASE 1 - NON-INVASIVE ACTIVITIES

Literature Review

Literature survey is a comprehensive review of published and unpublished work from secondary data sources. In order to conduct the exploration programme in an efficient and effective manner, there will be an acquisition and review of information and data gathered during historical exploration on the properties (and in the general area). A short economic costing study may be undertaken to determine the likelihood of mineral concentration required to make the project feasible (and direct further work).

This may also include photo-geological and satellite interpretations. Data will be sourced from the Council for Geoscience (including high resolution aeromagnetic data sets), Universities and other libraries and previous explorers may be approached with a view to gain results. The re-evaluation of previously explored areas of similar nature is very important at this stage to build conceptual geological model.

Geological Mapping

The area will be geologically mapped on a regional basis to update information on a 1:50 000 scale using photo-geological interpretations and satellite imagery, remote sensing technologies, and using the interpretations from the previous phase as a guide. This data with assistance of 1:10 000 ortho-photo maps (and those gathered from the desktop study efforts) will be integrated in GIS systems and an upgraded digital geological model will be compiled.

Some detailed field mapping will be required in areas outlined by the quality of the information gained from historical archives. The conceptual geological model will then be upgraded prior to conducting any diamond drilling. The end product of geological mapping is a map which accurately documents rock types, alteration mineralogy, and structural data such as faults, folds, and dip of strata.

Geochemical Sampling & Anomaly Screening

The target mineralization identified during the desktop study and mapping exercise will be further defined using surveyed line/grid based traversing geochemical soil/stream sediment and grab/float sampling activities. An orientation survey will be undertaken prior to this and is usually undertaken along existing roads, survey tracks and open areas to test the effectiveness of the technique in the specific terrain.

Geochemical target anomalies identified from the soil/sediment and grab sampling coupled with geophysical magnetic/gravity anomalies and possible airborne survey verification would be integrated on GIS application and followed by homing in over selected target areas and follow-up by further detailed geological mapping if possible, mainly to determine possible extent and depth of orebody. Also, if possible, an attempt at possible structural complexities will be determined at this stage.

Geophysical Surveys

Various methods of geophysical applications will be applied on the target areas and include: ground magnetics, gravity and radiometric traversing on irregular grids where road infrastructure allows for it and symmetrical grid traversing in areas possible.

PHASE 2 - INVASIVE ACTIVITIES

Construction, Operational and Decommissioning Phase

Following Phase 1 - non-invasive activities, Phase 2 will commence with reconnaissance/stratigraphical drilling. The construction part entails of the site preparation and clearing of the site and bringing the equipment such as the drill rig and mobile toilets on site. Ten (10) of twenty (20) 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 to a depth of approximately 150m.

The (10) boreholes will be correlated to establish the preliminary strati-graphical column. Secondly, the boreholes will be sampled and analysed for mineral content and the results of the sampling will be used as a basis for the next phase of exploration drilling.

Infill Resource Diamond Drilling

Drilling targets for this phase of drilling will be based on the results of the ten (10) 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, ten (10) follow-up boreholes will be drilled. These ten (10) 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 reefs are intersected in all the ten (10) 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 orebody and also define the grade and tonnage and improve the geological confidence.

Any further follow up/infill boreholes will be planned and those will have to be drilled at a grid of 150 m. It is estimated that the depth of each borehole will range from 50 - 150 m. Drilled core will be logged (structure, lithology and facies), sampled and analyzed for Manganese, Lead, Zinc, Limestone, Cobalt, Copper and Iron. 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 twenty (20) 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 Outlined Below

- Movement of vehicles and machineries for the proposed activities.
- There are currently existing roads that give access to the proposed sites. Temporary roads will be established (through trucks moving through the bush, not through bush clearing).
- Supply of water for prospecting purposes such as cooling the rig and portable water for contractors will be provided and will be stored on site.
- It is mandatory under the Health and Safety Act that ablution facilities are made available where people will be undertaking any activities. Chemical mobile toilets will be placed 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. It should be noted that no workers will be staying on site unless agreed with land owners.
- Storage and handling of hydrocarbons which is limited to fuel (diesel) and oil will be stored on site.

1.3 Policy and Legislative Context

The Pan African Minerals Development Company (Pty) Ltd Prospecting Right application requires authorisation in terms of the interlinked pieces of various legislation which are listed in the table below. These various pieces of core legislation stipulate the requirements which are necessary when for consideration of applications, reports and legal processes to be conducted and the results thereof are to be submitted to the relevant competent authority for approval prior to commencement of the prospecting operations. In addition to the above, there are various pieces of legislation which govern certain aspects of the prospecting right operations and these are summarised in **Table 4** below.

Table 4: Applicable Legislations to this Application

<p>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</p> <p>(A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)</p>	<p>REFERENCE WHERE APPLIED</p> <p>(i.e. Where in this document has it been explained how the development complies with and responds to the legislation and policy context)</p>	<p>HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT?</p> <p>(E.g. In terms of the National Water Act: - Water Use Licence has/has not been applied for)</p>
<p>Minerals and Petroleum Resources Development Act (Act No. 28 of 2002).</p>	<p>This act has been applied throughout the entire document as it applies to Prospecting Right Application</p>	<p>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</p>

		Petroleum Resources Development Act (M&PRDA). The applicant lodged a Prospecting right as per the legislation
National Environmental Management Act, 1998 (Act No. 107 Of 1998), as Amended	This act has been applied throughout the entire document as it applies to Environmental Authorisation Application	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	This regulation has been applied throughout the entire document as it applies to the compilation of Environmental Management Programme	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.
National Environmental Management: Biodiversity Act 2004 (Act No. 10 of 2004)	This act has been applied throughout the entire document as it applies to the protection of the Fauna and Flora	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)	This act has been applied on Environmental Management Programme as it applies to all waste generated on site	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.

<p>National Water Act, 1998 (Act No. 36 of 1998)</p>	<p>This act has been applied throughout the entire Basic Assessment report as it applies to the protection of the water resources</p>	<p>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</p>
<p>National Heritage Resources Act, 1999 (Act No. 25 of 1999)</p>	<p>This act has been applied throughout the entire Basic Assessment report as it applies to the protection of the heritage resources</p>	<p>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.</p>
<p>Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013)</p>	<p>This dataset has been applied throughout the entire Basic Assessment report as it outlines the plans and the land uses of the proposed site</p>	<p>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</p>
<p>The Mine Health and Safety Act, 1996 (Act No. 26 of 1996)</p>	<p>This act has been applied throughout the entire Basic Assessment report as it applies to the protection of the health and safety of all workers on site.</p>	<p>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-</p> <ul style="list-style-type: none"> • To promote a culture of health and safety;

		<ul style="list-style-type: none"> • To provide for the enforcement of health and safety measurements; • 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; • To promote training and human resource of development; • To regulate employers' and employees' duties to identify hazards and eliminate, control and minimise the risk to health and safety; <p>To entrench the right to refuse to work in dangerous conditions</p>
<p>South African National Biodiversity Institute (SANBI) Biodiversity GIS (bgis.sanbi.org)</p>	<p>This dataset has been applied throughout the entire Basic Assessment report as it gives a baseline environmental description of the proposed site</p>	<p>Used during desktop research to identify sensitive environments within the right area.</p>
<p>Conservation of Agricultural Resources Act 1983 (Act No. 43 of 1983)</p>	<p>This act has been applied throughout the entire Basic Assessment report as it applies to the protection of the agricultural land</p>	<p>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.</p>

		<p>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</p>
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1.4 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).

Assessment of the geological data available has indicated that the area in question may have Manganese, Lead, Zinc, Limestone, Cobalt, Copper and Iron minerals.

In order to ascertain the above minerals and determine the nature, location and extent of the subject minerals within the proposed prospecting area, it will be necessary that prospecting activities be undertaken. Prospecting activities will also determine if there are any features that may have an impact on the economic extraction of the subject minerals. As such, a prospecting right is required to allow Pan African Minerals Development Company (Pty) Ltd to survey or investigate the area of land for the purpose of identifying an actual or probable mineral deposit

The data that will be obtained from the prospecting activities of the subject minerals will be necessary to determine the economic viability of the anticipated mineral reserves within the proposed prospecting area. Should the feasibility study prove positive, the project will graduate to a mining right project which will positively contribute to the socio-economic development of the nation 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 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, Pan African Mineral Development Company 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.

Although mining's contribution to South Africa's GDP has declined over the past 10-20 years, the industry remains one of the country's critical economic cornerstones and contributes to its economic activity, job creation and foreign exchange earnings, therefore it is of utmost importance that continuous exploration is undertaken to discover new resources that will lead to the reboots of the mining sector again.

1.5 Motivation for the Overall Preferred Site, Activities and Technology Alternative

The preferred site was selected based on the underlying geology of the area. The information on the geology of the area was gathered by the use of historical data available, which will be confirmed by the prospecting activities to be undertaken. The geology of the area contributed greatly in giving the insight of the preferred site.

1.6 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.

1.6.1 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) The Property or Location on Which the Proposed Activity is to be Undertaken;

The preferred location/property was chosen based on the underlying geology of the farm. The underlying formations on the farm may potentially contain Manganese, Lead, Zinc, Limestone, Cobalt, Copper and Iron reserves that may be possibly mined feasibly. However, the sensitive pockets (if any) of the project area will be taken into consideration when locating the prospecting activities area.

(ii) The Type of Activity to be Undertaken;

The type of activity to be undertaken is a prospecting activity which will be undertaken through drilling (for core extraction). These methods provide feasible and cost-effective measures of obtaining ore samples from underground.

The prospecting method includes prospecting without bulk sampling and prospecting with bulk sampling. The prospecting method with bulk sampling was assessed and found to be not cost effective and not very environmentally friendly and therefore the applicant opted for prospecting without bulk sampling which will only consist of twenty (20) boreholes.

(iii) The Design or Layout of the Activity;

The preliminary layout has been designed in such a manner to avoid any potential sensitive areas, to minimize access away from existing farm tracks and to minimize impacts on existing activities. The exact access routes required will only be available once the final locations of the boreholes have been established, however due to the availability of routes on site, minimal routes will be required.

(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. The bulk sampling alternative/or additional method of prospecting was assessed and was found to be not cost effective and not very environmentally friendly and that if avoided, the desired results will still be obtained.

(v) The Operational Aspects of the Activity:

The prospecting site alternatives are limited to the location of the mineral resources. Therefore, the sites of the proposed drill holes are based on the potential for high grade minerals to be present in these areas. However, alternative sites may be determined once the desktop studies and geophysical surveys have been completed.

(vi) The Option of not Implementing the Activity:

The option of not undertaking the prospecting activities on the project site assumes that the site remains in its current state, therefore the option of not implementing will result in no impacts on the social and biophysical environment. However, the option of not implementing the activities 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 and the community and other stakeholders will miss the financial and economic benefit which include jobs among other benefits.

1.6.2 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 public participation process that was followed. This application triggered the Basic Assessment Process and therefore a public participation process that was followed is outlined and detailed below. The public participation ensures that the complete Basic Assessment Report document has been communicated and presented properly to all the Interested and Affected Parties (I&APs) involved. The public participation process is an integrated process with the purpose of providing I&APs with the sufficient and accessible information to assist them to:

- Raise comments and make recommendations to be considered during the Impact Assessment phase;
- Provide comments on the project alternatives and the proposed process of assessment;
- Verify that their issues were recorded, understood and addressed;
- Contribute local/indigenous knowledge to the process;
- Comment on the findings of the specialist studies and the EIA; and
- Advise I&APs of the outcome of the Environmental Authorisation (i.e. DMR's decision), and the appeals process and procedure

The Following Steps Were Undertaken to Satisfy the Public Consultation Process:

- **Identification of Interested and Affected Parties (I&APs)**

The NEMA Regulations requires identification of and consultation with I&APs. The term I&AP generically refers to people 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 982 of 2014) is compiled and attached as **Appendix 7** and it includes full contact details of registered I&APs and as well as other stakeholders involved.

- **Notification of Authorities and I&APs**

Various means of notification are used to inform farm owner's, organs of states as well as I&AP's the intension of the applicant. The content of the notification included the proposed site, DMR reference number, the scope of work to be conducted as well as the contact details of the EAP responsible. These means of notification includes:

- A newspaper advertisement
- Site Notices which are placed at prominent points
- Registered letters, emails and facsimiles are composed and are sent to the identified authorities, adjacent landowners, ward councillors and I&APs including the Joe Morolong Local Municipality Manager

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

Draft Basic Assessment Report has been made available to registered interested and affected parties for a period of 30 days. This included a background information document which summarized the application process as well the impacts associated with the proposed project. The following organs of state have received Draft Basic Assessment Report for Comments; Northern Cape Department of Water and Sanitation, Northern Cape Department of Rural Development and Land Reform, Northern Cape Department of Agricultural, Department of Environmental Affairs and other stakeholders that were notified included the John Taolo Gaetsewe District Municipality and Joe Morolong Local Municipality.

- **Public Meeting**

A public participation plan has been submitted for approval to the Department of Mineral Resources and Energy in the Northern Cape Province. This plan has been approved and exempted Joan Consulting from conducting the 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 Farmers Hall on the 26th of November 2020 at 10:00 am. Please refer to the minutes of the meeting attached as Appendix 9.

1.6.3 Summary of the Issues Raised by the I&APs

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

Table 5: Summary of Issues Raised by I&APs

INTERESTED & AFFECTED PARTIES List the Names of the People Consulted in this Column, and Mark with an X Where Those Who Must be Consulted were in fact Consulted	DATE COMMENTS RECEIVED	ISSUES RAISED DATE COMMENTS RECEIVED	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 Appendix 9 for the summary of minutes which were compiled from the outcomes of the meeting.				

1.6.4 The Environmental Attributes Associated with the Alternatives

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

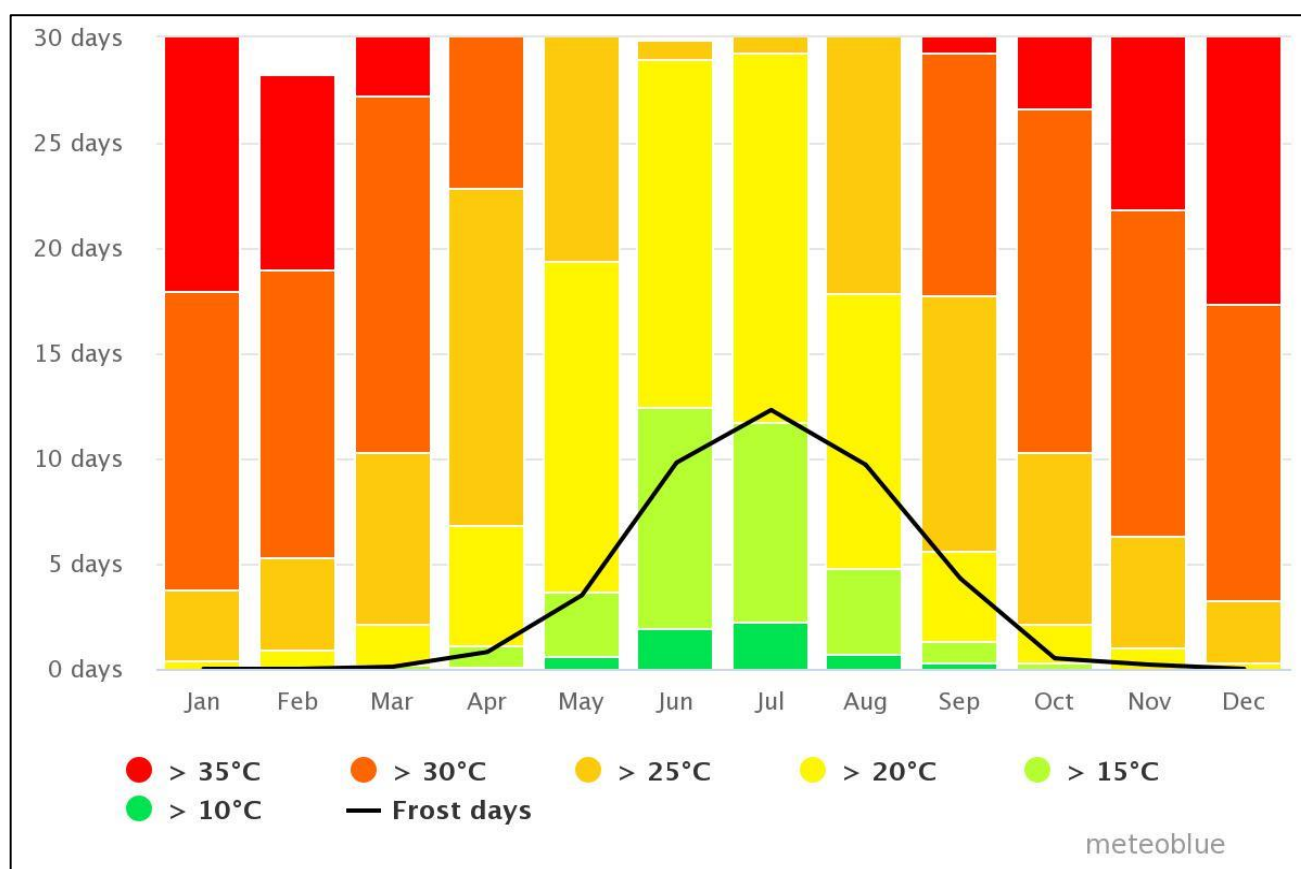


Figure 3: Temperature Depiction of Hotazel

The monthly distribution of average daily maximum temperature shows that the highest average midday temperatures in Hotazel is 31°C, these highest temperatures occurs in January which is the warmest month of the year. The monthly distribution of average daily minimum temperature shows that the lowest average temperatures in Hotazel is 9.6°C, these minimum temperatures occurs in June which is the coldest month of the year.

➤ Rainfall

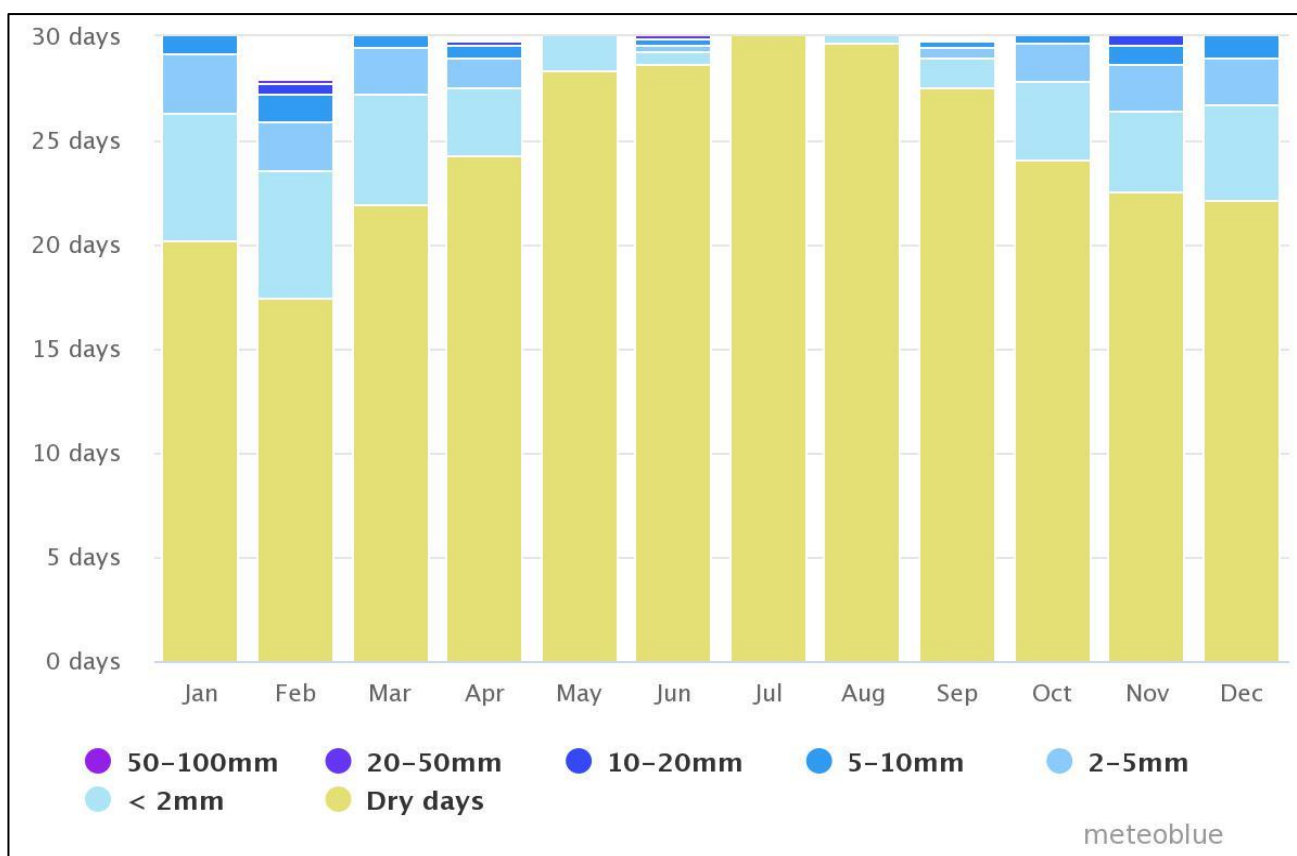


Figure 4: Rainfall Depiction of Hotazel

Hotazel experiences significant seasonal variation in monthly rainfall. The rainy period of the year lasts for eight (8) months, from September to May, the most rain falls during the thirty-one (31) days centred around February. The rainless period of the year lasts for 4 months, from May to September. The least rain falls around July. Hotazel normally receives about 452mm of rain per year, with most rainfall occurring mainly during the summer. The month which is the wettest on average is February which amounts to more mm of the rain that falls in Hotazel, averaging 60mm along with January averaging 48mm and March averaging 54mm. The month which is the driest on average is July, which receives the lowest amount of rainfall which can be so little to no rain at all.

➤ Wind Speed

The diagram below shows the average hourly wind speed in Hotazel which experiences significant seasonal variation over the course of the year. The windier part of the year lasts for four (4) months, from August to November, with average wind speeds of more than 28 km/h (kilometres per hour). The windiest day of the year is September 24, with an average hourly wind speed of 15.6 km/h. The calmer time of year lasts for eight (8) months, from December to July. The calmest day of the year is March 30, with an average hourly wind speed of 10.3 km/h. The predominant average hourly wind direction in Hotazel varies throughout the year.

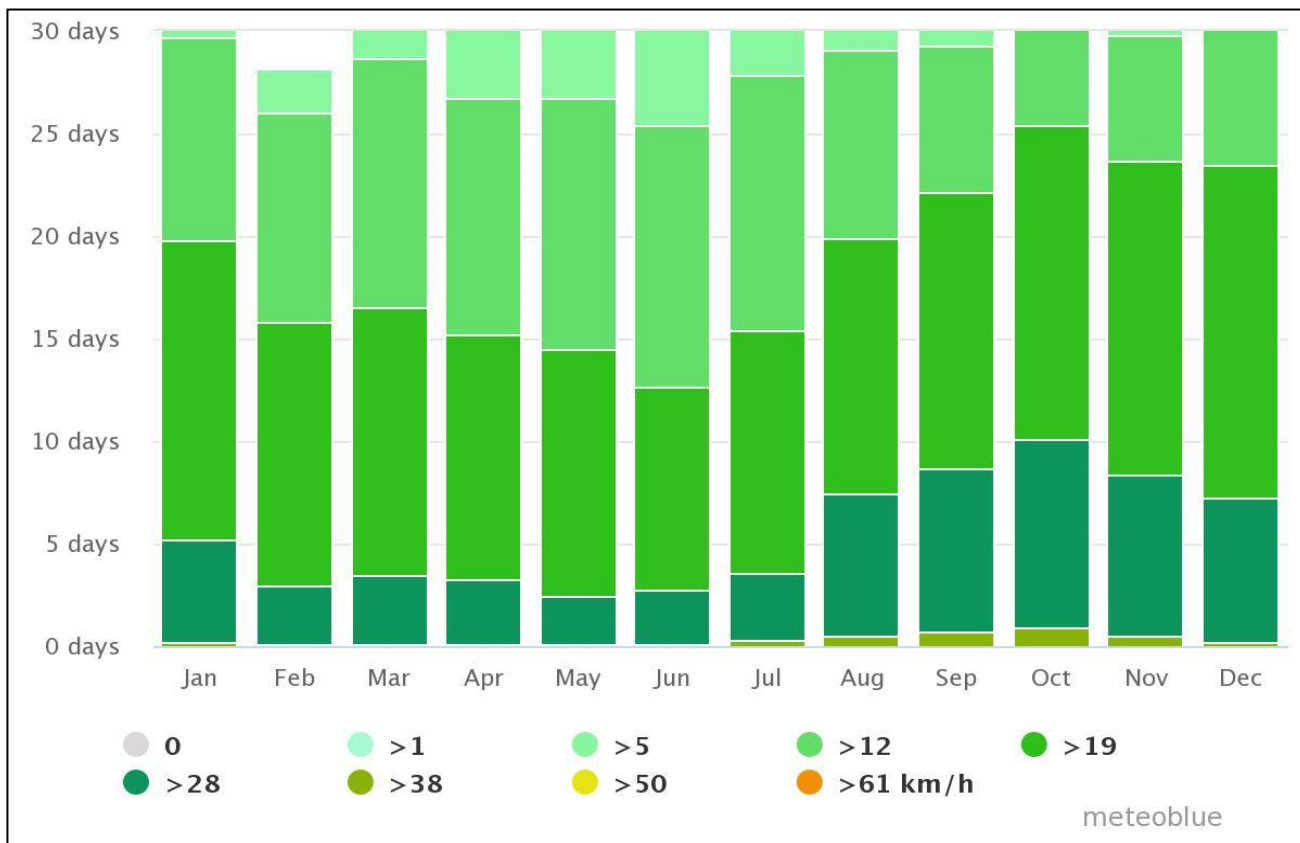


Figure 6: Average Wind Speed of Hotazel

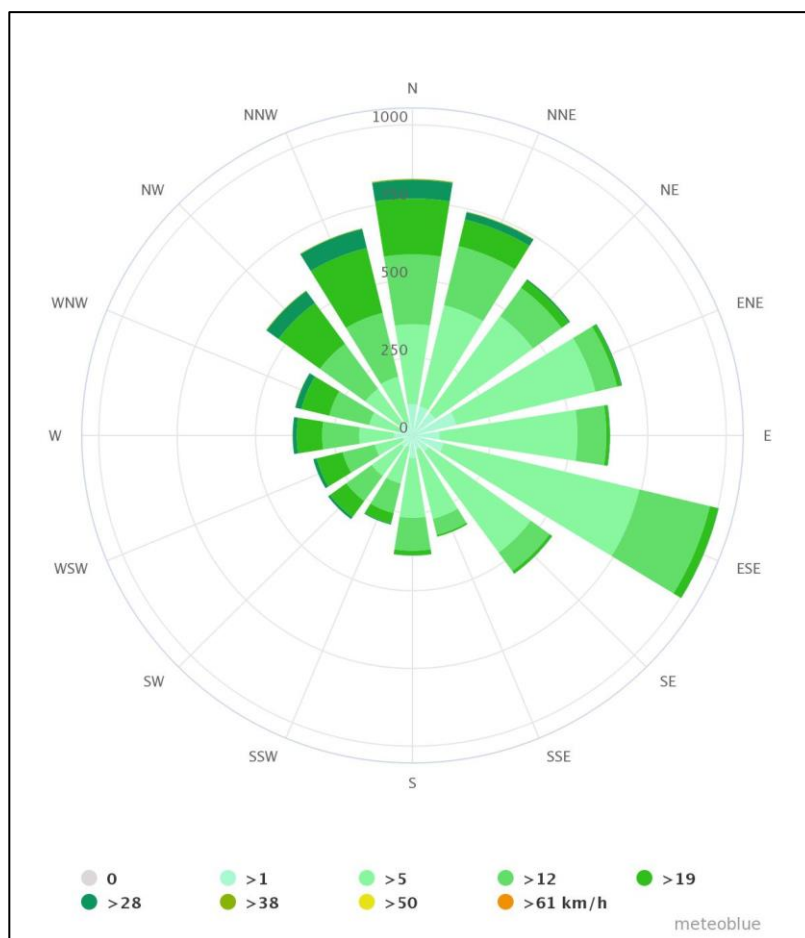


Figure 5: Average Wind Direction of Hotazel

The above wind rose for Hotazel shows how many hours per year the wind blows from the indicated directions. The wind is most often from the North for two (2) months, from March to April and for eight (8) months, from July to February with a peak percentage of 35% on March. The wind is most often from the West from April to May with a peak percentage of 31% on May. The wind is most often from the South from May to June with a peak percentage of 30% on June.

➤ **Topography**

Thornveld is the natural vegetation of the province, and the climate is generally hot and arid and it is characterised by some Campbell Group dolomite and chert and mostly younger, superficial Kalahari Group sediment, with red wind-blown (0.3-1.2 m deep) sand. Locally, rocky pavements are formed in places. The topography of Hotazel is recognised as a powerful influence contributing to the high biodiversity of southern Africa. Landscapes composed of spatially heterogeneous abiotic conditions provide a greater diversity of potential niches for plants and animals than do homogeneous landscapes.

The species richness and biodiversity has been found to be significantly higher in areas of geomorphological heterogeneity. Ridges and rocky outcrops are characterised by high spatial variability due to the range of differing aspects, slopes and altitudes all resulting in differing soil (e.g. depth, moisture, temperature, drainage, nutrient content), light and hydrological conditions. Temperature and humidity regimes of microsites vary on both a seasonal and daily basis. Moist cool aspects are more conducive to leaching of nutrients than warmer drier slopes.

➤ **Heritage**

The literature review and field research confirmed that the project area is situated within a contemporary cultural landscape dotted with settlements with long local history. In terms of the archaeology and heritage in respect of the proposed prospecting site, there are no obvious 'Fatal Flaws' or 'No-Go' areas. However, it must be borne in mind that most burial sites in the project area occur closer to farmsteads and they are known by landowners and farm workers. As such it is important for prospecting teams to seek assistance of landowners and farm workers to ensure that all known graves are identified and protected.

The potential for chance finds, still remains and the applicant and contractors are advised to be diligent and observant during prospecting, should prospecting activities commence on the site. The procedure for reporting chance finds has clearly been laid out. This report concludes that the prospecting right application may be approved by SAHRA to proceed as planned subject to recommendations herein made and heritage monitoring plan being incorporated into the EMP. The mitigation measures are informed by the results of the AIA/HIA study and principles of heritage management enshrined in the NHRA, Act 25 of 1999.

➤ Air Quality

Air quality is the degree to which the air in a particular place is pollution free. With regard to the prospecting area air pollution is caused by movement of vehicles going to and from Hotazel via the R31 road in which the cars emit the CO₂ gas from the exhausts which can cause haze which becomes a nuisance and can impact on the health of the people staying around the area.

The proposed project will impact the quality of air through movement of heavy earthmoving equipment. These movements will generate dust and cause nuisance and health implications to the workers and people living nearby. To minimise the generation of dust, a vehicle speed on gravel road will be limited to 20 km/h. All the equipment on site will be maintained and kept in a good working order, and dust suppression will be conducted when necessary.

➤ Noise

The only sources of noise within the local area comes from the vehicle movements of local residents and visitors or tourists and other people from around the area going in and out of the Kuruman town via the R31 route. The proposed project will generate noise through movement of vehicles and operational of the drill rig. This noise will be localized and will only impact the site area

➤ Flora

The proposed site gives a feel of the savanna biome as well as the vegetation unit on site. The site is dominated by Medium-tall tree layer with *Vachellia erioloba* in places, but mostly open and including *Boscia albitrunca* as the prominent trees. Other plant species recorded include *Melia azedarach*, *Prosopis glandulosa*, *Vachellia mellifera*, *Terminalia sericea*, *Ziziphus mucronata*, *Grewia occidentalis*, *Senna didymobotrya*, *Datura ferox*, *Grewia retinervis*, *Nolletia arenosa*, *Sida cordifolia*, *Lycium hirsutum*, *Gymnosporia buxifolia*, *Rhigozum brevispinosum*, *Vachellia hebeclada*.

Grass species such as *Eragrostis annulata*, *Eragrostis bicolor*, *Odyssea paucinervis*, *Panicum coloratum*, *Asparagus lacrinus* *Setaria verticillata*, *Aristida meridionalis*, *Brachiaria nigropedata*, *Centropodia glauca*, *Eragrostis lehmanniana*, *Schmidtia pappophoroides*, *Stipagrostis ciliata*.

Only two species are recorded are *Vachellia Erioloba* and *Boscia albitrunca* were recorded on site as a national protected. In terms of section 15(1) of the National Forests Act, 1998, no person may cut, disturb, damage or destroy any protected tree; or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any product derived from a protected tree, except under a license or exemption granted by the Minister of Agriculture, Forestry and Fisheries (Now Department of Environment, Forestry and Fisheries).

Declared weeds and invaders have the tendency to dominate or replace the herbaceous layer of natural ecosystems, thereby transforming the structure, composition, and function of natural ecosystems. Therefore, all these transformers must be eradicated and controlled using an

eradication and monitoring program. Some invader plants may also degrade ecosystems through superior competitive capabilities to exclude native plant species (Henderson, 2001).

➤ **Fauna**

The mammals recorded during the site visit include Oryx gazelle, Sylvicapra grimmia, Hippotragus niger, Taurotragus oryx, Syncerus caffer, Antidorcas marsupialis, Tragelaphus strepsiceros, Aepyceros melampus, Connochaetes taurinus, Tragelaphus angasii, Kobus ellipsiprymnus were recorded within private nature reserves. Other animals include encountered include cows, sheep, Procavia capensis, horses, Hantam Angulate and goats.

Desktop assessment (SABAP 2) showed that a total of 76 bird species have been confirmed within the 3 QDGC (2622 DA, DB, DC and DC). Many of these species are expected to be available on site as the site present the favourable habitat. Many avifaunal species are adaptable as they are habitat generalists and can therefore accommodate a certain degree of habitat degradation and transformation (Harrison et al., 1997). Other species are extremely habitat specific and have to rely on certain habitat units for breeding, hunting or foraging and roosting. It is the survival of these species that become threatened as they cannot adapt to changes to the habitat. Habitat-specific species are sensitive to environmental change, with destruction of habitat being the leading cause of species decline worldwide (Barnes, 2000).

It is widely accepted that vegetation structure, rather than the actual plant species, influences bird species' distribution and abundance (Harrison et al., 1997). Therefore, the vegetation description used in the Bird Atlas does not focus on lists of plant species, but rather on factors which are relevant to bird distribution. The proposed site is located outside important bird areas.

➤ **Soils**

Soils are shallow sandy soils, of the Hutton form. Red Aeolian sand of tertiary to recent age (Kalahari Group) with silcrete and calcrete and some andesitic and basaltic lava of the Griqualand West Supergroup are found within this vegetation type and Hutton soil forms, deeper than 1.2 m on the overwhelmingly dominant soil types and to a far lesser extent land type.

➤ **Geology**

The Hotazel Thornveld is characterised by some Campbell Group dolomite and chert and mostly younger, superficial Kalahari Group sediment, with red wind-blown sand. Locally, rocky pavements are formed in places with Hutton soil form. The Hotazel and Asbestos Hills consist of banded iron formation, with jaspilite, chert and riebeckite-asbestos of the Asbestos Hills Subgroup of the Griqualand West Supergroup.

➤ **Surface Water**

The groundwater of Hotazel on the northern portion of the prospecting area is provided by karst aquifers, whereas the central portion of the prospecting area hosts a fractured aquifer. Although groundwater quality in the area is considered to be generally good with greatest recharge occurring in the mountainous areas, the potential for groundwater vulnerability is overall low except for a small portion that is considered high towards the north-east corner of the proposed prospecting area.

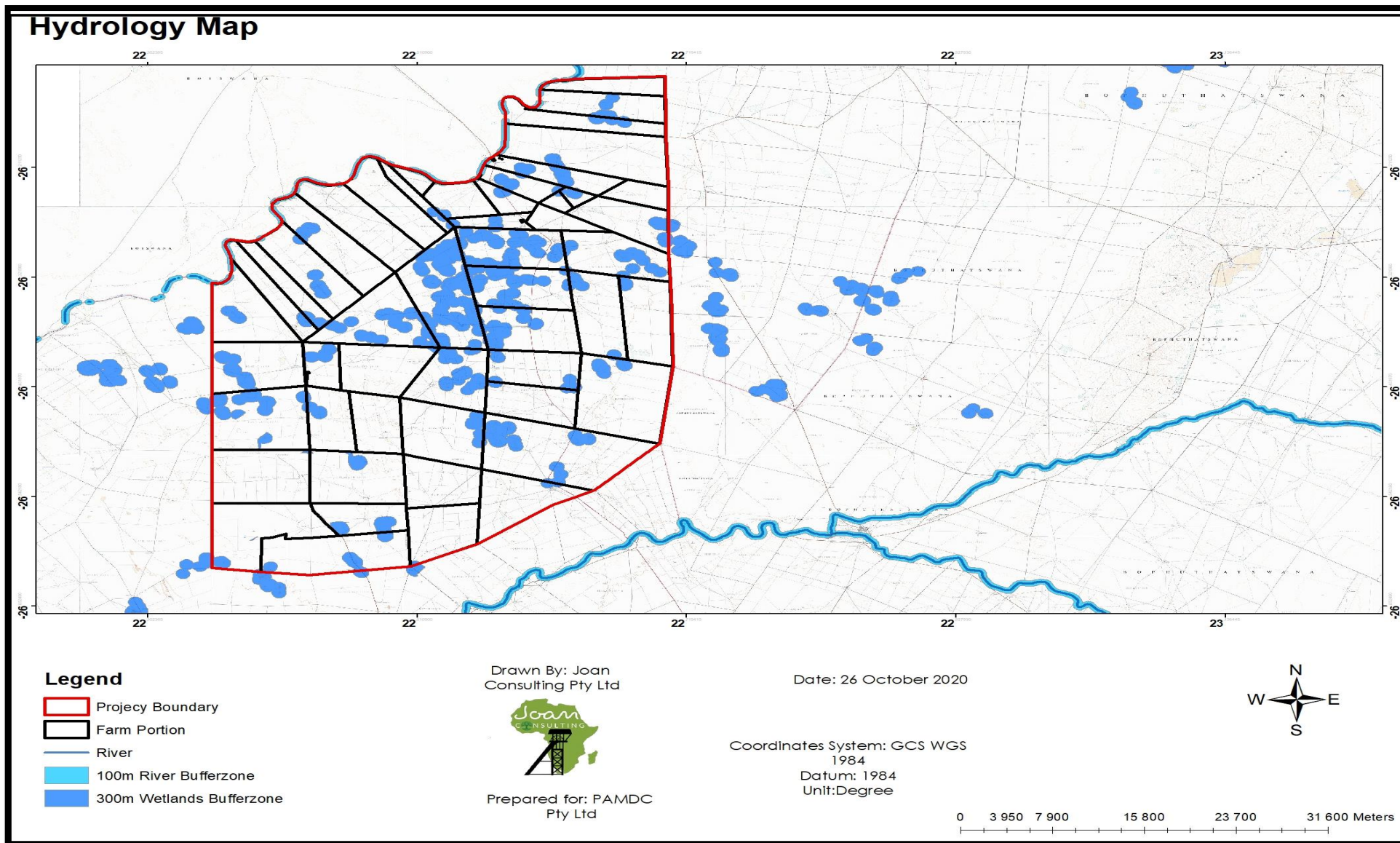


Figure 7: Hydrology Map

➤ **Socio-economic**

Within the Joe Morolong Local Municipality, several sectors contribute to the municipality’s economy and the Gross Domestic Product (GDP). These sectors include, amongst others agriculture, mining, manufacturing, electricity, gas and water, construction, trade, transport and communications. From 2006 to 2016, the municipality’s economy grew at a positive Compounded Annual Growth Rate (CAGR) of 3% per annum and contributes a quarter to the economy of the John Taolo Gaetsewe DM, as well as 6% to the economy of the Northern Cape Province.

Economic activities currently characteristic of the proposed development area are mainly agriculture, specifically game farming and hunting, and tourism related. Adjacent land uses include livestock farming and irrigated crop production.

➤ **Population**

The Joe Morolong Local Municipality (LM) is located in the Northern Cape Province based in the John Taolo Gaetsewe District, on the North Eastern and Western part of the district and it is accessible via the N14 which links it to the North West Province. The municipality has a population of approximately 89 530 people (Census 2011), with a total of 23 707 households with a population growth of -0.9%. Of the households, 6.6% have access to piped water either in their dwelling or in the yard while 81.8% of the household have access to electricity with 146 villages and 2 small towns and surrounding private commercial farms and government owned farms,

Of the 89 530 people residing in the municipality, there are 12 740 people that are economically active (employed or unemployed but looking for a job), and of these, 38.6% are unemployed (Stats SA, 2017). In the zone of influence, the population density is concentrated in the closest town, Kuruman and the villages of Kudumane, Batlharo Ba Ga-Motlhwane and Batlhaping Ba Ga-Sehunelo. The majority of the population in the Joe Morolong LM are black African (96.4%), 2.0% are coloured with the other population groups making up the remaining 1.6%. Setswana is the most commonly used language in the municipality followed by Afrikaans (Stats SA, 2017).

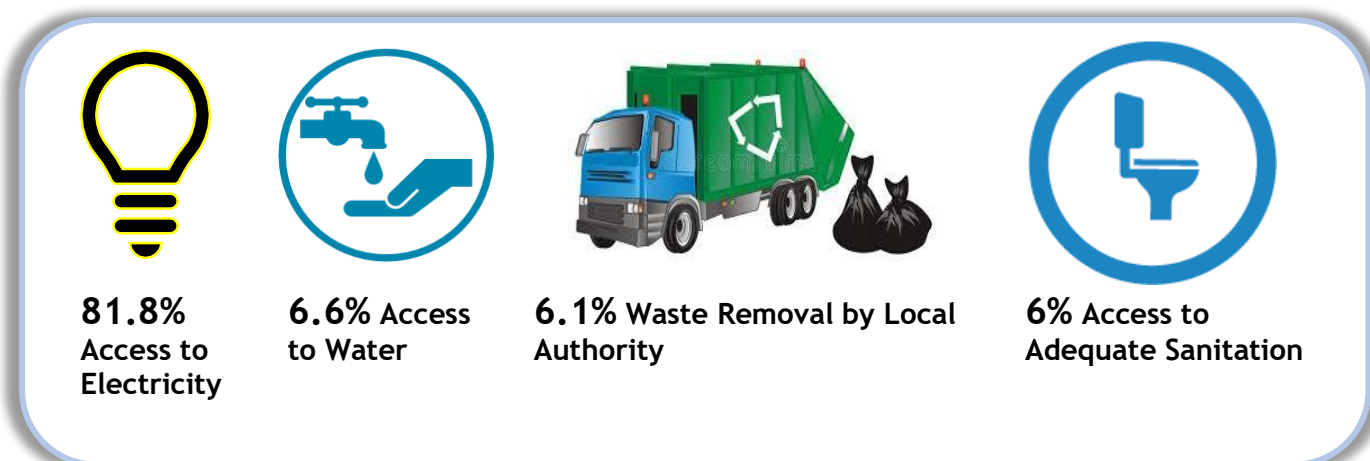


Figure 8: Status of Service Delivery

(b) Description of the Current Land Uses

The John Taolo Gaetsewe District Municipality (previously Kgalagadi) is a Category C municipality located in the north of the Northern Cape Province, bordering Botswana in the west. It comprises of the three local municipalities of Gamagara, Ga-Segonyana and Joe Morolong, and 186 towns and settlements, of which the majority (80%) are villages.

The boundaries of this district were demarcated in 2006 to include the once north-western part of Joe Morolong and Olifantshoek, along with its surrounds, into the Gamagara Local Municipality. It has an established rail network from Sishen South and between Black Rock and Dibeng. It is characterised by a mixture of land uses, of which agriculture and mining are dominant. The district holds potential as a viable tourist destination and has numerous growth opportunities in the industrial sector.

The average current land uses which were observed on site during the site survey from the 23rd - 26th November 2020 varies from farm to farm, this could be due to the farms having different owners and also their different intensions over the land they own. Various farms in the proposed project area consists of but not limited to: livestock farming, game farming, grazing land, game lodge, farm settlements and there are no crops or agricultural activities which were observed in the area. The absence of crops or agricultural farming could be due to the relatively high temperatures in the Kalahari which are not favourable for farming, accompanied by the absence of rain for a relatively long period.

(c) Description of Specific Environmental & Social Features and Infrastructure on the Site

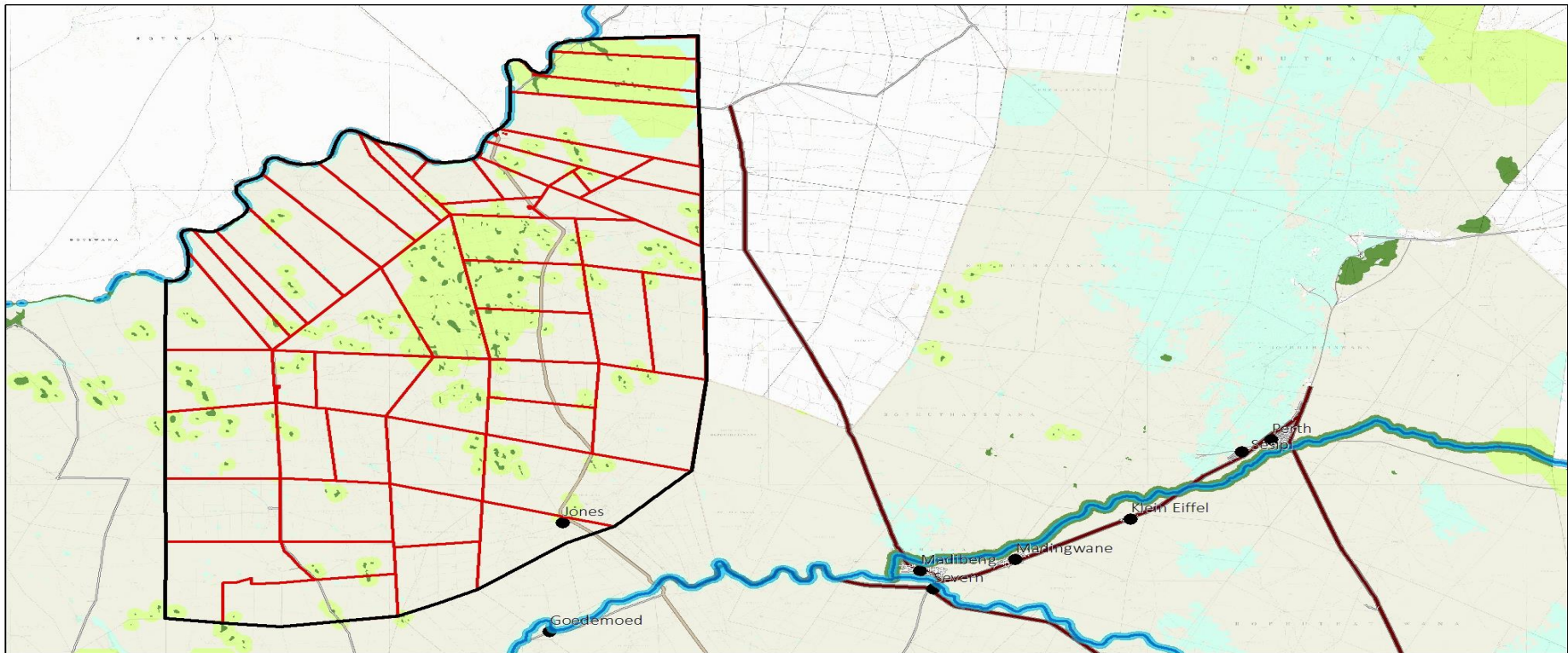
Hotazel lies north west of Kuruman, virtually on the border with Botswana. The bush-covered landscape is reminiscent of the desert which is featureless, flat and dry but it is not without its own beauty. The Kgalagadi, or waterless place, is where the San lived for thousands of years, without finding it particularly hot or cumbersome. But then they have lived in harmony with nature for at least 20 000 years.

Hotazel is home to an open-quarry manganese ore mine and sinter plant. Interestingly, the mine is South Africa's first black woman owned manganese mine, said to be the world's largest sinter plant, producing three million tons of ore every year. The ore is used to produce 2.4 million tons of sinter (sintering involves the mixing, agglomeration and semi smelting of manganese ore, fine coke, fluxes and recycled dust into sintered product). Other than the mine, and the town that services it, there is little to endear the town of Hotazel to visitors.

(d) Infrastructure and Land Use Map

See Overleaf for an Infrastructure and Land Use Map

Land use and Infrastructure Map



Legend

- PTN_1_Project
- PTN_1_Farms
- River
- 100m River Bufferzone
- Locals
- Roads Type**
- NATIONAL FREEWAY
- MAIN ROAD
- ARTERIAL ROUTE
- SECONDARY ROAD
- STREET
- OTHER ACCESS
- UNDER CONSTRUCTION
- TRACK FOOTPATH

CBA_Cat

- Protected Area
- Critical Biodiversity Area One
- Critical Biodiversity Area Two
- Ecological Support Area
- Other Natural Areas

Northern_Cape_CBA_Map

Drawn By: Joan Consulting Pty Ltd

Date: 26 October 2020



Coordinates System: GCS WGS 1984
Datum: 1984
Unit: Degree



Prepared for: PAMDC Pty Ltd



Figure 9: Land Use and Infrastructure Map

1.6.5 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 low to high) assigned to each potential impact. The significance of an impact is defined as an addition of the points of nature of the impact, magnitude, extent, duration of the impact multiplied by its probability of occurrence. The criteria used to determine impact consequence includes nature of the impact, magnitude, extent, duration of the impact and the probability of occurrence and those are presented below.

Table 6: 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:

$$\text{Significance Points (SP)} = (\text{Magnitude} + \text{Extent} + \text{Duration}) \times \text{Probability}$$

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 7: Criteria for Rating of Classified 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.

1.6.6 Impacts and Risks Identified Including the Nature, Magnitude, Extent, Duration and Probability Significance Consequence of the Impacts, Including the Degree of these Impacts

Table 8: Assessment of Potentially Significant Impacts and Risks

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	<ul style="list-style-type: none"> Dust suppression using water will be under taken to manage dust emitting from vegetation removal 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	<ul style="list-style-type: none"> Trucks, machinery, and equipment must be regularly serviced to reduce noise levels Work should be conducted during day time only to minimise disruption of neighbours and animal life 	4	1	1	2	16
Clearing of vegetation and movement of vehicles for site establishment	Destruction of archaeological remains and un identified graves	Cultural Heritage	- (ve)	6	2	3	5	55	<ul style="list-style-type: none"> Burial sites must be plotted, clearly marked and must be protected/barricaded to avoid accidental damage during prospecting activities Custodians must be involved in any mitigation work to their family burial sites 	4	1	2	3	21

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
									<ul style="list-style-type: none"> All personnel working on site must be educated about burial sites 					
Clearing of vegetation and movement of vehicles for site establishment	Disruption and destruction of animal life	Fauna	- (ve)	6	1	2	2	18	<ul style="list-style-type: none"> No wild animal may under any circumstance be handled, removed or be interfered with No wild animal may be fed on site; No wild animal may under any circumstance be hunted, snared, captured, injured or killed No wild animal may under any circumstance be hunted, snared, captured, injured or killed Remove and dispose of any snares or traps found on or adjacent to the site 	4	1	1	2	12
Clearing of vegetation and movement of vehicles for site establishment	Disruption and destruction of vegetation	Flora	- (ve)	6	1	2	3	27	<ul style="list-style-type: none"> Do not disturb, deface, destroy or remove plants or natural features outside the demarcated area No open fires are permitted under trees and no vegetative matter may be removed for firewood Locate construction camps on the outside fringe of the riparian vegetation zone 	4	1	1	2	12

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
									<ul style="list-style-type: none"> Where damage to protected plants and natural features is a problem, then these should be fenced for protection 					
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	<ul style="list-style-type: none"> The construction footprint should be kept as small as possible Keep as much original land cover as possible 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	<ul style="list-style-type: none"> Avoid creating many access routes Keep the speed limit to minimum to reduce the tire contractions on the soil 	4	1	1	2	12
Clearing of vegetation and movement of vehicles for site establishment	Soil contamination from hydrocarbon spills	Soil, Land Use and Land Capability	- (ve)	6	3	3	3	36	<ul style="list-style-type: none"> Clean all hydrocarbon spills from machinery immediately, and Dispose contaminated soils at a permitted site Drip trays are to be watertight, and must be emptied regularly and before rain events The contents of drip trays are to be treated as hazardous waste 	4	1	1	2	12

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
									<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Demarcate construction footprint and limit activities to within this footprint as far as possible Keep the clearance area as small as possible 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	<ul style="list-style-type: none"> Limit the development footprint to reduce high-sediment runoff Avoid clearing the site during the rainy seasons 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	<ul style="list-style-type: none"> Clean all hydrocarbon spills from machinery immediately Dispose contaminated soils at a permitted site Drip trays are to be watertight, and must be emptied regularly and before rain events 	2	1	1	2	08

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
									<ul style="list-style-type: none"> The contents of drip trays are to be treated as hazardous waste. 					
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	<ul style="list-style-type: none"> The development footprints and disturbed areas should be kept as small as possible Construction activities should be restricted to daylight hours to limit the need to bright floodlighting and the potential for skyglow Dust suppression should be carried throughout, whenever dust emanates 	4	1	1	2	12
Clearing of vegetation and movement of vehicles for site establishment	On Game Lodges, Lodges & Guest Houses: <ul style="list-style-type: none"> Dust Generation Noise Generation 	Air Quality Noise	- (ve)	8	3	2	4	52	<ul style="list-style-type: none"> Dust suppression using water will be under taken to manage dust emitting from vegetation removal Footprint earmarked for vegetation removal must be clearly marked Trucks, machinery, and equipment must be regularly serviced to reduce noise levels Work should be conducted during day time only to minimise disruption of neighbours and animal life 	6	2	1	2	18

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
Clearing of vegetation and movement of vehicles for site establishment	On Game Lodge <ul style="list-style-type: none"> Dispersing and disruption of animals 	Fauna	- (ve)	6	2	2	2	20	<ul style="list-style-type: none"> No wild animal may under any circumstance be handled, removed or be interfered with No wild animal may be fed on site No wild animal may under any circumstance be hunted, snared, captured, injured or killed No wild animal may under any circumstance be hunted, snared, captured, injured or killed Remove and dispose of any snares or traps found on or adjacent to the site 	4	1	1	2	12
Clearing of vegetation and movement of vehicles for site establishment	On Settlement and Residential <ul style="list-style-type: none"> Negatively impacting on residents' livelihoods 	Social	- (ve)	8	2	2	5	60	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Notify the local farmer's forum (Agri-Kuruman and affected forums) Comply with all the local safety requirements 	2	1	1	1	04

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
Prospecting works	Generation of waste	Impact all environmental Aspects	- (ve)	6	1	1	4	32	<ul style="list-style-type: none"> Dedicate a storage area on site for the collection of wastes Litter bins must be equipped with a closing mechanism to prevent their contents from over following blowing out by wind Empty litter bins regularly to avoid overflow Proper ablution facilities on site must be provided. 	4	1	1	2	18
Prospecting works	Work injury - impacting on the wellbeing of employees	Social, Health & Safety Aspect	- (ve)	6	2	2	4	40	<ul style="list-style-type: none"> Proper protective equipment must be allocated to all personnel working with high risk equipment (drill rig) 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	<ul style="list-style-type: none"> Dust suppression using water will be under taken to manage dust emitting from vegetation removal. 	4	1	1	2	12

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
Borehole drilling, construction of water sump and movement of vehicles	Increased noise levels from movement of vehicles	Noise	- (ve)	6	1	1	3	24	<ul style="list-style-type: none"> Trucks, machinery, and equipment must be regularly serviced to reduce noise levels 	4	1	1	2	12
Borehole drilling, construction of water sump and movement of vehicles	Destruction of archaeological remains and un identified graves	Cultural Heritage	- (ve)	4	1	2	2	14	<ul style="list-style-type: none"> Burial sites must be plotted, clearly marked and must be protected/barricaded to avoid accidental damage during prospecting activities Custodians must be involved in any mitigation work to their family burial sites Should and graves or archaeological artifacts are discovery on site, work should cease immediately until a heritage specialist gives a go ahead 	2	1	2	2	10
Borehole drilling, construction of water sump and movement of vehicles	Disruption and destruction of animal life	Fauna	- (ve)	6	1	2	2	18	<ul style="list-style-type: none"> No wild animal may under any circumstance be handled, removed or be interfered with No wild animal may be fed on site No wild animal may under any circumstance be hunted, snared, captured, injured or killed 	4	1	2	2	14

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
									<ul style="list-style-type: none"> No wild animal may under any circumstance be hunted, snared, captured, injured or killed Remove and dispose of any snares or traps found on or adjacent to the site 					
Borehole drilling, construction of water sump and movement of vehicles	Disruption and destruction of vegetation	Flora	- (ve)	6	1	2	4	36	<ul style="list-style-type: none"> Do not disturb, deface, destroy or remove plants or natural features outside the demarcated area No open fires are permitted under trees and no vegetative matter may be removed for firewood Locate construction camps on the outside fringe of the riparian vegetation zone Where damage to protected plants and natural features is a problem, then these should be fenced for protection 	4	1	2	2	14
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	<ul style="list-style-type: none"> The construction footprint should be kept as small as possible Keep as much original land cover as possible Stripped soils should be stockpiled surrounding the disturbed area 	4	1	2	2	14
Borehole drilling, construction of	Soil Compaction	Soil, Land Use and Land Capability	- (ve)	6	1	2	3	27	<ul style="list-style-type: none"> Avoid creating many access routes 	4	1	2	2	14

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
water sump and movement of vehicles									<ul style="list-style-type: none"> Keep the speed limit to minimum to reduce the tire contractions on the soil. 					
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	<ul style="list-style-type: none"> Clean all hydrocarbon spills from machinery immediately Dispose contaminated soils at a permitted site Drip trays are to be watertight, and must be emptied regularly and before rain events The contents of drip trays are to be treated as hazardous waste Only emergency and essential repairs of vehicles and equipment may take place on site 	4	1	1	2	12
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	<ul style="list-style-type: none"> Demarcate construction footprint and limit activities to within this footprint as far as possible 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	Increased sedimentation,	Surface Water Resources	- (ve)	4	1	2	2	14	<ul style="list-style-type: none"> Limit the development footprint to reduce high-sediment runoff; 	4	1	1	2	12

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
movement of vehicles	surface runoff and Soil Erosion								<ul style="list-style-type: none"> Avoid clearing the site during the rainy seasons Rehabilitate the area by re-using stockpiled soil within as short a period of time 					
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	<ul style="list-style-type: none"> Clean all hydrocarbon spills from machinery immediately Dispose contaminated soils at a permitted site Drip trays are to be watertight, and must be emptied regularly and before rain events; The contents of drip trays are to be treated as hazardous waste. 	4	1	1	2	16
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	<ul style="list-style-type: none"> The development footprints and disturbed areas should be kept as small as possible Construction activities should be restricted to daylight hours to limit the need to bright floodlighting and the potential for skyglow Dust suppression should be carried throughout, whenever dust emanates 	4	1	1	2	12
Storage of Hydrocarbons	Soil and Land Capability and	Land and Water Contamination	- (ve)	8	1	1	4	40	<ul style="list-style-type: none"> Clean all hydrocarbon spills from machinery immediately 	6	1	1	2	16

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation	
	Surface Water								<ul style="list-style-type: none"> Dispose contaminated soils at a permitted site Drip trays are to be watertight, and must be emptied regularly and before rain events The contents of drip trays are to be treated as hazardous waste The bund must be able to accommodate at least the full volume of one of the containers 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	<ul style="list-style-type: none"> Dedicate a storage area on site for the collection of wastes Litter bins must be equipped with a closing mechanism to prevent their contents from over following blowing out by wind Empty litter bins regularly to avoid overflow Proper ablution facilities on site must be provided 	4	1	1	2	12	

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
Prospecting Works	Work injury-impacting on the wellbeing of the employees	Social, Health & Safety Aspect	- (ve)	6	1	1	4	32	<ul style="list-style-type: none"> Proper protective equipment must be allocated to all personnel working with high risk equipment (drill rig) Tool box talk must be conducted to address the risk associated with the proposed project 	4	1	1	2	12
Borehole drilling, construction of water sump and movement of vehicles	On Game Lodges, Lodges & Guest Houses: <ul style="list-style-type: none"> Dust Generation Noise Generation 	Air Quality Noise	- (ve)	8	3	2	4	52	<ul style="list-style-type: none"> Dust suppression using water will be under taken to manage dust emitting from vegetation removal Footprint earmarked for vegetation removal must be clearly marked Trucks, machinery, and equipment must be regularly serviced to reduce noise levels 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 <ul style="list-style-type: none"> Dispersing and disruption of animals 	Fauna	- (ve)	6	2	2	2	20	<ul style="list-style-type: none"> No wild animal may under any circumstance be handled, removed or be interfered with No wild animal may be fed on site; No wild animal may under any circumstance be hunted, snared, captured, injured or killed 	4	1	1	2	12

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
									<ul style="list-style-type: none"> No wild animal may under any circumstance be hunted, snared, captured, injured or killed Remove and dispose of any snares or traps found on or adjacent to the site 					
Borehole drilling, construction of water sump and movement of vehicles	On Settlement and Residential <ul style="list-style-type: none"> Negatively impacting on residents' livelihoods 	Social	- (ve)	8	2	2	5	60	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Notify the local farmer's forum (Agri-Kuruman and affected forums) Comply with all the local safety requirements 	2	1	1	1	04
Decommissioning Phase														
Decommissioning	Dust generated from removal of site infrastructures and from	Air Quality	- (ve)	6	1	1	4	32	<ul style="list-style-type: none"> Topsoil must be spread during less windy days Vegetation cover must be introduced as soon as possible to avoid soil erosion Implement dust suppression measures to minimize dust 	4	1	1	2	12

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
	spreading of topsoil								Revegetation must be done during rainy season					
Decommissioning	Hydrocarbons spillages and wildlife deaths from Vehicles	Fauna and Flora	- (ve)	6	1	2	3	27	<ul style="list-style-type: none"> Protect vegetation and soil by avoiding hydrocarbon spillages 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	<ul style="list-style-type: none"> All unnecessary infrastructure must be removed from the site Spread topsoil over the rehabilitated area Surface water and drainage lines must be rehabilitated to create a free-draining topography 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	Noise	- (ve)	6	1	1	3	24	<ul style="list-style-type: none"> Trucks, machinery, and equipment must be regularly serviced to ensure noise levels are not exceeded Reduce the vehicles speed limits 	4	1	1	2	12

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
	vehicles movements								<ul style="list-style-type: none"> Switch off equipment when not in use 					
Decommissioning	Restoration of the surrounding land and its land use	Soil, Land Use and Land Capabilities	+ (ve)	8	1	5	5	70	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Protect vegetation and soil by avoiding hydrocarbon spillages Vehicles must make use of existing roads to avoid destruction of vegetation Alien invasive control program must be adhered to 	8	1	4	4	52

1.6.7 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 9: Positive and Negative Impacts of the Project

Positive Impacts of the Proposed Activity	Negative Impacts of 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 great impact on the land capability; however, this impact cannot be ruled out completely.
	Generation of Dust: Drilling activity and movement of vehicles on the gravel road will cause minimal dust dispersion.
	Groundwater Contamination; drill rig will be used to intersect different rock layers underneath the earth surface, there is high possibility that the rig will intersect the ground water and therefore there is potential impact of ground water (though it is of a very low significance).
	Waste Generation: General waste will be generated and may litter around the site if not properly managed.
	Soil Pollution: Potential leakage of oil and other industrial liquids from the trucks and machineries may cause soil pollution.

1.6.8 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 to **Table 8** above for detailed mitigation measures and also refer to **Table 6** and **Table 7** above for a full description of the Impact Assessment Methodology.

1.6.9 Motivation Where no Alternative Sites Were Considered

The selected/preferred site, activities and technology to be used were chosen based on the attributes of the underlying geology of the area hence there are no alternative sites.

1.6.10 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.

1.7 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 on the 23rd - 26th of November 2020, through literature review as well as the specialist studies of the same activities. The receiving environment and its surroundings 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.

Interested and affected parties as well as landowners were consulted and notified of the proposed project to ensure that they exchange any information pertaining to the environment that may be of great importance to the attention of the EAP compiling the report. Please refer to **Section 1.6.5** for the full methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks

1.8 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).

See Section 1.6.6 Above for the Identified Potentially Significant Impacts and Risks

1.9 Summary of Specialist Reports

This proposed project will only involve drilling of twenty (20) boreholes. The establishment of infrastructure such as ablution facility and core yard as well as construction and operational activities will take into account a 100 m buffer away from any sensitive environment such as rivers, wetlands and other critical biodiversity. Although the proposed project will have impacts, such impacts are envisaged to be minimal due to the scale of work proposed therefore, all possible impacts will be mitigated as per the EMP. Biodiversity and Heritage specialist studies were conducted to ensure that all species and heritage resources on site are taken into consideration. The summary of specialists' reports is on **Table 10** below

Table 10: Summary of Specialist Reports

LIST OF SPECIALIST REPORTS UNDERTAKEN	RECOMMENDATIONS OF SPECIALISTS 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.
Archaeological & Heritage Impact Assessment Report	<ul style="list-style-type: none"> ▪ 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 preserved <i>in situ</i> ▪ The prospecting team must engage land owners and farm workers regarding occurrence of known graves in their farms. ▪ Should any unmarked burials be exposed during prospecting, 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 	All specialist recommendations have been included in the Basic Assessment Report	Specialist recommendations are included in Section 1.10.1 and 1.10.2 below

oversee the relocation process in accordance with the National Heritage Resources Act 25 of 1999.

- Should chance archaeological materials or human burial remains be exposed during subsurface construction work on any section of the proposed development laydown sites, work should cease on the 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.
- Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project EMP, there are no other significant cultural heritage resources barriers to the proposed development. The Heritage authority may approve the proposed prospecting right application to proceed as planned with special commendations to implement the recommendations here in made.
- 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.
- 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
- 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

- It is the responsibility of the applicant to protect the site from publicity (i.e., media) until a mutual agreement is reached.
- 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
- The applicant is reminded that unavailability of archaeological materials (e.g. stone tools and graves, etc) and fossils does not mean they do not occur, archaeological material might be hidden underground, and as such the client is reminded to take precautions during prospecting.
- The footprint impact of the proposed prospecting activities should be kept to minimal to limit the possibility of encountering chance finds within the proposed development site.
- Overall, impacts to heritage resources are not considered to be significant for the project receiving environment. It is thus concluded that the project may be cleared to proceed as planned subject to the Heritage Authority ensuring that detailed heritage monitoring procedures are included in the project EMP for the construction phase, include chance archaeological finds mitigation procedure in the project EMP
- The chance finds process will be implemented when necessary especially when archaeological materials and burials are encountered during subsurface construction activities.
- 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.

<p>Biodiversity Impact Assessment Report</p>	<ul style="list-style-type: none"> ▪ The proposed area for the prospecting is regarded as having a conservation value of Medium to High. This is due to the abundance and richness of the protected plant species (<i>Vachellia erioloba</i> and <i>Boscia albitrunca</i>) as well as part of the area being within a CBA and ESA ▪ It is therefore important that the placement of the prospecting sites including structures is done with these sensitive areas in mind ▪ The placement of drilling sites must take into account the area contains protected and red listed plants for the proposed prospecting to contribute significantly to conservation of biodiversity within the region, as not the whole area will be removed of vegetation but rather only the drilling sites ▪ Rather than creating new roads use already available farm roads to the drilling sites ▪ If efforts are made to initiate conservation of this habitat, and conservation is maintained after the closure of the prospecting, the net impacts on biodiversity will be positive ▪ Avoid drilling close to watercourses. 	<p>All specialist recommendations have been included in the Basic Assessment Report</p>	<p>Specialist recommendations are included in Section 1.10.1 and 1.10.2 below</p>
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1.9.1 Assessment of Impacts from Archaeological & Heritage Impact Assessment Report

Table 11: Assessment of Impacts from Archaeological & Heritage Impact Assessment Report

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
CLEARING, PROSPECTING, OPERATIONAL & DECOMMISSIONING PHASE														
Clearing and Prospecting	Destruction of archaeological remains	Cultural heritage	- (ve)	6	1	4	5	55	<ul style="list-style-type: none"> LIA site must be mapped and documented A management plan for the site must be drawn An archaeologist must be appointed to monitor during prospecting Use chance find procedure to cater for accidental finds 	6	2	4	3	36
Clearing and Prospecting	Disturbance of graves	Cultural heritage	- (ve)	6	1	4	5	55	<ul style="list-style-type: none"> Graves must be preserved in situ Landowners and farm workers must be consulted for more information regarding location of known graves Identification of graves in this section of the country is difficult prospecting teams must solicit assistance of local residents during prospecting 	6	2	4	3	36
Clearing and Prospecting	Disturbance of buildings and	Cultural Heritage	- (ve)	4	1	2	2	14	<ul style="list-style-type: none"> None required 	4	1	2	2	14

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
	structures older than 60 years old													
Movement of equipment	Destruction public monuments and plaques	Cultural Heritage	- (ve)	2	1	1	1	04	<ul style="list-style-type: none"> Mitigation is not required because there are no public monuments within the mining right application site 	2	1	1	4	04

1.9.2 Assessment of Impacts from Biodiversity Impact Assessment Report

Table 12: Assessment of Impacts from Biodiversity Impact Assessment Report

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
Prospecting Phase														
Vegetation Clearing for the prospecting purpose	Destruction of protected plant species	Flora	- (ve)	4	1	4	5	45	<ul style="list-style-type: none"> Supervision by an ecologist to ensure success of the rescue operation Place drilling holes away from any red listed and/or protected plant species Use already available farm roads to avoid trampling red listed plant species 	2	1	2	5	25
Vegetation Clearing for the prospecting purpose	Removal of the natural vegetation	Flora	- (ve)	4	1	4	5	45	<ul style="list-style-type: none"> 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 Avoid drilling on The Falls area as it provides habitat for Vultures as well as Blue Cranes. Use already available farm roads and avoid creating new ones Vegetation clearing areas should be kept to a minimum and restricted to the proposed drilling sites. 	4	1	1	2	16

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
									<ul style="list-style-type: none"> Exposed areas should be rehabilitated with indigenous plants to the project area as soon as construction is finished 					
Vegetation Clearing for the prospecting purpose	Disturbance to animals on site	Fauna	- (ve)	6	2	3	4	44	<ul style="list-style-type: none"> Do not disturb nests, breeding sites or young ones. Do not attempt to kill or capture snakes unless directly threatening the safety of employees. Dogs or other pets are not allowed to the worksite as they are threats to the natural wild animal A low speed limit should be enforced on site to reduce wild animal-vehicle collisions No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site. 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. Hunting weapons are prohibited on site. Contract employees must be educated about the value of wild animals and the importance of their conservation. 	4	1	2	3	21

Activity	Impact	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance Before Mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance After Mitigation
									<ul style="list-style-type: none"> The ECO must conduct regular site inspections of removing any snares or traps that have been erected. Employees and contractors should be made aware of the presence of, and rules regarding, flora and fauna through suitable induction training and on-site signage. 					
Vegetation Clearing for the prospecting purpose	Increased soil erosion, increase in silt loads and sedimentation	Soil	- (ve)	4	2	4	5	50	<ul style="list-style-type: none"> Following prospecting, rehabilitation of disturbed areas is required Avoid areas with sensitive soils, steep slopes during rain or windy season. Ensure that roads are not paved but well maintained (as gravel) to reduce the speed of water by promoting infiltration. 	4	1	1	2	12
Vegetation Clearing for the prospecting purpose	Establishment and spread of declared weeds	Flora	- (ve)	6	1	4	5	55	<ul style="list-style-type: none"> The best mitigation measure for alien and invasive species is the early detection and eradication of these species which will be ensured with the use of a monitoring programme. An alien invasive management programme should be developed and implemented in order to control alien invasive species 	4	1	1	2	12

1.10 Environmental Impact Assessment

1.10.1 Summary of the Key Findings of the Archaeological & Heritage Impact Assessment Report

The literature review and field research confirmed that the project area is situated within a contemporary cultural landscape dotted with settlements with long local history. In terms of the archaeology and heritage in respect of the proposed prospecting site, there are no obvious 'Fatal Flaws' or 'No-Go' areas. However, it must be borne in mind that most burial sites in the project area occur closer to farmsteads and they are known by landowners and farm workers. As such it is important for prospecting teams to seek assistance of landowners and farm workers to ensure that all known graves are identified and protected.

The potential for chance finds, still remains and the applicant and contractors are advised to be diligent and observant during prospecting, should prospecting activities commence on the site. The procedure for reporting chance finds has clearly been laid out. This report concludes that the prospecting right application may be approved by SAHRA to proceed as planned subject to recommendations herein made and heritage monitoring plan being incorporated into the EMP. The mitigation measures are informed by the results of the AIA/HIA study and principles of heritage management enshrined in the NHRA, Act 25 of 1999.

1.10.2 Summary of the Key Findings of the Biodiversity Assessment Report

From the desktop assessment it seems the plant communities on the site were in a good condition, representing natural, close to pristine vegetation. The proposed area for the prospecting is regarded as having a conservation value of Medium to High. This is due to the abundance and richness of the protected plant species (*Vachellia erioloba* and *Boscia albitrunca*) as well as part of the area being within a CBA and ESA.

It is therefore important that the placement of the prospecting sites including structures is done with these sensitive areas in mind. The placement of drilling sites must take into account the area contains protected and red listed plants. The opportunity exists however, for the proposed prospecting to contribute significantly to conservation of biodiversity within the region, as not the whole area will be removed of vegetation but rather only the drilling sites. Rather than creating new roads use already available farm roads to the drilling sites. If efforts are made to initiate conservation of this habitat, and conservation is maintained after the closure of the prospecting, the net impacts on biodiversity will be positive. Avoid drilling close to watercourses.

It is then advised that drilling prospecting may continue provided that the mitigation measures as suggested can be implemented, then the overall impact of the development components would be of low overall significance and it is unlikely that the development would result in an overall

net loss of biodiversity or long-term degradation of the receiving environment as the area to be drilled is smaller in terms of vegetation removal

1.10.3 Site Map

The Site Map has been attached as **Figure 2** for the proposed project

1.10.4 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 **Section 1.6.7** above

1.11 Proposed Impact Management Objectives and the Impact Management Outcomes for the 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 of each site. All the potential (negative) impacts identified have been assessed and found to be of low to medium significance and after applying the mitigation measures, the impacts get even lower.

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

1.12 Aspects for Inclusion as Conditions of the Authorisation

(any aspects which must be made conditions of the Environmental Authorisation approval)

- Existing access routes must be used to access the point of interest.
- Where necessary, the access routes should be maintained to ensure that other users are not affected by the use of routes for the development
- Disturbed areas must be rehabilitated to a standard that matches or replicates the surrounding area,
- All wastes generated must be disposed of at an appropriate registered landfill and disposal certificate/proof of disposal be kept on site;

1.13 Description of Any Assumptions, Uncertainties and Gaps in Knowledge.

(Which relate to the assessment and mitigation measures proposed)

- It is assumed that the information obtained from the existing literature is correct

- It is assumed that the conclusions made from the observation made during the site visit is correct.
- It is assumed that the information obtained from the Kuruman Museum regarding environmental sensitivity, biodiversity, climatic conditions, heritage and any related information is a true reflection of the existing of the site
- This report has been compiled according to the requirements stipulated or outlined in the NEMA regulations.

1.14 Reasoned Opinion as to Whether the Proposed Activity Should or Should not be Authorised

1.14.1 Reasons Why the Activity Should Be Authorised or Not

The applicant is applying for a prospecting right which will be undertaken through drilling of twenty (20) boreholes which has a very 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. The authorization of this project will assist the government to obtain geological information such as quality and quantity of the minerals in the area from the applicant

1.14.2 Conditions That Must be Included in the Authorisation

The management's objectives listed in this report under Section 1.12 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.

1.15 Period for Which the Environmental Authorisation is Required

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

1.16 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 of this report

1.17 Financial Provision

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

The financial provision is estimated at approximately **R84 968,47**.

1.17.1 Explain How the Aforesaid Amount Was Derived

The amount was derived using the quantum calculation table and applying the 2020 Master Rates

1.17.2 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 the amount is provided for in the Prospecting Works Programme.

1.18 Specific Information Required by the Competent Authority

1.18.1 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 No. 107 of 1998) states that 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)

- Land owners' socio-economic impact will be minimal to none because the drilling programme will either be conducted during a non-business season (off season for breeding or hunting) or will avoid the sensitive areas and drill on the closest available piece of land that is the same as the point of interest (e.g., avoid the cultivation area and drill on its boundary to avoid interfering with the crop production)
- The drilling activity is normally a short to medium term in duration, therefore the land owners or users will not lose profitable time.
- Only twenty (20) boreholes will be drilled - spread over the whole application area consisting of forty-eight (48) portions which means that over 58% of the farm portions will not be impacted while some may have a maximum of four (4) drill holes.

(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 literature review and field research confirmed that the project area is situated within a contemporary cultural landscape dotted with settlements with long local history. In terms of the archaeology and heritage in respect of the proposed prospecting site, there are no obvious 'Fatal Flaws' or 'No-Go' areas. However, it must be borne in mind that most burial sites in the project area occur closer to farmsteads and they are known by landowners and farm workers. As such it is important for prospecting teams to seek assistance of landowners and farm workers to ensure that all known graves are identified and protected.

The potential for chance finds, still remains and the applicant and contractors are advised to be diligent and observant during prospecting, should prospecting activities commence on the site. The

procedure for reporting chance finds has clearly been laid out. This report concludes that the prospecting right application may be approved by SAHRA to proceed as planned subject to recommendations herein made and heritage monitoring plan being incorporated into the EMP.

1.19 Other Matters Required in Terms of Section 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).

There are 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 have already been included in **PART A, Section 1(a)**.

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 environmental management programme is already included in **PART A** of this report.

1.3 Composite Map

(Provide a map (Attached as an Appendix D) 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 should be avoided, including buffers)

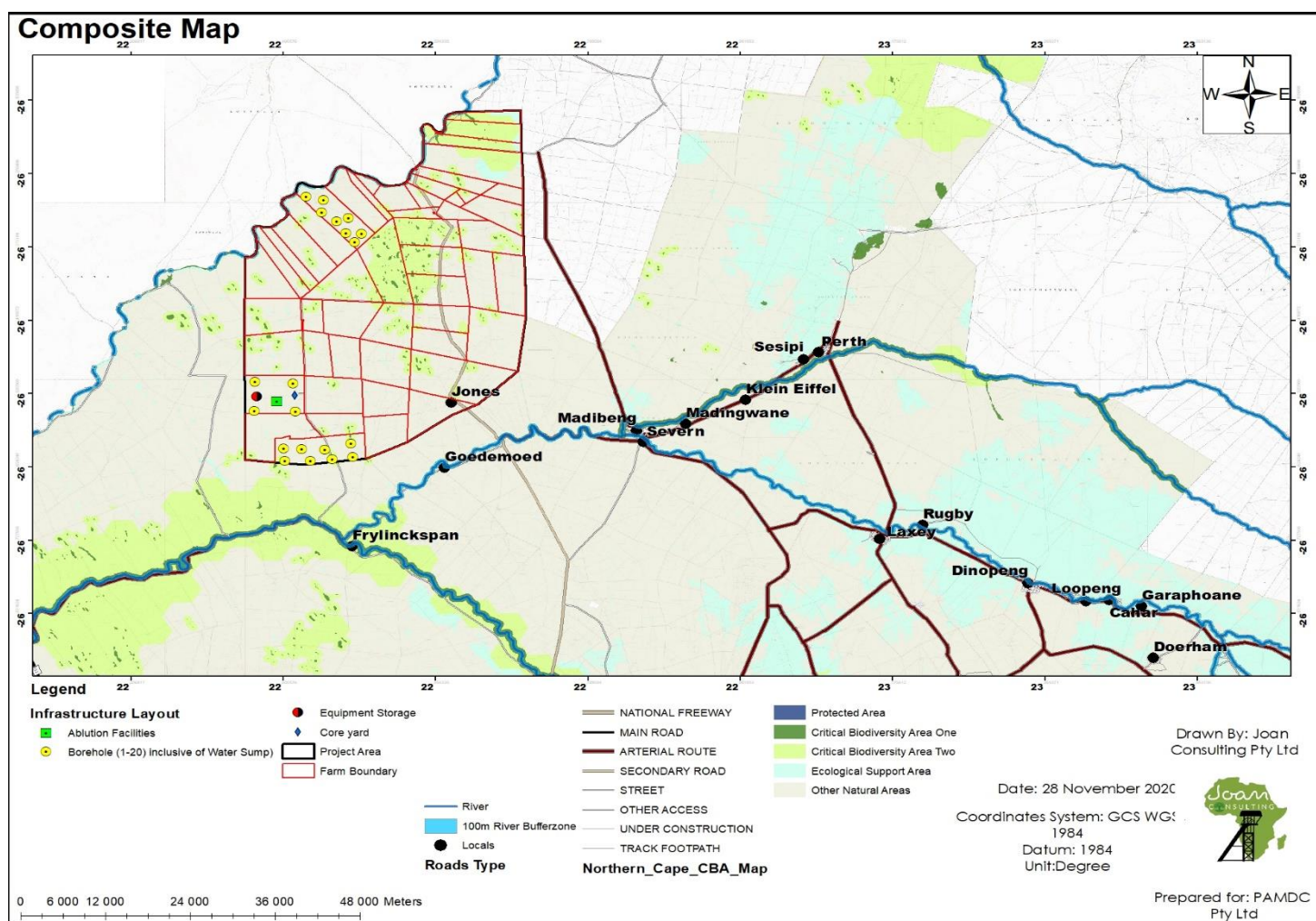


Figure 10: Composite Map

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)

Closure of each prospecting site will entail rehabilitation of the disturbed areas to as close to their pre-prospecting condition as practically as possible. The closure related objectives are as follows:

- To rehabilitate the disturbed area back to its natural state as practically as possible.
- To leave no residual impacts on the neighbouring farmers
- To encourage revegetation
- To leave no open borehole on site (close the drill holes with concrete caps)
- To remove all the mobile infrastructure and all other items brought in for the operation
- To remove all waste types and disposed of properly.
- To ensure the safety and health of humans and animals post closure.
- To complete rehabilitation of the site within a specified period as guided by the Regional Manager

1.4.2 Volumes and Rate of Water Use Required for the Operation

The operation requires approximately 1000 litres of water per day. This quantity of water is for dust suppression and for cooling down the drill rig. The water will be outsourced from the municipality and will be transported to the site by a tanker with a capacity of 10 000 litres.

1.4.3 Has a Water Use License Been Applied For?

The quantity of water which is required during the prospecting process does not require the application of a Water Use License

1.4.4 Impacts to be Mitigated in their Respective Phases

Table 13: Measures to Rehabilitate the Environment Affected by the Undertaking of the Listed Activities

Activity	Impact	Aspect	Size and Scale	Mitigation measures	Compliance with Standards	Time Period for Implementation	Standard to be Achieved
CONSTRUCTION PHASE							
Clearing of vegetation and movement of vehicles for site establishment	Generation of Dust	Air Quality - Dust	0.408	<ul style="list-style-type: none"> Dust suppression using water will be under taken to manage dust emitting from vegetation removal. 	Compliance with Ambient air quality Standards	Throughout the life cycle of the prospecting works	To remain within air quality ambient level
Clearing of vegetation and movement of vehicles for site establishment	Increased noise levels from movement of vehicles	Noise	0.408	<ul style="list-style-type: none"> Trucks, machinery, and equipment must be regularly serviced to reduce noise levels 	Compliance with Ambient Noise Standards	Throughout the life cycle of the prospecting works	To remain within ambient noise level
Clearing of vegetation and movement of vehicles for site establishment	Destruction of archaeological remains and un identified graves	Cultural Heritage	0.408	<ul style="list-style-type: none"> Burial sites must be plotted, clearly marked and must be protected/barricaded to avoid accidental damage during prospecting activities Custodians must be involved in any mitigation work to their family burial sites 	Compliance with cultural heritage standards	During construction phase	Protection of cultural heritage sites
Clearing of vegetation and movement of	Disruption and destruction of animal life	Fauna	0.408	<ul style="list-style-type: none"> No wild animal may under any circumstance be handled, removed or be interfered with No wild animal may be fed on site 	Compliance with conservation	Throughout the life cycle of the prospecting works	Prevent and protect and conserve the lives of fauna

Activity	Impact	Aspect	Size and Scale	Mitigation measures	Compliance with Standards	Time Period for Implementation	Standard to be Achieved
vehicles for site establishment				<ul style="list-style-type: none"> No wild animal may under any circumstance be hunted, snared, captured, injured or killed No wild animal may under any circumstance be hunted, snared, captured, injured or killed Remove and dispose of any snares or traps found on or adjacent to the site. 	of wild life Standards		
Clearing of vegetation and movement of vehicles for site establishment	Disruption and destruction of vegetation	Flora	0.408	<ul style="list-style-type: none"> Do not disturb, deface, destroy or remove plants or natural features outside the demarcated area. No open fires are permitted under trees and no vegetative matter may be removed for firewood. Locate construction camps on the outside fringe of the riparian vegetation zone. Where damage to protected plants and natural features is a problem, then these should be fenced for protection. 	Compliance with conservation of wild life Standards	Throughout the life cycle of the prospecting works	Prevent and protect and conserve the lives of flora
Clearing of vegetation and movement of vehicles for site establishment	Loss of fertile topsoil	Soil, Land Use and Land Capability	0.408	<ul style="list-style-type: none"> The construction footprint should be kept as small as possible Keep as much original land cover as possible Stripped soils should be stockpiled surrounding the disturbed area 	Compliance with measures outlined on this EMP and soil quality standard	During Construction phase	Prevent fertile soil. implementation of Monitoring programme

Activity	Impact	Aspect	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	Soil Compaction	Soil, Land Use and Land Capability	0.408	<ul style="list-style-type: none"> • Avoid creating many access routes. • Keep the speed limit to minimum to reduce the tire contractions on the soil. 	Compliance with measures outlined on this EMP and soil quality standard	During Construction phase	Prevent compaction of soil and land. implementation of Monitoring programme
Clearing of vegetation and movement of vehicles for site establishment	Soil contamination from hydrocarbon spills	Soil, Land Use and Land Capability	0.408	<ul style="list-style-type: none"> • Clean all hydrocarbon spills from machinery immediately, and • Dispose contaminated soils at a permitted site • Drip trays are to be watertight, and must be emptied regularly and before rain events • The contents of drip trays are to be treated as hazardous waste • Only emergency and essential repairs of vehicles and equipment may take place on site. 	Compliance with measures outlined on this EMP and soil quality standard	During Construction phase	Prevent pollution of soil and land. implementation of Monitoring programme
Clearing of vegetation and movement of vehicles for site establishment	Uncontrolled soil erosion and change in the area topography	Topography	0.408	<ul style="list-style-type: none"> • Demarcate construction footprint and limit activities to within this footprint as far as possible • Keep the clearance area as small as possible • Keep as much original land cover as possible 	Compliance with measures outlined on this EMP	During Construction phase	To conform to the natural surroundings of the area

Activity	Impact	Aspect	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	Increased sedimentation, surface runoff and Soil Erosion	Surface Water Resources	0.408	<ul style="list-style-type: none"> Limit the development footprint to reduce high-sediment runoff; Avoid clearing the site during the rainy seasons Rehabilitate the area by re-using stockpiled soil within as short a period of time. 	Compliance with water quality Standards	Throughout the life cycle of the prospecting works	Prevent pollution of surface water.
Clearing of vegetation and movement of vehicles for site establishment	Surface water contamination from hydrocarbon spills	Surface Water Resources	0.408	<ul style="list-style-type: none"> Clean all hydrocarbon spills from machinery immediately Dispose contaminated soils at a permitted site Drip trays are to be watertight, and must be emptied regularly and before rain events The contents of drip trays are to be treated as hazardous waste. 	Compliance with water quality Standards	Throughout the life cycle of the prospecting works	Prevent pollution of surface water.
Clearing of vegetation and movement of vehicles for site establishment	Increased visual levels such as dust and infrastructures	Visual Aspect	0.408	<ul style="list-style-type: none"> The development footprints and disturbed areas should be kept as small as possible Construction activities should be restricted to daylight hours to limit the need to bright floodlighting and the potential for skyglow Dust suppression should be carried throughout, whenever dust emanates 	Compliance with measures outlined on this EMP	During Construction phase	To conform to the natural surroundings of the area

Activity	Impact	Aspect	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: <ul style="list-style-type: none"> Dust Generation Noise Generation 	Air Quality Noise	0.408	<ul style="list-style-type: none"> Dust suppression using water will be under taken to manage dust emitting from vegetation removal Footprint earmarked for vegetation removal must be clearly marked Trucks, machinery, and equipment must be regularly serviced to reduce noise levels Work should be conducted during day time only to minimise disruption of neighbours and animal life 	Compliance with Ambient Noise and Air Quality Standards	Throughout the life cycle of the prospecting works	To remain within air quality and noise ambient level
Clearing of vegetation and movement of vehicles for site establishment	On Game Lodge <ul style="list-style-type: none"> Dispersing and disruption of animals 	Fauna	0.408	<ul style="list-style-type: none"> No wild animal may under any circumstance be handled, removed or be interfered with No wild animal may be fed on site No wild animal may under any circumstance be hunted, snared, captured, injured or killed No wild animal may under any circumstance be hunted, snared, captured, injured or killed Remove and dispose of any snares or traps found on or adjacent to the site 	Compliance with conservation of wild life Standards	Throughout the life cycle of the prospecting works	Prevent and protect and conserve the lives of fauna
Clearing of vegetation and movement of	On Settlement and Residential	Social	0.408	<ul style="list-style-type: none"> The applicant must consult with the affected parties on which times are favourable for them before undertaking 	Compliance with standards	Throughout the life cycle of the prospecting works	To prevent negative impacts and protect the

Activity	Impact	Aspect	Size and Scale	Mitigation measures	Compliance with Standards	Time Period for Implementation	Standard to be Achieved
vehicles for site establishment	<ul style="list-style-type: none"> Negatively impacting on residents' livelihoods 			the activities which could negatively impact their livelihood	within the IDP		livelihood of farm owners and local residents
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	0.408	<ul style="list-style-type: none"> Notify the local farmer's forum (Agri-Kuruman and affected forums) Comply with all the local safety requirements 	Compliance with the local safety requirements	Throughout the life cycle of the prospecting works	Safety of all I&APs
Prospecting Works	Generation of Waste	Impact all environmental aspects	0.408	<ul style="list-style-type: none"> Dedicate a storage area on site for the collection of wastes Litter bins must be equipped with a closing mechanism to prevent their contents from over following blowing out by wind Empty litter bins regularly to avoid overflow Proper ablution facilities on site must be provided. 	Compliance with waste management regulation	Throughout the life cycle of the prospecting works	Waste Reduction on site
OPERATIONAL PHASE							
Prospecting Works	Work injury - impacting on the employees	Social, Health & Safety Aspect	0.408	<ul style="list-style-type: none"> Proper protective equipment must be allocated to all personnel working with high risk equipment (drill rig) Tool box talk must be conducted to address the risk associated with the proposed project 			

Activity	Impact	Aspect	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	Generation of Dust	Air Quality - Dust	0.408	<ul style="list-style-type: none"> Dust suppression using water will be under taken to manage dust emitting from vegetation removal. 	Compliance with Ambient air quality Standards	Throughout the life cycle of the prospecting works	To remain within air quality ambient level
Borehole drilling, construction of water sump and movement of vehicles	Increased noise levels from movement of vehicles	Noise	0.408	<ul style="list-style-type: none"> Trucks, machinery, and equipment must be regularly serviced to reduce noise levels 	Compliance with Ambient Noise Standards	Throughout the life cycle of the prospecting works	To remain within ambient noise level
Borehole drilling, construction of water sump and movement of vehicles	Destruction of archaeological remains and unidentified graves	Cultural Heritage	0.408	<ul style="list-style-type: none"> Burial sites must be plotted, clearly marked and must be protected/barricaded to avoid accidental damage during prospecting activities. Custodians must be involved in any mitigation work to their family burial sites Should and graves or archaeological artifacts are discovery on site, work should cease immediately until a heritage specialist gives a go ahead 	Compliance with cultural heritage standards	During operational phase	Protection of cultural heritage sites
Borehole drilling, construction of water sump and movement of vehicles	Disruption and destruction of animal life	Fauna	0.408	<ul style="list-style-type: none"> No wild animal may under any circumstance be handled, removed or be interfered with. No wild animal may be fed on site 	Compliance with conservation of wild life Standards	Throughout the life cycle of the prospecting works	Prevent and protect and conserve the lives of fauna

Activity	Impact	Aspect	Size and Scale	Mitigation measures	Compliance with Standards	Time Period for Implementation	Standard to be Achieved
				<ul style="list-style-type: none"> No wild animal may under any circumstance be hunted, snared, captured, injured or killed No wild animal may under any circumstance be hunted, snared, captured, injured or killed Remove and dispose of any snares or traps found on or adjacent to the site. 			
Borehole drilling, construction of water sump and movement of vehicles	Disruption and destruction of vegetation	Flora	0.408	<ul style="list-style-type: none"> Do not disturb, deface, destroy or remove plants or natural features outside the demarcated area No open fires are permitted under trees and no vegetative matter may be removed for firewood Locate construction camps on the outside fringe of the riparian vegetation zone Where damage to protected plants and natural features is a problem, then these should be fenced for protection 	Compliance with conservation of wild life Standards	Throughout the life cycle of the prospecting works	Prevent and protect and conserve the lives of flora
Borehole drilling, construction of water sump and movement of vehicles	Loss of fertile topsoil	Soil, Land Use and Land Capability	0.408	<ul style="list-style-type: none"> The construction footprint should be kept as small as possible Keep as much original land cover as possible Stripped soils should be stockpiled surrounding the disturbed area 	Compliance with measures outlined on this EMP and soil quality standard	During Operational Phase	Prevent fertile soil. implementation of Monitoring programme

Activity	Impact	Aspect	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	Soil Compaction	Soil, Land Use and Land Capability	0.408	<ul style="list-style-type: none"> Avoid creating many access routes; Keep the speed limit to minimum to reduce the tire contractions on the soil. 	Compliance with measures outlined on this EMP and soil quality standard	During Operational Phase	Prevent compaction of soil and land. implementation of Monitoring programme
Borehole drilling, construction of water sump and movement of vehicles	Soil contamination from hydrocarbon spills	Soil, Land Use and Land Capability	0.408	<ul style="list-style-type: none"> Clean all hydrocarbon spills from machinery immediately, and Dispose contaminated soils at a permitted site Drip trays are to be watertight, and must be emptied regularly and before rain events The contents of drip trays are to be treated as hazardous waste Only emergency and essential repairs of vehicles and equipment may take place on site. 	Compliance with measures outlined on this EMP and soil quality standard	During Operational Phase	Prevent pollution of soil and land. implementation of Monitoring programme
Borehole drilling, construction of water sump and movement of vehicles	Uncontrolled soil erosion and change in the area topography	Topography	0.408	<ul style="list-style-type: none"> Demarcate construction footprint and limit activities to within this footprint as far as possible Keep the clearance area as small as possible Keep as much original land cover as possible 	Compliance with measures outlined on this EMP	During Operational Phase	To conform to the natural surroundings of the area

Activity	Impact	Aspect	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	Increased sedimentation, surface runoff and Soil Erosion	Surface Water Resources	0.408	<ul style="list-style-type: none"> Limit the development footprint to reduce high-sediment runoff; Avoid clearing the site during the rainy seasons Rehabilitate the area by re-using stockpiled soil within as short a period of time 	Compliance with water quality Standards	Throughout the life cycle of the prospecting works	Prevent pollution of surface water.
Borehole drilling, construction of water sump and movement of vehicles	Surface water contamination from hydrocarbon spills	Surface Water Resources	0.408	<ul style="list-style-type: none"> Clean all hydrocarbon spills from machinery immediately Dispose contaminated soils at a permitted site Drip trays are to be watertight, and must be emptied regularly and before rain event The contents of drip trays are to be treated as hazardous waste. 	Compliance with water quality Standards	Throughout the life cycle of the prospecting works	Prevent pollution of surface water.
Borehole drilling, construction of water sump and movement of vehicles	Increased visual levels such as dust and infrastructures (drill rig)	Visual Aspect	0.408	<ul style="list-style-type: none"> The development footprints and disturbed areas should be kept as small as possible Construction activities should be restricted to daylight hours to limit the need to bright floodlighting and the potential for skyglow Dust suppression should be carried throughout, whenever dust emanates 	Compliance with measures outlined on this EMP	During Operational Phase	To conform to the natural surroundings of the area

Activity	Impact	Aspect	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: <ul style="list-style-type: none"> Dust Generation Noise Generation 	Air Quality Noise	0.408	<ul style="list-style-type: none"> Dust suppression using water will be under taken to manage dust emitting from vegetation removal Footprint earmarked for vegetation removal must be clearly marked Trucks, machinery, and equipment must be regularly serviced to reduce noise levels Work should be conducted during day time only to minimise disruption of neighbours and animal life 	Compliance with Ambient Noise and Air Quality Standards	Throughout the life cycle of the prospecting works	To remain within air quality and noise ambient level
Clearing of vegetation and movement of vehicles for site establishment	On Game Lodge Dispersing and disruption of animals	Fauna	0.408	<ul style="list-style-type: none"> No wild animal may under any circumstance be handled, removed or be interfered with No wild animal may be fed on site No wild animal may under any circumstance be hunted, snared, captured, injured or killed No wild animal may under any circumstance be hunted, snared, captured, injured or killed Remove and dispose of any snares or traps found on or adjacent to the site 	Compliance with conservation of wild life Standards	Throughout the life cycle of the prospecting works	Prevent and protect and conserve the lives of fauna
Clearing of vegetation and movement of	On Settlement and Residential	Social	0.408	<ul style="list-style-type: none"> The applicant must consult with the affected parties on which times are favourable for them before undertaking 	Compliance with standards	Throughout the life cycle of the prospecting works	To prevent negative impacts and protect the

Activity	Impact	Aspect	Size and Scale	Mitigation measures	Compliance with Standards	Time Period for Implementation	Standard to be Achieved
vehicles for site establishment	Negatively impacting on residents' livelihoods			the activities which could negatively impact their livelihood	within the IDP		livelihood of farm owners and local residents
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	0.408	<ul style="list-style-type: none"> Notify the local farmer's forum (Agri-Kuruman and affected forums) Comply with all the local safety requirements 	Compliance with the local safety requirements	Throughout the life cycle of the prospecting works	Safety of all I&APs
Prospecting works	Generation of waste	Impact all environmental aspects	0.408	<ul style="list-style-type: none"> Dedicate a storage area on site for the collection of wastes Litter bins must be equipped with a closing mechanism to prevent their contents from over following blowing out by wind Empty litter bins regularly to avoid overflow Proper ablution facilities on site must be provided. 	Compliance with waste management regulation	Throughout the life cycle of the prospecting work	Waste reduction on site
Prospecting works	Work injury - impacting on the	Social, Health & Safety Aspect	0.408	<ul style="list-style-type: none"> Proper protective equipment must be allocated to all personnel working with high risk equipment (drill rig) Tool box talk must be conducted to address the risk associated with the proposed project. 			
DECOMMISSIONING PHASE							

Activity	Impact	Aspect	Size and Scale	Mitigation measures	Compliance with Standards	Time Period for Implementation	Standard to be Achieved
Decommissioning	Dust generated from removal of site infrastructures and from spreading of topsoil	Air Quality	0.408	<ul style="list-style-type: none"> Topsoil must be spread during less windy days Vegetation cover must be introduced as soon as possible to avoid soil erosion Implement dust suppression measures to minimize dust Revegetation must be done during rainy season. 	Compliance with Ambient air quality Standards	Throughout the life cycle of the prospecting works	To remain within air quality ambient level
Decommissioning	Hydrocarbons spillages and wildlife deaths from Vehicles	Fauna and Flora	0.408	<ul style="list-style-type: none"> Protect vegetation and soil by avoiding hydrocarbon spillages 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 works	Prevent and protect and conserve the lives of fauna and flora
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	Visual	0.408	<ul style="list-style-type: none"> All unnecessary infrastructure must be removed from the site Spread topsoil over the rehabilitated area Surface water and drainage lines must be rehabilitated to create a free-draining topography Re-vegetate the rehabilitated areas Ensure that the all boreholes are closed with a steel cap. 	Compliance with measures outlined on this EMP	During Operational phase	To conform to the natural surroundings of the area

Activity	Impact	Aspect	Size and Scale	Mitigation measures	Compliance with Standards	Time Period for Implementation	Standard to be Achieved
	receiving environment.						
Decommissioning	Increase of ambient noise levels from vehicles movements	Noise	0.408	<ul style="list-style-type: none"> Trucks, machinery, and equipment must be regularly serviced to ensure noise levels are not exceeded Reduce the vehicles speed limits Switch off equipment when not in use 	Compliance with Ambient Noise Standards	Throughout the life cycle of the prospecting works	To remain within ambient noise level
Decommissioning	Restoration of the surrounding land and its land use	Soil, Land Use and Land Capabilities	0.408	<ul style="list-style-type: none"> No mitigation measure is required for this impact as is positive and land is reinstated back to the state prior prospecting activities 	Compliance with measures outlined on this EMP and soil quality standard	Decommissioning phase	Land restoration
Decommissioning	Soil and Land contamination from hydrocarbons spillages	Soil, Land Use and Land Capabilities	0.408	<ul style="list-style-type: none"> Protect vegetation and soil by avoiding hydrocarbon spillages Vehicles must make use of existing roads to avoid destruction of vegetation Alien invasive control program must be adhered to. 	Compliance with measures outlined on this EMP and soil quality standard	Decommissioning phase	Land restoration

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 of the above requirements have been addressed in **Table 13** 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 of the above requirements have been addressed in **Table 13** 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 Regulations.

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

- To rehabilitate the disturbed area back to its natural state as close as possible.
- To leave no residual impacts on the neighbouring farmers
- To promote revegetation of denuded areas
- To leave no open borehole on site (close the drill holes with caps).
- To remove all the mobile infrastructure and all other items brought in for the operation
- To remove all waste types and dispose properly.
- To ensure the safety and health of humans and animals on the site post closure.
- To minimise disturbance whenever possible so that normal land use can continue after closure
- To complete final rehabilitation within specified period as guided by the Regional Manager

(ii) Confirm Specifically that the Environmental Objectives in Relation to Closure Have Been Consulted with Landowner and Interested and Affected Parties.

The environmental objectives in relation to the closure objectives of the prospecting activities have been specifically indicated in **PART B, Section 1.4.1.** above in this report. The draft basic assessment report was distributed to all stakeholders and to all the I&APs with these environmental closure objectives, ensuring that information is descended to all parties interested and affected by this proposed prospecting project.

Due to the current Corona Virus (COVID-19) pandemic, the public participation process excluded public meetings. This was because of the prohibition of gatherings set out in the published government regulations to help curb the spread of the Corona Virus. A public participation plan outlining all the methods of public consultation and measures taken to reduce the risk of spreading the virus was drafted and approved by the Department of Mineral Resources, Northern Cape.

(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 boreholes (20 in total) will be closed with caps to prevent inflow of surface runoff which may contaminate ground water. All the infrastructure will be removed, and the surface will be cleaned up, ripped up and fertilised to aid revegetation.

Table 14: Rehabilitation Measures

Activity	Extent Before Closure	Area After Rehabilitation and Closure
Boreholes	0.200 ha	Area will be completely rehabilitated and boreholes will be closed with caps.
Mobile Office and Ablution Facilities	0.208 ha	Area will be completely rehabilitated and all infrastructures will be removed.
Disturbed and Denuded Surfaces	0.408 ha	Clean, rip and fertilize

(iv) Explain Why it can be Confirmed that the Rehabilitation Plan is Compatible with the Closure Objectives.

The closure plan will assist the proposed prospecting right operation to achieve the following 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 the state which it was in pre-development, one that is safe and which will allow for natural succession as practically as possible.
- The rehabilitation plan responds to these closure objectives and aims to carry out tasks that will ensure that the closure objectives are met
- Comply with relevant legislation and policy requirements with regards to mine rehabilitation.
- Avoid or mitigate impacts associated with the project which may be detrimental to the environment
- Cost effective and efficient closure of mining operations.
- Management and monitoring of the area post-closure.

The closure objectives are aligned with the site rehabilitation plan that must be done. The closure objectives are aimed at leaving the project site in the state which is safe and which will allow natural succession as far as possible. 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

The Quantum for Financial Provision Is on Table 15 Below

Table 15: Financial Provision for Rehabilitation

No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures	m3	0	17,3	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	241,3	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	355,7	1	1	0
3	Rehabilitation of access roads	m2	0	43,2	1	1	0
4 (A)	Demolition and rehabilitation of electrified railway lines	M	0	419,2	1	1	0
4 (B)	Demolition and rehabilitation of non-electrified railway lines	M	0	228,6	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	482,7	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	0	245652,0	1	1	0
7	Sealing of shafts adits and inclines	m3	0	129,6	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0	168679,4	1	1	0
8 (B)	Processing waste deposits and evaporation ponds (salt)	ha	0	210087,1	1	1	0
8 (C)	Processing waste deposits and evaporation ponds (acid, metal)	ha	0	610192,5	1	1	0
9	Rehabilitation of subsided areas	ha	0	141243,5	1	1	0
10	General surface rehabilitation	ha	0,40	133622,5	1	1	53449
11	River diversions	ha	0	133622,5	1	1	0
12	Fencing	m	0	152,4	1	1	0
13	Water management	ha	0	50807,0	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0,40	17782,5	1	1	7112,988
15 (A)	Specialist study	Sum				1	0
15 (B)	Specialist study	Sum				1	0
Sub Total 1							60561,988
1	Preliminary and General		7267,43856		Weighting Factor 2		7267,43856
					1		
2	Contingencies				6056,1988		6056,1988
Sub Total 2							73885,63
VAT (15%)							11082,84
Grand Total							ZAR 84 968,47

(vi) Confirm that the Financial Provision Will be Provided as Determined

The financial provision will be provided as determined by the Competent Authority In terms of Section 41 of the Act (MPRDA) to achieve the total quantum for the rehabilitation, management and remediation of negative environmental impacts.

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 applicant's Environmental Control Officer and the Project Manager. The ECO will be based on site to ensure that all management actions are implemented where they are 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 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, to 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 the implementation of the corrective measures and when 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 programmes will be done on a monthly basis and reporting to the competent authority will be done on an annual basis. Any non-compliances will be recorded and plans of actions will be documented.

1.10 Responsible Person

For this EMP to be implemented effectively, all the role players involved in this project needs to ensure that there is compliance to the commitments set out in the EMP. A concise description of impacts and their mitigation/management measures will be provided and understood by all the 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 Region)
- The Environmental Control Officer
- The Contractor
- The Project Manager, and
- The Prospecting Right Holder

These parties will ensure that all conditions stated on the Environmental Authorisation are adhered to and that all environmental management requirements are met. Each person's responsibility is detailed in **Table 16** below.

Table 16: Responsible People for the Project Undertaking

Functions	Responsibility
Permit Holder	<ul style="list-style-type: none"> • Ensuring compliance to the EMP and conditions contained in the Environmental Authorisation (EA). • Contracting the Environmental Control Officer as an independent appointee to objectively monitor and implement the applicable environmental legislation.
Project Manager	<p>Oversee 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;</p> <ul style="list-style-type: none"> • Review the annual reports compiled by the Environmental Control Officer (ECO); • Identify the need for remedial measures with regard to proposed works; • Communicate directly with the Contractors; and • Issue non-conformance notifications to Contractors that do not comply with the requirements as set out in the EMP.
Environmental Control Officer	<ul style="list-style-type: none"> • Objectively monitor, implement applicable environmental legislation, conditions of Environmental Authorisations (EA's) and the EMP. • 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). • 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 • Develop environmental awareness training for all new site personnel (e.g. posters, tool box talks, signage); • Undertake visual inspections of the activities of employees with regard to implementation of the requirements outlined in the EMP; • Immediately notify the Project Manager of any non-compliance with the EMP, or any other complaints or issues of environmental concern;

	<ul style="list-style-type: none"> Ensure that all environmental monitoring programmes (sampling, measuring, recording etc.) are carried out according to protocols and schedules
Lead Authority (DMR)	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/right holder for undertaking prospecting work (drilling and rehabilitation) and ensure compliance with the EMP whilst carrying out the work.

1.11 Time Period for Implementing Impact Management Actions

The implementation of impact management actions must be done throughout the life of the prospecting activities. The impact management actions must immediately be implemented within a day of being approved before the impacts become detrimental to the environment.

1.12 Mechanisms for Monitoring Compliance

Table 17: Mechanisms for Monitoring Compliance

Source of Activity	Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities	Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions
CONSTRUCTION, OPERATIONAL & DECOMMISSIONING PHASE				
Construction, Operational and Decommissioning	Generation of Dust	Daily inspection of construction and operational works to ensure that no dust is generated	ECO and Project Manager	Daily monitoring and reporting. Management actions will be implemented daily
Construction, Operational and Decommissioning	Increased Noise Levels	Monitoring of construction and operational vehicles to ensure that noise level is kept at minimal	ECO and Project Manager	Daily monitoring and reporting. Management actions will be implemented daily
Construction, Operational and Decommissioning	Destruction Graves	Inspection of construction and operational works to ensure that no graves are destructed	ECO, Project Manager and Drilling Contractor	Monitoring and reporting as and when graves are encountered. Management actions will be implemented as mandated by SAHRA
Construction, Operational and Decommissioning	Soil Contamination	Daily inspection of operational equipment. Service vehicles timeously	ECO and Project Manager	Daily monitoring and reporting as spills occur. Management actions will be implemented as spill incidences occurs

Source of Activity	Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities	Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions
Construction, Operational and Decommissioning	Uncontrolled Soil Erosion	Ensure concurrent rehabilitation (backfilling and fertilisation/re-vegetation) is implemented throughout the life of the mine	ECO, Project Manager and Drilling Contractor	Monitoring and reporting throughout the entire prospecting operation. Management actions will be implemented in the event of erosion.
Construction, Operational and Decommissioning	Surface Water Contamination	Daily inspection of operational equipment. Service vehicles timeously	ECO and Project Manager	Daily monitoring and reporting as spills occur. Management actions will be implemented as spill incidences occurs
Construction, Operational and Decommissioning	Generation of Waste	Inspection of waste storage and ablution facilities and the general site inspection for any oil spillages	ECO & Project Manager	<ul style="list-style-type: none"> ➤ Weekly monitoring ➤ Monthly reporting ➤ Immediate implementation of management actions
REHABILITATION PHASE				
Decommissioning	Rehabilitation activities (spreading of topsoil, removal of infrastructures and rehabilitation of access roads) will assist to reduce the negative visual impact of mining	Inspection of rehabilitation on site and comparison of rehabilitation progress against rehabilitation plan	ECO, Project Manager and Competent Authority	Annual inspection and reporting. No implementation of impact management action is required

Source of Activity	Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities	Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions
	on the receiving environment.			
Decommissioning	Restoration of the surrounding land and its land use	Inspection of rehabilitation on site and comparison of rehabilitation progress against rehabilitation plan	ECO, Project Manager and Competent Authority	Annual inspection and reporting. No implementation of impact management action is required

1.13 Indicate the Frequency of the Submission of the Performance Assessment/Environmental Audit Report

The submission of the performance assessment/environmental audit report will be submitted on an annual basis. The performance assessment will be aiming to report to the Competent Authority in relation to the approved EMPr, the Environmental Authorisation and any other documentation related to the environment in which the mine will be required to conform to.

1.14 Environmental Awareness Plan

The management of the proposed prospecting right project has to appoint an Environmental Control Officer whose duty is to also implement an effective environmental awareness plan aimed to educate workers and contractors in terms of the biodiversity on site, environmental risks associated with the proposed development and land management of the site. Training and/or awareness should be raised and effectively communicated prior to the commencement of the construction phase.

Training sessions should incorporate the management plans addressed in this EMPr as well as any new information and documentation provided by the ECO, as well as that of the Environmental Health & Safety Officer. The ECO must be the most suitable person to conduct these training sessions, identifying sensitive environments as well as all the risks and impacts associated with the prospecting activities and the methods in which to deal with the impacts in order to avoid environmental degradation.

Training sessions can be monitored by providing an attendance register indicating the workers that received training as well as evidence of the training and/or awareness received. These sessions will also need to be carried out throughout the life of the prospecting activities, at least once a year, or as new information becomes available.

(i) Manner in Which the Applicant Intends to Inform Employees of Any Environmental Risk Which May Result from Their Work

The applicant will appoint an environmental officer who will be responsible for conducting monthly meetings with all the employees and environmental awareness of all environmental risks associated with the prospecting works.

- Environmental Induction Training
- Management Review Meetings
- Environmental Toolbox Tools

(ii) Manner in Which Risks Will be Dealt with in Order to Avoid Pollution or the Degradation of the Environment

PART A, **Section 1.6.6.** details the possible mitigation measures that could be applied in order to avoid pollution or the degradation of the environment which may arise due to the undertaking of the prospecting activities. In conjunction with the development of a working guideline policy, an EMS (Environmental Management System) will also be developed to ensure that a systemic approach is used to measure the success of the implementation of mitigation measures.

1.15 Specific Information Required by the Competent Authority

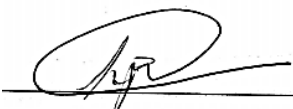
(Among others, confirm that the financial provision will be reviewed annually)

There are no specific information requirements which have been made by the Competent Authority at this stage, however, the financial provision will be reviewed annually.

2 UNDERTAKING

The EAP herewith confirms

- 2.1 The corrections 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 recommendation from the specialist reports where relevant
- 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.

A handwritten signature in black ink, appearing to be 'A.P.', written over a horizontal line.

Signature of the Environmental Assessment Practitioner

Joan Consulting (Pty) Ltd

Name of Company

November 2020

Date

END

APPENDICES

1. Appendix 1: EAP's Qualifications and Experience
2. Appendix 2: Project Maps
3. Appendix 3: Proof of Public Participation
4. Appendix 4: Specialist Studies Reports
5. Appendix 5: Site Notices
6. Appendix 6: Proof of Notification Delivery
7. Appendix 7: I&APs Database
8. Appendix 8: E-mail Communication to and from I&APs
9. Appendix 9: Minutes of the Meeting



Appendix 1: EAP's Qualifications and Experience

CURRICULUM VITAE OF LUFUNO PRECILLA MUTSHATHAMA

Surname : Mutshathama
First Name : Lufuno Precilla
Identity Numbers : 851002 0398 080
Date of Birth : 02nd October 1985
Gender : Female
Marital Status : Single
Home Language : Tshivenda
Nationality : South African
Physical Address : 45 Mayers Estate, Bassoon Avenue, Struben Valley, 1724
Contact numbers : 073 912 0800/011 791 5032
Fax No : 086 2355 142
Email address : lufuno@joanprojects.co.za

TERTIARY COMPETENCES

1. Name of Institution : University of Venda
Qualification : BEnvSc (Bachelor of Environmental Sciences)
Duration of study : 2005 - 2007
Major courses : **Ecology and Resources Management**
 - Environmental Impact Assessment Modelling
 - Hydrology & water resources
 - Conservation biology
 - Environmental Pollution and management
 - Resources Evaluation and Information Systems**Geography**
 - Geographic Information System (GIS)
 - Remote sensing
 - Population and demography
 - Climatology

- Biogeography
- Tourism geography

CURRENT OCCUPATION

June 2013 to date : Director: Mineral Licensing and Environmental Consultant
Company : Joan Consulting (Pty) Ltd

PROJECTS UNDERTAKEN

See attached page

PREVIOUS WORK EXPERIENCE

1. Name of Employer : Village Main Reef Limited
Job Title : Group Environmental Officer
Duration : January 2012 to July 2013
Duties:

Environmental Management:

- Enforce Compliance of MPRDA 2002 (Act No. 28 of 2002), NWA1998 (Act no 36 of 1998) and NEMA 1998 (Act No. 107 of 1998) through conducting environmental monitoring & auditing in four (4) mines and one exploration site.
- Compilation of EMPs
- Assessment of EM Programmes before they are submitted to the DMR
- Compilation of rehabilitation plans
- Liaison with the regulators (DMR, DWA & DEA)
- Compilation of performance assessments for all operations
- Calculation and updating rehabilitation financial liability
- Compilation of closure applications for Prospecting Rights
- Conduct public participation

Mineral and Prospecting Right Legal Tenure

- Apply and follow up on section 11s (cessions)
- Apply and follow up on section 102s (amendments/variations)
- Follow ups on conversion applications
- Apply and follow up on Mining Permits

2. Name of the employer : Department of Minerals Resources

Directorate : Mineral Regulation
 Job title : Environmental Officer
 Duration : September 2008 to December 2011
 Duties :

Environmental Management:

- Evaluation & assessment of EMPs, EIAs Scoping Reports, Performance Assessment Report, Closure Plans, rehabilitation plans Environmental Liability and other Environmental Technical Reports.
- Management of mining related impacts on the components of the natural environment.
- Compliance and enforcement of MPRDA 2002 (Act No. 28 of 2002), NWA1998 (Act no 36 of 1998) and NEMA 1998 (Act no 107 of 1998) through conducting Inspections, environmental monitoring & auditing
- Consult with relevant state departments that administer matters relating to the environment.
- Identifying area that are sensitive and protected before mining can resume.

Mineral and Prospecting Right Legal Tenure

- Assist clients with lodging applications on SAMRAD system.
- Capture mining spatial areas (polygons/ farms) applied for on the work - based GIS (ArcIMS) software for mining right, prospecting right and mining permit
- Digitising/geo-coding mining polygons
- Advise the regional manager on settlement and environmentally sensitive areas under the mining Application
- Give monthly statistic of all mining application in Limpopo

3. Name of the employer : Department of Minerals Resources
 Directorate : Mineral Regulation
 Job title : Intern (Environmental & GIS officer)
 Duration : April 2008 to September 2008
 Duties :

- Capture mining spatial areas (polygons/ farms) applied for on the work -based GIS (ArcIMS) software for mining right, prospecting right and mining permit
- Digitising/geo-coding mining polygons

- Advice the regional manager on settlement and environmentally sensitive areas under the mining Application
- Give monthly statistic of all mining application in Limpopo

REFERENCES

1. Name and Surname : Mr. Dalubuhle Ncube
Company name : Village Main Reef limited
Title : Managing Director
Contact details : 072 334 1965/011 274 4600
: DNcube@villagemainreef.co.za

2. Name and Surname : Mr. Aaron Kharivhe
Name of institution : Department of Mineral Resources
Title : Regional Manager: Limpopo Region
Contact details : 015 287 4700/082 467 0912
: Aaron.Kharivhe@dmr.gov.za

University of Venda



This is to Certify that the Degree of
**Bachelor of
Environmental Sciences**

was Awarded to

MUGOVHANI LUFUNO PRECILLA

at a Ceremony held on the

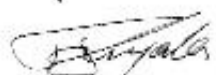
08-MAY-2008

in Accordance with the Provisions of the
Act and Statute


Vice Chancellor




University Registrar


Executive Dean

Certification:

I, *Lufuno Prescilla Mutshathama*, the undersigned, certify that to the best of my knowledge and belief, that the data provided above correctly describes my qualification, my experience and me

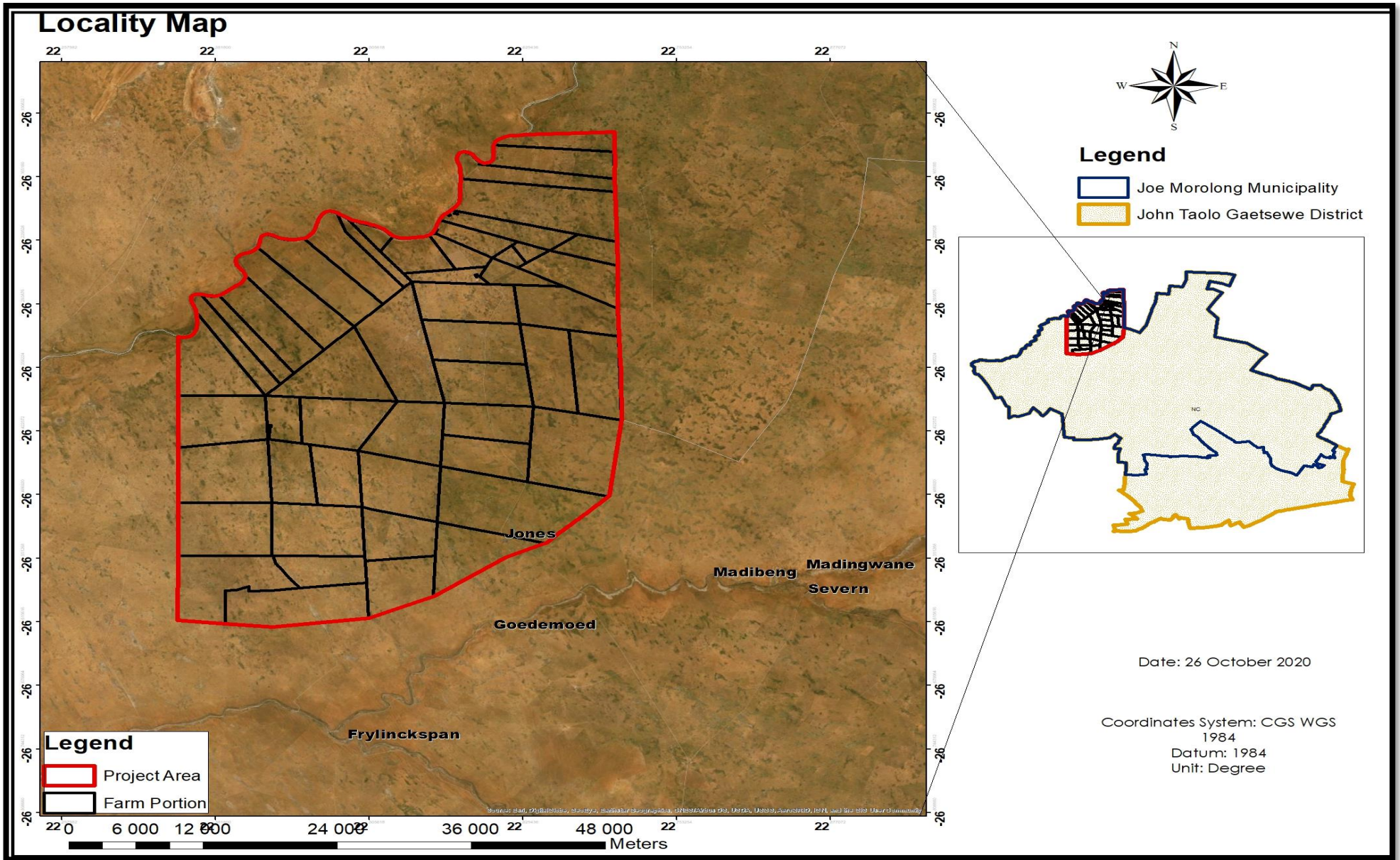
A handwritten signature in black ink, appearing to be 'LPM', written over a horizontal line.

Signature

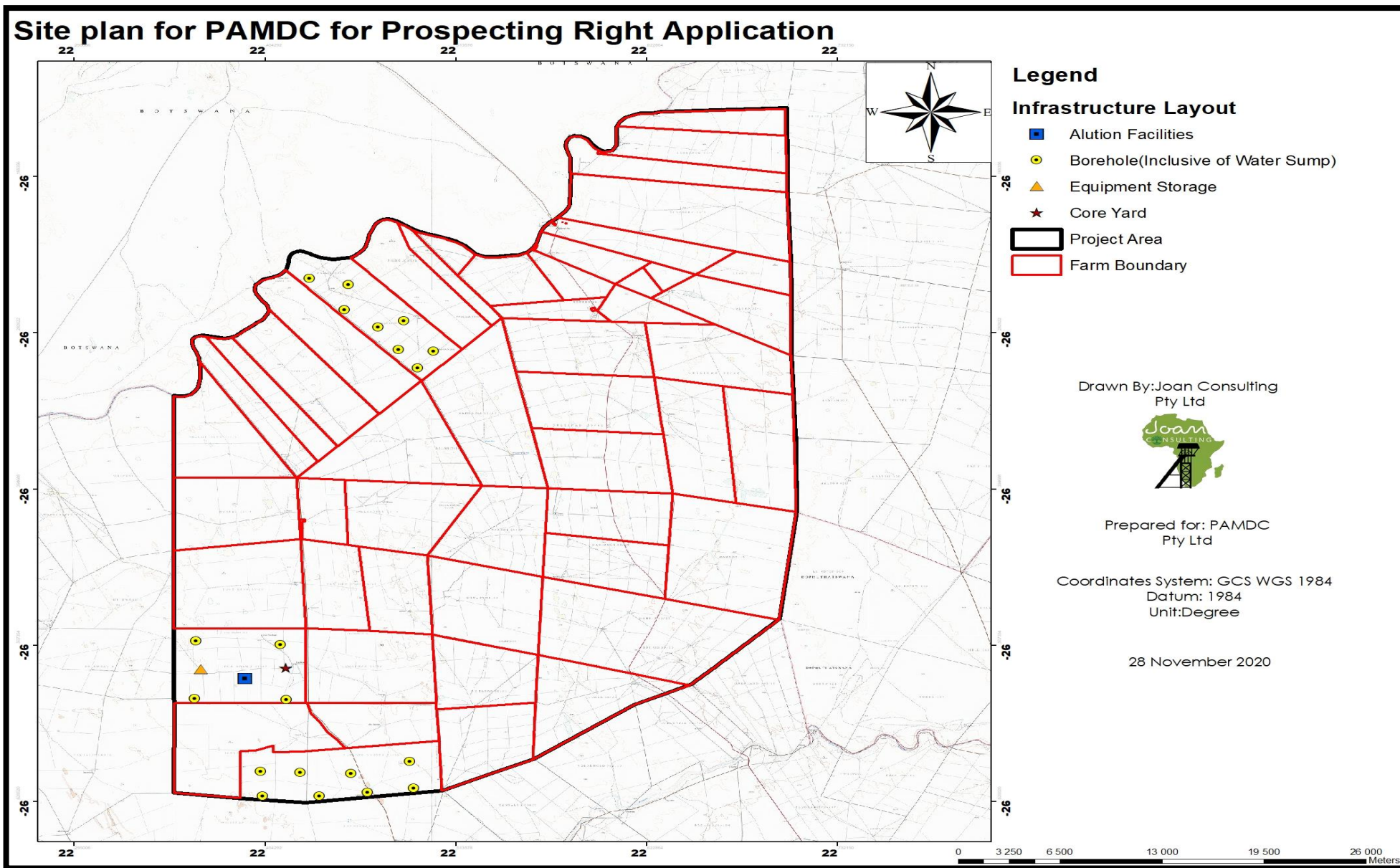


Appendix 2: Project Maps

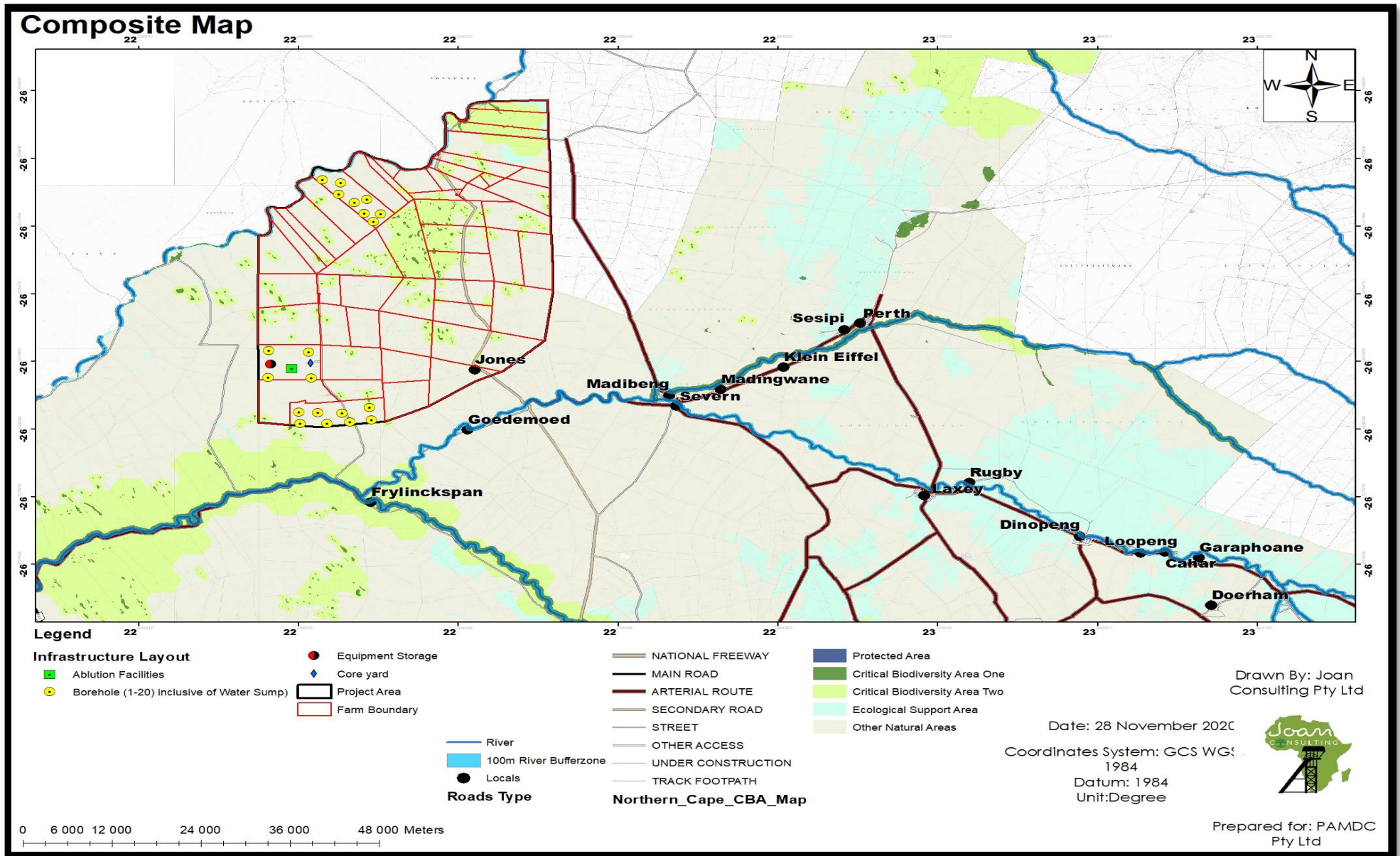
(a) Locality Map



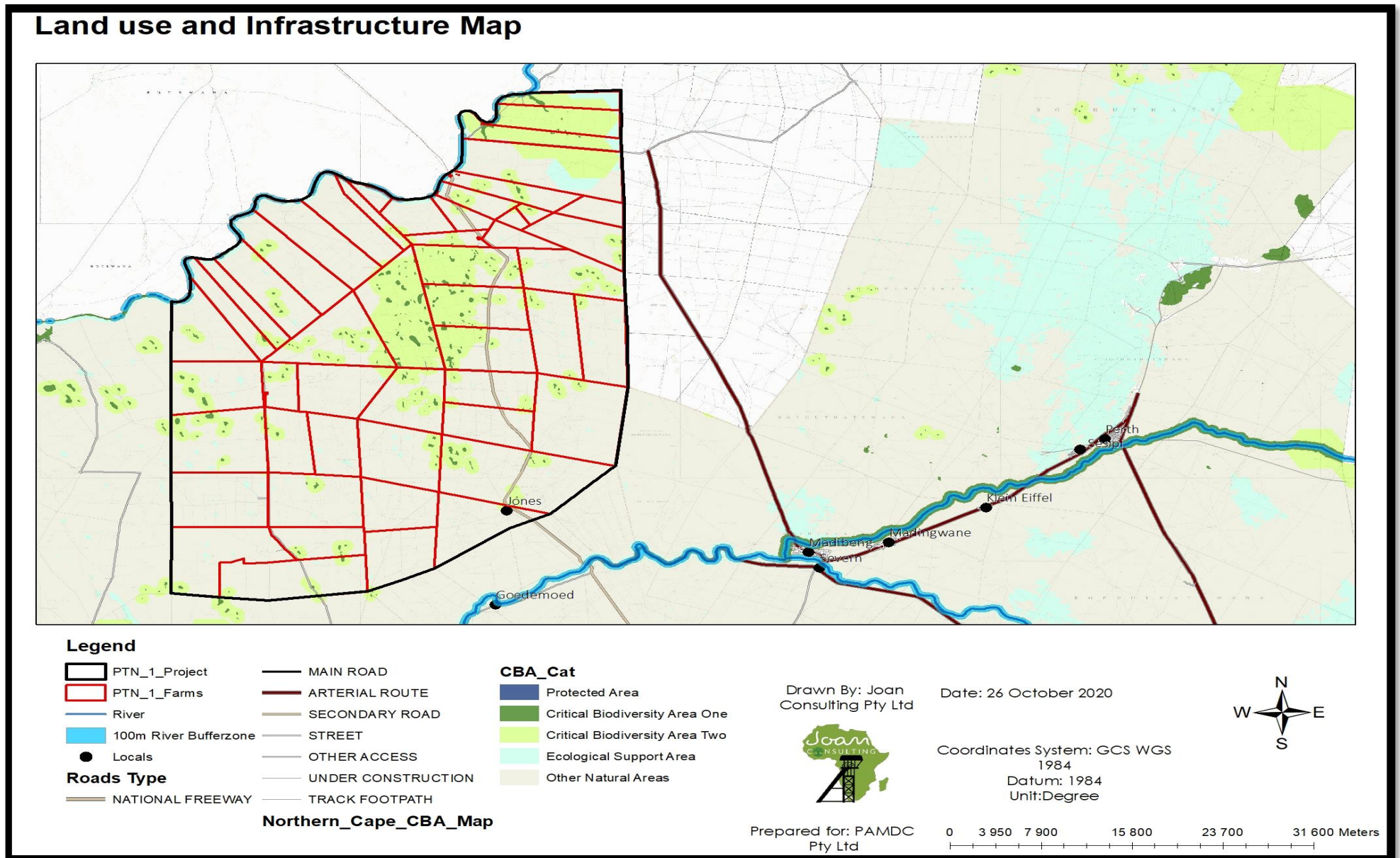
(b) Site Plan



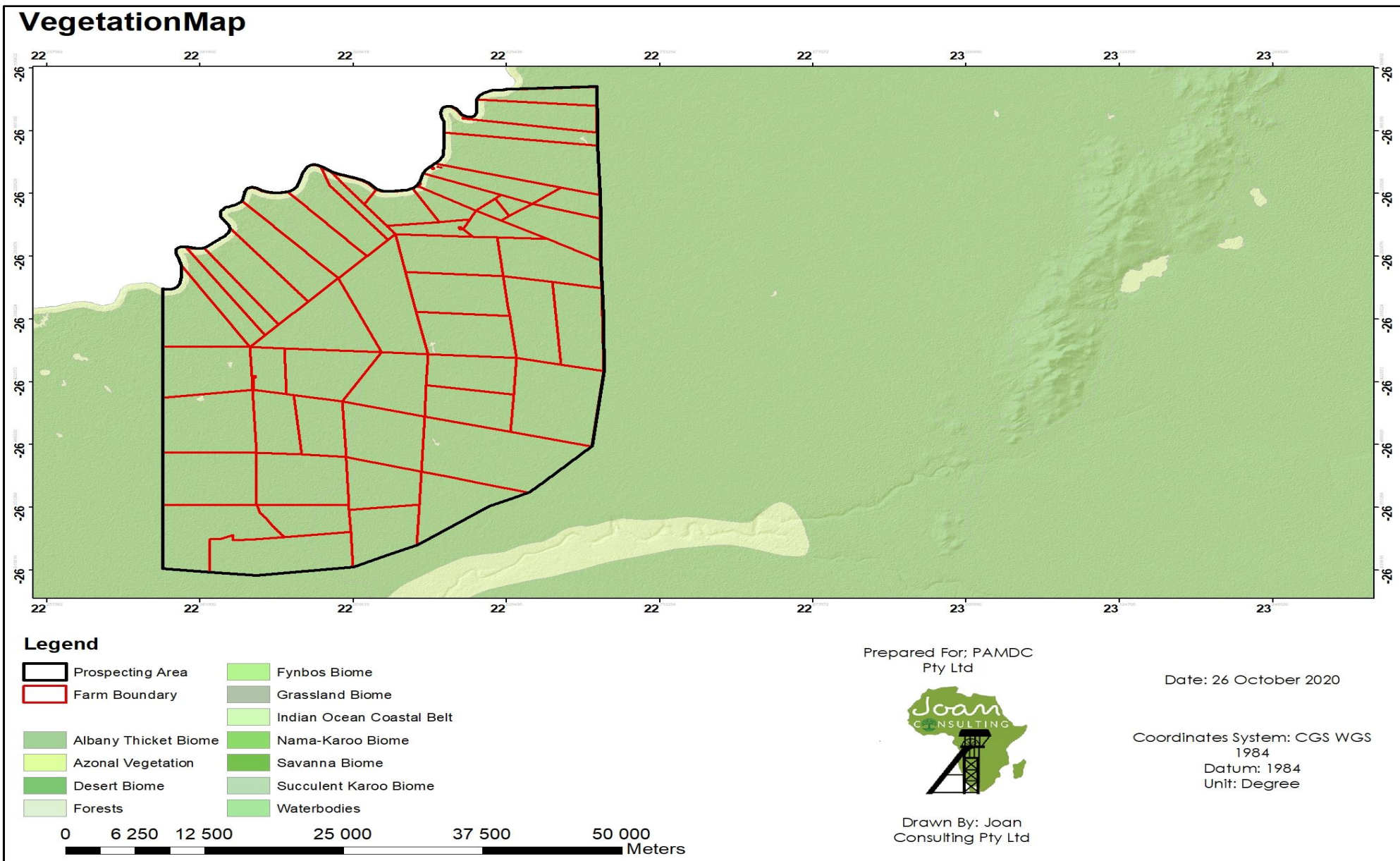
(c) Sensitivity/Composite Map



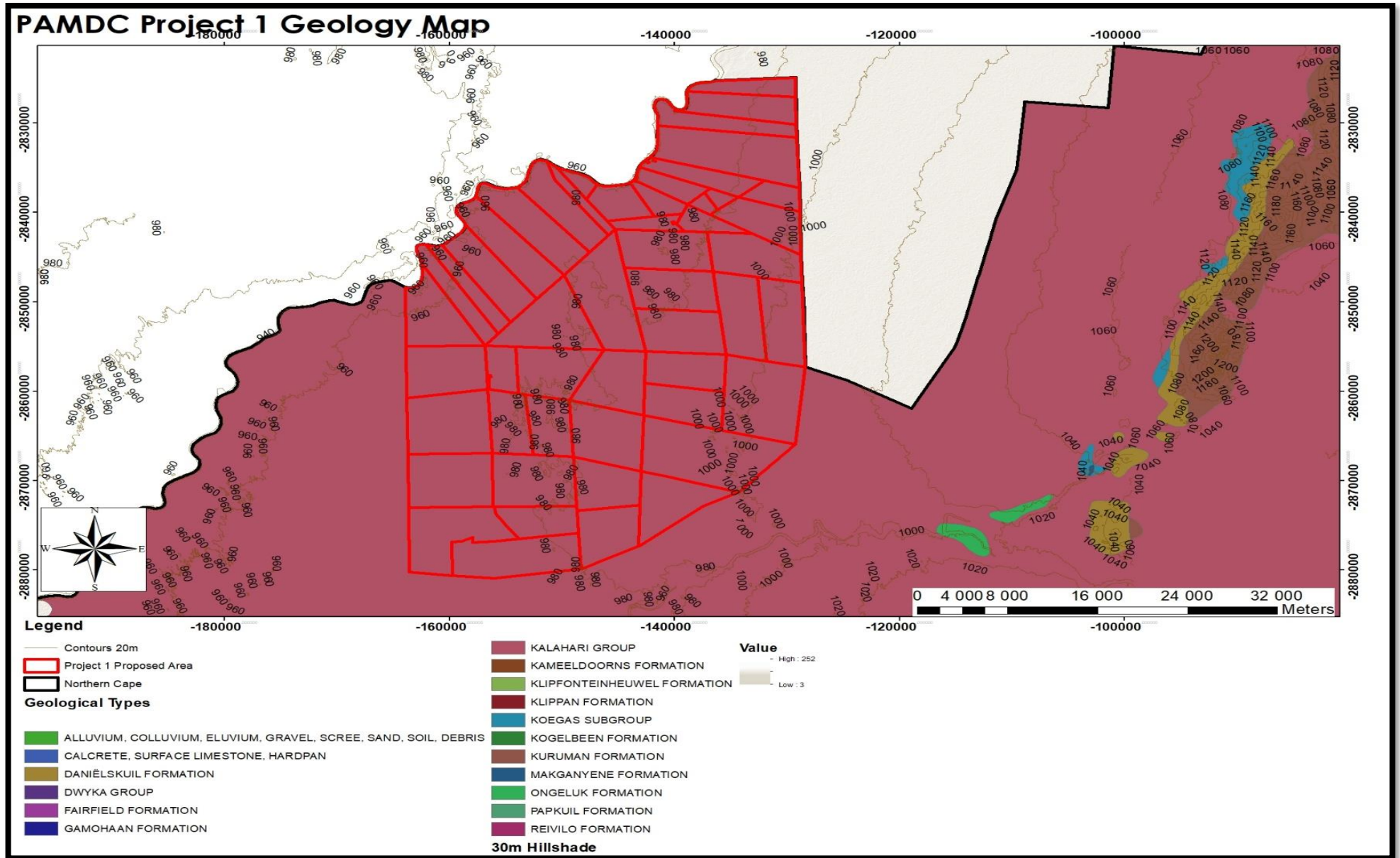
(d) Land Use Map



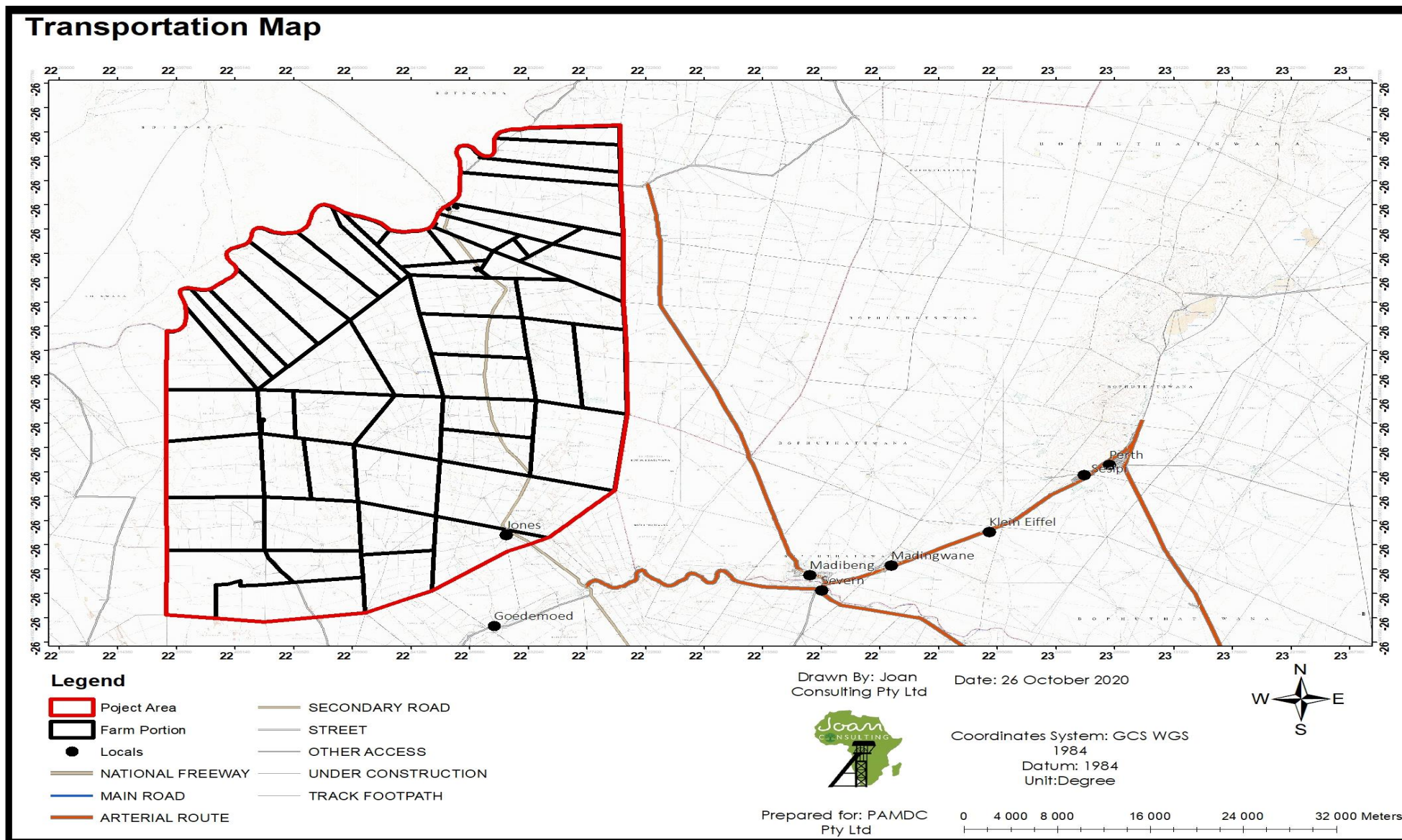
(e) Vegetation Map



(f) Geology Map



(h) Transportation Map





Appendix 3: Proof of Public Participation

Appendix 4: Specialist Studies Reports



Appendix 5: Site Notices



Appendix 6: Proof of Notification Delivery



Appendix 7: I&APs DATABASE



Appendix 8: E-mail Communication to and from I&APs



Appendix 9: Minutes of the Meeting