PROSPECTING RIGHT APPLICATION ON FARM CHERTSEY 430 IN KATHU, GAMAGARA LOCAL MUNICIPALITY IN NORTHERN CAPE

NCR30/5/1/1/3/2/1/(12917)PR

DRAFT BASIC ASSESSMENT REPORT
MAY 2022

RETSO CON
Forever Green

Prepared for:
EFM HOLDINGS

EXECUTIVE SUMMARY

INTRODUCTION AND BACKGROUND

EMF Holdings (Pty) Ltd. appointed Retso Con (Pty) Ltd as the independent Environmental Assessment Practitioner (EAP) to compile a Rehabilitation and Closure Plan for its proposed prospecting activities. The proposed prospecting activity will be undertaken on the Farm Chertsey No. 430 in Kathu, Gamagara Local Municipality, Northern Cape Province.

EFM proposes to prospect two main commodities, Manganese and Iron ore. The application employs a phased approach, where work program is divided into several sequential sections. This allows for multiple "hold" points where a decision can be taken on further incremental investment informed by the outcomes of the previous activity/phase.

PROJECT DESCRIPTION

This approach means that the investment quantum is always linked to the level of confidence and level of associated risk. As **EFM HOLDINGS (PTY) LTD** progresses through the project development life cycle the following characteristics will unfold:

- Level of confidence increases;
- Level of risk decreases;
- Quantum of further investment required increases; and,
- Ability to attract a strategic investor increase.

Essentially, the company will only action the next stage once satisfied with the results obtained. In addition, non-core parts of the work program will be undertaken if warranted. Essentially the program can be summarised as:

Table 1. Summary of the Prospecting Work Program.

Phase	Activity	Timeframe
Phase 1	Desktop study	7 months
	Geological mapping	
	Geophysical survey	
Phase 2	Reconnaissance and resource drilling	12 months
	Sample analysis	
Phase 3	3-D geological model	4 months
	Ore resource estimation	
Phase 4	Feasibility study	3 months

Phase 1

Desktop study (year 1; Duration: 3 months)

All historical data detailing the position and economic potential of the target horizons will be acquired. The data obtained will be in the form of historical borehole information, cadastral maps, geological maps, and geological reports, geophysical surveys (any information pertaining to previous exploration or mining will be consulted and integrated).

From the study of aerial photographic images available contrasting lithologies will be traced out. The data will be scrutinized, verified and interpreted. Useful data will be inventoried in databases for future reference and ease of access to relevant information. The database will form part of the base of geological information that will inform the geological model and resource estimate.

Geological mapping (Year 1; Duration: 1 month)

Detailed field mapping of the surface geology will be done to verify and correlate the geology, generating from satellite images that identify any possible outcrops of manganese and iron ore within the application property. The GPS will be used to mark the important contacts (such as the contact between manganese and iron). Data collected during field mapping will be compiled to produce local geology maps and detailed surface geology report of the farm.

Geophysical survey (year 1; duration: 3 months)

The method will be selected based on the information gathered from the desktop study, including the data gathered from the geological mapping. Geophysical data from previous surveys, airborne and on surface that are available will be integrated with geophysical and geological data.

Progress report (year 1; duration: 1 month)

Comprehensive report will be compiled using the collected historic data, geological mapping information and the geophysical survey data. The report will form part of the Department of Mineral and resource annual report. This will follow after completion of the non-invasive phase, and before the planning of the first drilling phase, and will be updated after completion of successive drilling programs.

Sample analysis (Year 2; Duration: 3 months)

All the core samples recovered from the old drilling done in the previous exploration programs and the drilling that will be done after geophysical survey will be logged geologically to define the geology in details. The samples containing traces of manganese and iron ore will be sampled strategically and taken for laboratory testing to analyze for Manganese and Iron Ore content to determine grade distributions.

Progress report (Year 2; Duration: 1 month)

The progress report will be drafted after the completion of drilling program and sample analysis for management, including the investors and the DMR personnel of the step forwards or what need to be done next. The report will entail all the geological information gathered through the desktop study, mapping, drilling and it will include the determined grades and recommendations on the way forward.

Geological modelling (Year 2: Duration; 2 months)

Three-dimensional (3-D) geological model will be constructed using the data collected from the previous phases (geological mapping, drilling and geophysical survey). The geological model will be used to illustrate the geometry of the manganese and iron layers in relation to each other and the surface for later planning of mining activities.

Ore resources (Year 2; Duration: 2 months)

The grades of the mineral acquired after analyses by the laboratory will be interpreted into the 3-D geological model to obtain a 3-D grade distribution and volumes of the ore. Cut-off values will be applied to obtain mineable resources.

Phase 2

Drilling (Year 1 and 2; Duration: 8 Months)

It is not possible to give details of the drilling program before the geophysical survey and surface mapping (Phase 1) is completed. Detailed drilling program will be planned at the end of phase 1 because the positioning and dimensions of the drill holes as well as the number of drill holes to be drilled will be determined strategically based on the information gathered from geological mapping and the geophysical survey information from Phase 1. However, the number of boreholes and total number of meters to be drilled is estimated. The estimation was done for budgeting purposes and there are high chances that the plan will change after phase 1.

Once the geophysical is complete, Geophysical report with plans indicating ore body with sub-outcrop/s of manganese and iron ore will be produced. Drilling program will be planned and put into practice. It is expected that drilling targets will be close to surface and therefore drill holes will be short. Boreholes will be covered by numerical slabs, and the position measured by GPS. Two different type of drilling are to be applied to the project, they both have some common operations. In all instances, drilling would be:

- Under close supervision of an experienced geologist;
- Conducted along best practice guidelines; and,
- Minimize environmental disturbance.

Reverse Circulation (RC) Drilling: Drilling targets during the non-invasive phase will be tested by fairly widely spaced shallow drill holes. The total number of drilling targets to be tested is yet unknown, but expected to be

perhaps 12 boreholes totalling about 350 meters or less. Further investigation of the drilling targets, where the initial drilling results plus geophysical data are encouraging. The drill holes depths at this stage will be guided by the results from pervious activities (geophysics and RC drilling). At this stage between 30 and 40 boreholes will be drilled.

Drill chips will be logged by Project geologist and the samples collected following good practice guidelines. The samples will be collected at 1m intervals, from which representative samples for geochemical analysis will be separated by a standard sampling method. The remaining drill chips will be stored for metallurgical tests at a later stage. All samples with visible mineralization will be assayed for Lead (Pb), Zinc (Zn), Nickel (Ni), Copper (Cu), and Cobalt (Co). Logging of borehole will be conducted along the entire boreholes before being sampled for assaying.

Diamond drilling: 10 drill holes will be located strategically on the ore body (ies) defined by reverse circulation drilling and geophysical survey for further geological and geochemical assessments. Each drill site will be confined to an area of approximately 30 x 30 m. The area will be temporarily fenced off as and when drilling is occurring.

Drilling water will be obtained from existing boreholes in the area, alternatively a dedicated water borehole will be drilled. The estimated use of water per day is 5 000 litres per diamond drill rig.
Core will be sent to the accredited laboratory for analysis. Since the exploration program is results driven, updated final drill position plans and drill information will be submitted to DMR at the end of the program. In addition to the drill rig at a drill site there will be:

- a temporary shack;
- a water tanker;
- a chemical toilet;
- a mobile diesel bowser; and,
- a caravan to house the drillers.

A plastic lining will be placed under the drill rig and in the small sump (1x1m^3) required for the drilling operation. The mobile diesel bowser will obtain diesel from the nearest diesel service station and will also be located on the plastic lining.

The plastic lining must be laid in such a manner that potential hydrocarbon spills will not flow off it due to gravity or other forces and contaminate the adjacent soil. The purpose of the plastic lining is to ensure that there is no surface impact from the drilling programme in the form of hydrocarbon spillages on the soil.

Phase 4

Feasibility study (Year 2; duration: 3months)

The geological model and resource determination conducted in the previous phases will be incorporated into a financial model of a potential future mine in a concept study. The study will be separated into two, namely, indicated resources and proven reserves. The minable ore body or resources will be determined by applying various criteria, such as grade of the ore body, depth below surface and thickness. Different cost models will be generated by interpreting cost structures into the geological model to establish payable mining zones.

The business plan will be drafted using all the data gathered from various phases including all geological information, proposed mining plans and the various financial models to either generate further financial support by means of listing on a stock exchange or private investment.

LEGISLATIVE CONTEXT

Applicable listing activities:
Government Notice 327 of 2017: Listing Notice 1 of the National Environmental Management Act, 1998 (Act No. 107 of 1998):

Activity 20: Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) including -

a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or,
b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, calcining or gasification of mineral resource in which case activity 6 of Listing Notice 2 applies.

PUBLIC PARTICIPATION

A comprehensive public participation process (PPP) will be conducted in terms of Regulation 982 of NEMA EIA Regulations of 2014 as amended by GN 326, 7 April 2017. The PPP is undertaken in a manner that ensures that all interested and affected parties are adequately informed of the proposed development and to ensure that everyone has the opportunity to raise their concerns and/or comments. The PPP will include one newspaper advertisement, on-site notices and other means of contacting interested and affected parties, as described below.

The proposed project will be brought to the attention of the public by the following means:

a. fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of:
   - ✓ the site where the activity to which the application or proposed application relates is or is to be undertaken; and
   - ✓ any alternative site;

b. giving written notice, in any of the manners provided for in section 47D of the Act, to:
   - ✓ the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;
   - ✓ owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;
   - ✓ the municipal councillor of the ward in which the site and alternative site is situated and any organization of rate payers that represent the community in the area;
   - ✓ the municipality which has jurisdiction in the area;
   - ✓ any organ of state having jurisdiction in respect of any aspect of the activity; and,
   - ✓ any other party as required by the competent authority.

SPECIALIST FINDINGS

Heritage Impact Assessment:

BIF outcrop will not require further palaeontological investigation and the likelihood of impact on cf. late Neogene/Quaternary fossils is considered low given the low topography terrain, apparent absence of pans and no indication of proper fluvial conditions within the footprint. However, a wide range of tangible heritage resources including dense Stone Age surface occurrences and capped localities, Late Iron Age and historical structural remnants represent a rich archaeological record.

IMPACT STATEMENT

Based on the baseline studies carried out and a comprehensive impact assessment, several impacts were noted for the proposed prospecting activity. The first activity will be the establishment of the drilling / camp site and the construction of access roads. This step will result in vegetation clearing which results in spread of alien invasive species, dust and soil erosion. Any identified alien invasive species will be cut and burnt. Eroded soil may be washed by rain water and impact watercourses. No erosion was observed in the area however it is recommended that erosion control mechanisms to be installed prior to starting invasive exploration activities.

Drill rigs will be operating during the exploration activities with water for cooling and fly rock being obtained from the local municipality and being stored in plastic-lined water sumps before being mixed with drill fluids and

additives. It will be recycled to reduce water use. Rigs produce vibration and noise. This will be mitigated by operating during the day as well as bringing in well serviced machinery. Well serviced machinery produce less vibrations, noise and emissions. Additional devices can be fitted to the drill rigs and generators to reduce noise and greenhouse gas emissions. Biodegradable drill fluids and additives will be used to reduce the contamination of soil and ground water.

Despite the many impacts that seem possible from the exploration activities, the actual project spatial footprint is very small and will be deliberately minimised to keep the significance and extent of negative impacts minimal. For example, the camp site will take up about 0.09 hectares and each drilling site will use 1 metre by metre of space.

An ECO will also be on site to ensure that mitigation, minimisation and avoidance measures are effectively put in place. Should economically viable iron ore and manganese resources be discovered, the mining activities that follow will result in benefits such as local community development, economic growth, employment creation and availability of a market for local goods and services. At the end of this exploration project, the drill boreholes will be backfilled, access roads ripped and revegetated and all campsite equipment removed. The goal will be to rehabilitate the project site to its original state or better.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

BA	–	Basic Assessment
BAR	–	Basic Assessment Report
CBA	–	Critical Biodiversity Area
DEO	-	Designated Environmental Officer
DENC	-	Northern Cape Department of Environment and Nature Conservation
EAP	–	Environmental Assessment Practitioner
ECO	–	Environmental Compliance Officer
EIA	–	Environmental Impact Assessment
EMF	–	Environmental Management Framework
EMP'r	–	Environmental Management Program Report
ESA	–	Ecological Support Area
GN R.	–	Government Notice Regulation
I&AP	–	Interested & Affected Party
IDP	–	Integrated Development Plan
LED	–	Local Economic Development
LM	–	Local Municipality
NEM:PAA	–	National Environmental Management: Protected Areas Act
NEM:WA	–	National Environmental Management: Waste Act
NEMA	–	National Environmental Management Act
NHRA	–	National Heritage Resources Agency
NWA	–	National Water Act
PSDF	–	Provincial Spatial Development Framework
SAHRA	–	South African Heritage Resources Agency
SAPS	-	South African Police Service
SDF	–	Spatial Development Framework

LIST OF TABLES

TABLE OF FIGURES

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORTN AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT:	EFM HOLDINGS
TEL NO:	+27 82 698 7819
FAX NO:	N/A
POSTAL ADDRESS:	3894 ROBERT SOBUKWE STREET, RANDFONTEIN,1759
PHYSICAL ADDRESS:	3894 ROBERT SOBUKWE STREET, RANDFONTEIN,1759
FILE REFERENCE NUMBER SAMRAD:	NCR30/5/1/1/3/2/1/(12917)PR

1. IMPORTANT NOTICE

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

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

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

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

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

2. OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

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

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

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

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

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

(ii) the degree to which these impacts—

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources; and,

(cc) can be managed, avoided or mitigated;

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

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

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

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

PART A

SCOPE OF ASSSSMENT AND BASIC ASSESSMENT REPORT

1. Contact Person and correspondence address

a) Details of Retso Con (Pty) Ltd

Section 13(1) of EIA Regulations, Government Notice 326 clearly indicates that an Environment Assessment Practitioner (EAP) should be independent and have expertise in conducting environmental impact assessments, including knowledge of the Act, and any guidelines that have relevance to the proposed activity. **Retso- Con (Pty) Ltd** is an independent company of professional environmental services that provide sound environmental solutions. **Retso- Con (Pty) Ltd**, has appointed by the **EFM Holdings** to undertake the required to undertake the Basic Assessment process for the project.

The qualifications and experience of the independent Environmental Assessment Practitioners (EAP's) undertaking the Basic Assessment are detailed below and Curriculum Vitae provided in Appendix G.

Details of the EAP

Name of The Practitioner:	Liketso Tsotetsi
Tel No.:	+27 83 318 0352
Fax No. :	N/A
E-mail address:	liketso@retso.co.za

Expertise of the EAP

- **The qualifications of the EAP (with evidence):**

Liketso Anna Tsotetsi, *Cer Sci Nat, EAPASA and IAIAsa*

Bachelor of Science Biochemistry graduate from University of Free State in South Africa, and Master of Science in Environmental Management graduate from University of Ibadan, Nigeria and a graduate in Bachelor of Technology (Project Management) from Central University of Technology, Free State.

- **Summary of the EAP's past experience. (In carrying out the Environmental Impact Assessment Procedure):**

Ms Tsotetsi has over five years experienced sufficient experience in air emissions licensing and monitoring, atmospheric impact assessment studies, dispersion modelling, water use licensing applications, carbon footprint assessments, basic assessments, environmental impact assessment, waste management plans, project

management, environmental management systems, environmental legal compliance, and environmental auditing. Please Curriculum Vitae attached to this report as appendix A.

b) Location of the overall Activity

Table 2. Prospecting Location.

Farm Name:	Farm Chertsey 430
Application area (Ha)	2815 ha
Magisterial district:	Kuruman
Distance and direction from nearest town	50 km south west of Postmasburg and 60 km east of Kuruman
21-digit Surveyor General Code for each farm portion	C04100000000043000000

c) Locality map

(show nearest town, scale not smaller than 1:250000)

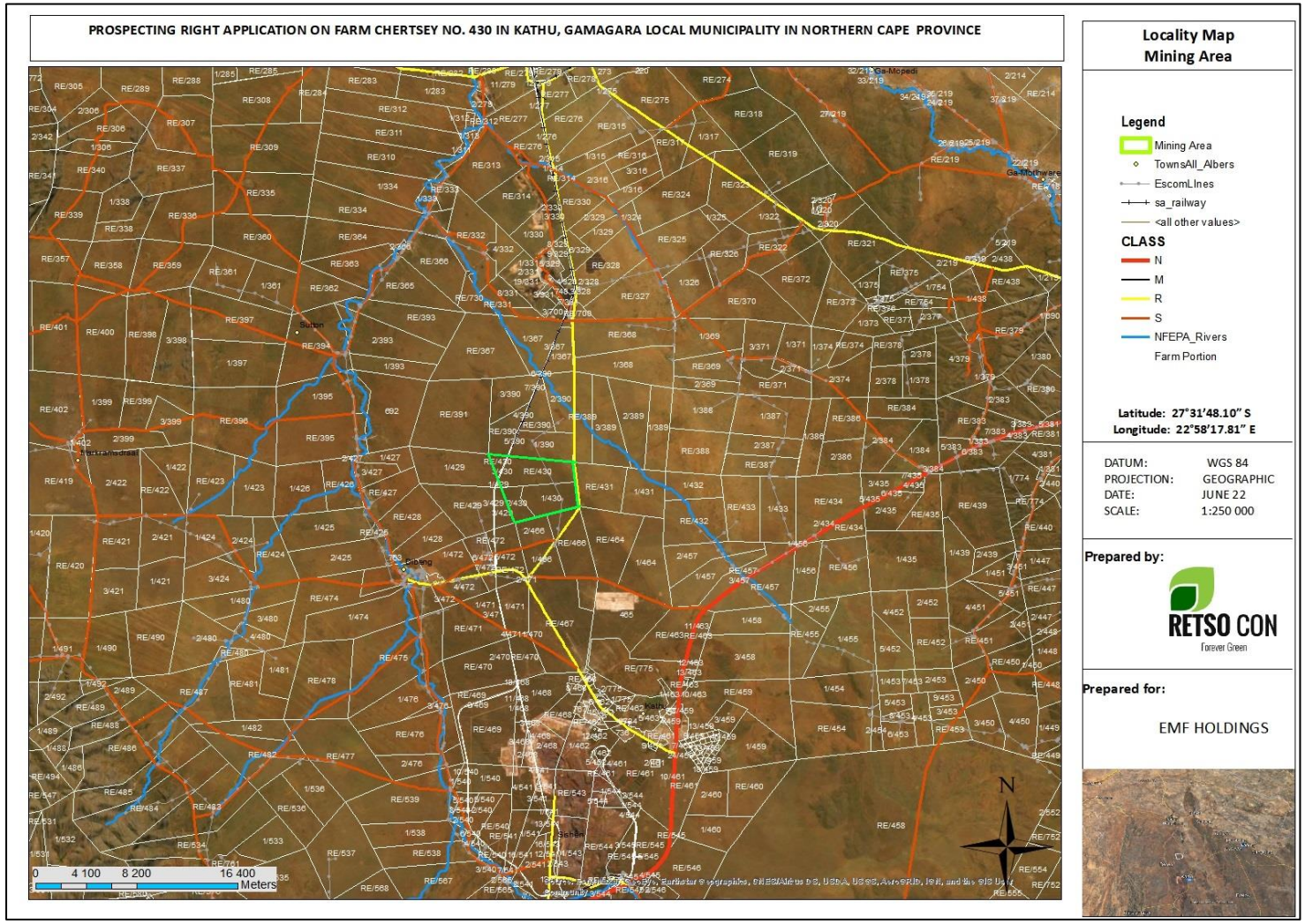

Figure 1: Prospecting location (scale 1:250 000).

d) Description of the scope of the proposed overall activity

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

The proposed drilling activities will cover an area of over 10 ha inclusive of the points. The drill site will cover about 1 ha, site camp, ablutions, accommodation and equipment storage facility will cover a total area of about 1 ha.

i. Listed and specified activities

Table 3: Listed Activities

NAME OF ACTIVITY **(E.g., For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **E.g. for mining**, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	**Aerial extent of the Activity** **Ha or m²**	**LISTED ACTIVITY** **Mark with an X where applicable or affected.**	**APPLICABLE LISTING NOTICE** ***(GNR 544, GNR 545 or GNR 546)***
Drill Site	0.5 ha	x	GNR 327 Activity 20: Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including: a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or
Site Camp	200 m^2	Not Listed	
Ablution Facility	0.1 ha	Not Listed	
Accommodation	100m^2	Not Listed	
Equipment Storage	40 m^2		GNR 327 Activity 20: Any activity including the operation of that activity which requires a

		X	prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including: a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or

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)

EFM proposes to prospect two main commodities, Manganese and Iron ore. The application employs a phased approach, where work program is divided into several sequential sections. This allows for multiple "hold" points where a decision can be taken on further incremental investment informed by the outcomes of the previous activity/phase.

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Feasibility study (Year 2; duration: 3months)

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The business plan will be drafted using all the data gathered from various phases including all geological information, proposed mining plans and the various financial models to either generate further financial support by means of listing on a stock exchange or private investment.

e) Policy and Legislative Context

The EIA process, applicable to this application, is determined by the Amendments to the Environmental Impact Assessment Regulations, 2014, published in Government Notice R326 in Government Gazette No 40772 of 7 April 2017 promulgated under Chapter 5 of the National Environmental Management Act, 1998 (Act No. 107 of 1998). The EIA regulations inter alia describe the procedure for EIA and provides a description of activities that would require authorisation through either 1) a Basic Assessment (in terms of Government Notices R327 and R324 of 2017) or 2) Scoping and Environmental Impact Assessment (in terms of Government Notice R325 of 2017).

Requirement for a Basic Assessment Process

The proposed project is subject to the requirements of the Environmental Impact Assessment Regulations (2014 EIA Regulations) in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended). NEMA is national legislation that provides for the authorisation of certain controlled activities known as "listed activities". In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed, and reported on to the competent authority (the decisionmaker) charged by NEMA with granting of the relevant environmental authorisation.

An environmental impact assessment is an effective planning and decision-making tool for the applicant as it provides the opportunity for the applicant to be fore-warned of potential environmental issues and assess if potential environmental impacts need to be avoided, minimised or mitigated to acceptable levels. The required Basic Assessment (BA) process which is being conducted in 3 phases namely:

- Phase 1: Project inception;
- Phase 2: Basic Assessment and Environmental Management Programme; and,
- Phase 3: Authority review and response.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (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	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLIY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT?** (E.g., In terms of the National Water Act a Water Use License has/ has not been applied for)
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – Storm water mitigation & Management of invader plant specie	The mitigation measures proposed for the site includes specifications of the CARA, 1983.
Mine Health and Safety Act, 1996 (Act No 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – Management of Health and Safety Risks	The mitigation measures proposed for the site includes specifications of the MHSA, 1996
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - Biological Environment Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – Management of invader plant species.	The mitigation measures proposed for the site includes specifications of the NEM:BA, 2004.
National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) read together with applicable amendments and regulations thereto. NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)	Part A(1)(d)(ii) Description of the activities to be undertaken	The mitigation measures proposed for the site take into account the NEM:WA.
National Heritage Resources Act. 1999 (Act No 25 of 1999).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Human Environment Part A(1)(h)(viii) The	The mitigation measures proposed for the site includes specifications of the NHRA, 1999.

	possible mitigation measures that could be applied on the level of risk – Archaeological, Heritage and Palaeontological Aspects. Part A(1)(t)(i)(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resou	
Public Participation Guideline in terms of the NEMA EIA Regulations	Part A(1)(h)(ii) Details of the Public Participation Process Followed	Public participation was conducted in accordance with the guidelines published in terms of the NEMA EIA Regulations

f) 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).

For years, mining has been the driving force behind South Africa's economy and continues to make a valuable contribution to the country's economy contributing. In recent years, there has been an increase in the production of ferrous metals and this increase has given rise to the mining of iron ore. In 2018, total iron ore rand sales increased by 3.7% and export sales have doubled over the last decade to 61 million tonnes in 2018 up from 32 million tonnes in 2008 (Minerals Council South Africa, 2019). South Africa is the world's leading producer of manganese, accounting for about 75% of the world's identified manganese resources, producing more than 14.9 million tonnes in 2018, up from 14.3 million tonnes in 2017. Most manganese deposits in South Africa are located in the Northern Cape Province (Brynes, 2016) and much of the manganese produced is exported.

In terms of employment, the iron ore industry recorded an increase by 6.2% between 2017 and 2018 to 18,613 and R6.6 billion was paid to employees. In 2018, the manganese industry employed 9 352 direct employees with and employee earnings amounting to R3 billion. Although South Africa is a top producer of a range of minerals and metals, the mining sector has fallen to around 7 % of GDP in 2019 commesurating a drop in employment to around 400 000 (World Bank, 2020). Loss of employment results in reduced standards of living as well as an increase in poverty levels. It is predicted that mining will still play an important role to the economy, most notably through foreign exchange earnings and employment provision. It is also one of the primary sectors that provide employment opportunities for unskilled and semi-skilled people.

The South African mining industry has its origin in small-scale and artisanal mining activities, with these operations offering much needed employment opportunities and entrepreneurship, as well as contributing to the mineral sector

and local economy (Ledwaba, 2017). Small-scale mining impact on employment is especially observed in small towns and rural areas where there are limited opportunities; providing significant livelihood for rural communities and a means of alleviating poverty.

According to Gamagara Local Municipality Integrated Development Plan (IDP) 2020–2021, mining has played a major role in shaping the economic development of the area. The area is rich in minerals which has historically been the mainstay of the area's economy with iron and manganese mining crucial mining activities to the economy of the area. In addition, the Gamagara Local Municipality IDP indicate that there are significant undeveloped mineral resources left in the area that can contribute to future economic growth in the area depending on the future viability of exploiting the minerals. An assessment undertaken during Phase 1, which entails desktop and data analysis, show that if undertaken, this project will involve the exploration of unexploited mineral resources and this will contribute to local economy growth.

g) Motivation for the overall preferred site, activities and technology alternative

The role of the EAP is therefore to provide a framework for sound decision-making based on the principles of sustainable development. Potential alternatives that were considered for the proposed prospecting activities are discussed below.

- *Location Alternative*

Given the extensive and already existing geological mapping and surveys that have been carried out by the Geological Society of South Africa, the project has no site alternatives as there are already maps to select suitable areas for exploration.

- *Technology Alternative*

Technology alternative has not been selected yet. However, the selected technology will depend on the one with more efficiency, reasonable cost and the least environmental impacts.

h) 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.

i. Details of the development footprint alternatives considered

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and,
(f) the option of not implementing the activity.

ii. 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 or not 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.

A comprehensive public participation process (PPP) will be conducted in terms of Regulation 982 of NEMA EIA Regulations of 2014 as amended by GN 326, 7 April 2017. The PPP is undertaken in a manner that ensures that all interested and affected parties are adequately informed of the proposed development and to ensure that everyone has the opportunity to raise their concerns and/or comments. The PPP will include one newspaper advertisement, on-site notices and other means of contacting interested and affected parties, as described below.

The proposed project will be brought to the attention of the public by the following means:

c. fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of:
   - ✓ the site where the activity to which the application or proposed application relates is or is to be undertaken; and
   - ✓ any alternative site;

d. giving written notice, in any of the manners provided for in section 47D of the Act, to:
   - ✓ the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;
   - ✓ owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;
   - ✓ the municipal councillor of the ward in which the site and alternative site is situated and any organization of rate payers that represent the community in the area;
   - ✓ the municipality which has jurisdiction in the area;
   - ✓ any organ of state having jurisdiction in respect of any aspect of the activity; and
   - ✓ any other party as required by the competent authority.

iii. Summary of issues raised by I&AP's

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

Interested and Affected Parties List the names of persons consulted in this column; and Mark with an X where those who must be consulted were in fact consulted.		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES					
Landowner/s	**X**				
Ruan Maritz			Comments to be incorporated after 30 days PPP		
Lawful occupier/s of the land					

Landowners or lawful occupiers on adjacent properties	**X**				
Jappie Fleming					
Municipal councillor	**X**				
Gamagara Local Municipality Ward Councillor			Comments to be incorporated after 30 days PPP		
Municipality	**X**				
Gamagara Local Municipality		Comments to be incorporated after 30 days PPP			
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e	**X**				
Department of Roads and Public Works(DRPW)					
Eskom					
DWS-Northern Cape					
Communities		No community were identified within the study area			

Dept. Land Affairs					
Traditional Leaders					
Dept. Environmental Affairs	**X**	Any comments received from the DEA (on the DBAR and EMPR) will be incorporated into the final BAR and EMPR.			
DENC					
Other Competent Authorities affected	**X**				
Department of Agriculture, Land Reform and Rural Development (DALRRD)		Any comments received from the DALRRD (on the DBAR and EMPR) will be incorporated into the final BAR and EMPR.			
Department of Water and Sanitation (DWS)		Any comments received from the DWS (on the DBAR and EMPR) will be incorporated into the final BAR and EMPR.			
Department of Labour (DoL)		Any comments received from the DoL (on the DBAR and EMPR) will be incorporated into the final BAR and EMPR.			
OTHER AFFECTED PARTIES					
INTERESTED PARTIES					

iv. The Environmental attributes associated with the alternatives

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

1. Baseline Environment

This section describes the biophysical, cultural and socio-economic environment that may be affected and the baseline conditions, which are likely to be affected by the prospecting operation.

a) Type of environment affected by the proposed activity.
(its current geographical, physical, biological, socio- economic, and cultural character).

GEOGRAPHICAL ENVIRONMENT

Climate:

Kathu experiences summer rainfall with most rain falling from November to April. Rainfall is highly unpredictable and averages around 418 mm per annum with a range of 156 to 1088 mm depending on the cycle. This rain usually falls as a result of thunderstorms when tropical thunderstorm activity extends southwards over the Kalahari (Figure 2). Summer temperatures can reach 40 ºC (average 16 – 30 ºC) whereas the dry winters are mild to cold. Winter daytime temperatures can reach 25 ºC but at night frost can occur and temperatures can average below 0 ºC (Van Rooyen, 2006) (Figure 3). A climate diagram for Kathu Bushveld.

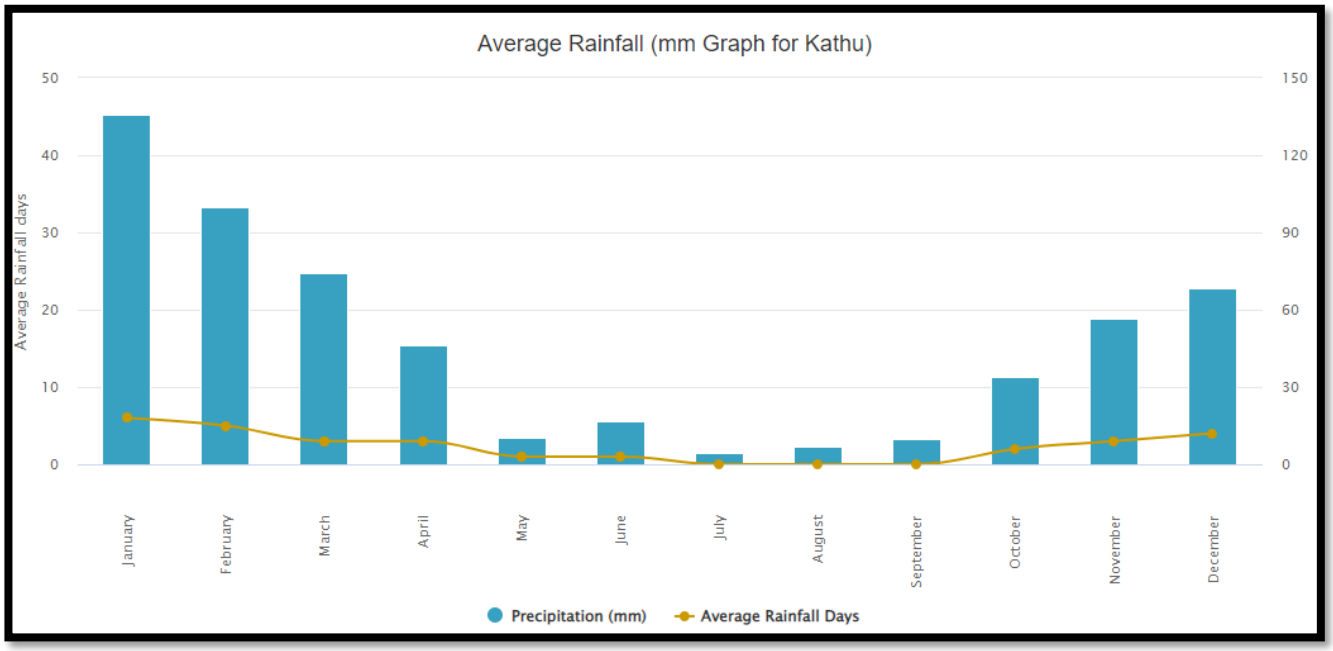

Figure 2: Annual rainfall in Khatu (https://www.worldweatheronline.com/kathu-weather-averages/northern-cape/za.aspx).

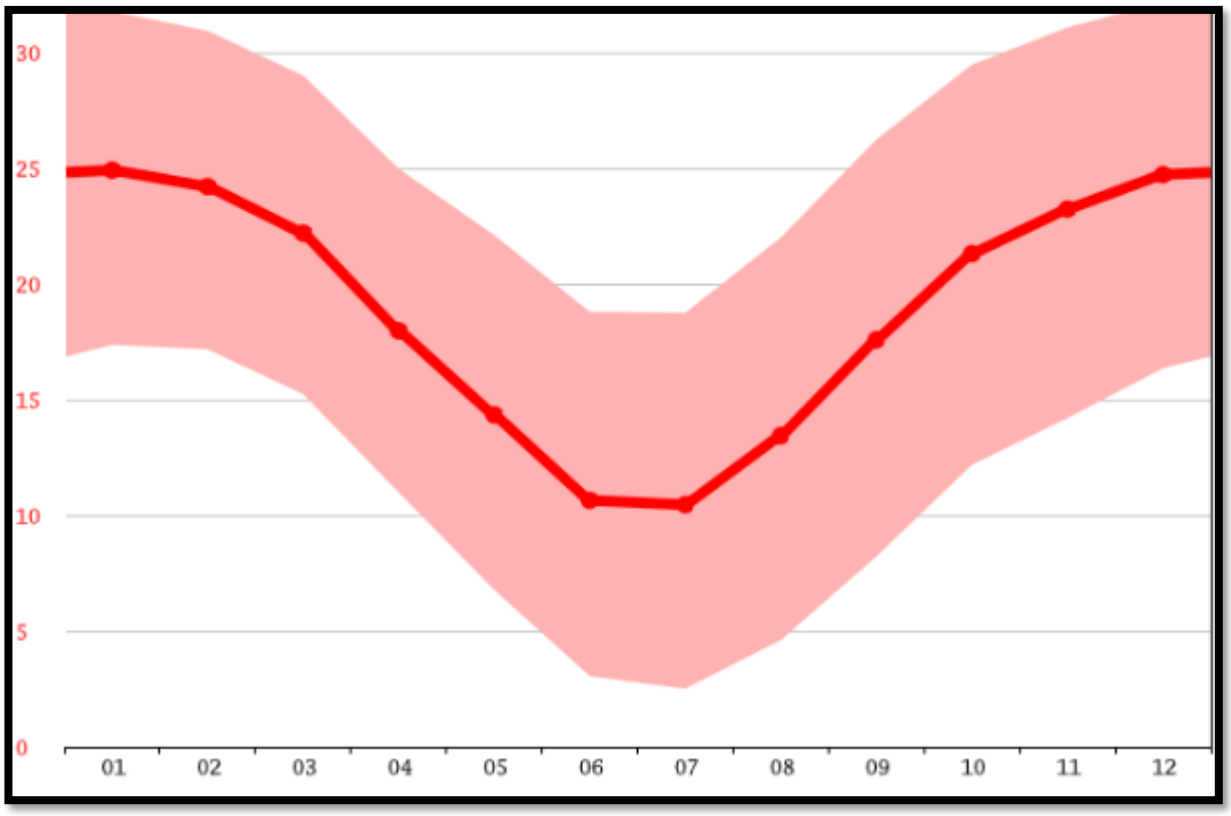

Figure 3: Average annual temperature (https://www.worldweatheronline.com/kathu-weather-averages/northern-cape/za.aspx).

Geology

The geology of the study region is shown on the 1: 250 000 geological sheet 2722 Kuruman (Council for Geoscience, Pretoria) (Figure 4). This map is now out of print and is not accompanied by a detailed sheet explanation (A brief explanation is printed on the map itself, however). Since this geological map was published, there have been considerable revisions to the stratigraphic subdivision and assignment of the several Precambrian rock units represented within the Kuruman sheet area. Where possible, the recent stratigraphic account for the Transvaal Supergroup given by Eriksson et al. (2006) is followed here, but correlations for all the subdivisions indicated on the older maps are not always clear.

The proposed prospecting area lies close to the axis of a major, elongate NNW-SSE trending domal structure in the underlying Precambrian bedrocks that is known as the **Maremane Anticline**. The bedrocks here belong to the Late Archaean to Early Proterozoic Transvaal Supergroup and were deposited within the **Ghaap Plateau Subbasin** of the Griqualand West Basin (Eriksson et al. 2006). Useful reviews of the stratigraphy and sedimentology of these Transvaal Supergroup rocks have been given by Moore et al. (2001), Eriksson and Altermann (1998) as well as Eriksson et al. (2006). The **Ghaap Group** represents some 200 million years of chemical sedimentation - notably iron and manganese ores, cherts and carbonates - within the Griqualand West Basin that was situated towards the western edge of the Kaapvaal Craton (McCarthy & Rubidge 2005). Carbonate sediments underlying the Bestwood development study area are assigned to the Campbell Rand Subgroup. Banded iron formations of the overlying Asbestos Hills Subgroup build the low hills just to the north and east but lie outside the study area itself and are not treated further here. Note that borehole data from the region show subsurface dolomite overlain by banded iron formation (D. Morris, pers. comm., January 2013).

The **Campbell Rand Subgroup** (previously included within the Ghaapplato Formation) is a very thick (1.6 - 2.5 km) carbonate platform succession of dolomites, dolomitic limestones and cherts with minor tuffs that was deposited on the shallow submerged shelf of the Kaapvaal Craton roughly 2.6 to 2.5 Ga (billion years ago; see readable general account by McCarthy & Rubidge). A range of shallow water facies, often forming depositional cycles reflecting sea level. changes, are represented here, including stromatolitic limestones and dolomites, oolites, oncolites, laminated calcilutites, cherts and marls, with subordinate siliclastics (shales, siltstones) and minor tuffs (Eriksson et al. 2006).

Campbell Rand carbonates do not crop out at surface within the study area where they are probably blanketed by thick superficial sediments. Note that since the 1: 250 000 geological maps were produced, the Campbell Rand succession has been subdivided into a series of formations, some of which were previously included within the older Schmidtsdrift Formation or Subgroup (Beukes 1980, 1986, Eriksson et al. 2006). It is unclear exactly which of these newer units are represented at depth beneath the present study area. However, this resolution is not critical for the current report since these older bedrocks are unlikely to be significantly impacted by the present development project. Since the northernmost portion of the study area (Erf 8434) lies close to the contact with the Asbestos Hills Subgroup, it is probably underlain by the Tsineng Formation, comprising laminated carbonates and cherts (Eriksson et al. 2006), with older Campbell Rand formations present further south beneath the area. A siliceous / cherty breccia or manganese marker that lies at the top of the Campbell Rand succession may be a downwasted palaeo weathering product of secondarily mineralised Campbell Rand carbonates and cherts. An unidentified NNE-SSW trending linear feature indicated on the geological map by a dotted line on the north-eastern side of the study area might be a dolerite dyke.

The Campbell Rand carbonates in the Kathu region are entirely mantled by Late Caenozoic calcretes and aeolian sands of the Kalahari Group. The pedogenic limestones reflect seasonally arid climates in the region over the last five or so million years and are briefly described by Truter et al. (1938) and in more detail by Haddon (2005). The surface limestones may reach thicknesses of over 20 m, but are often much thinner, and are locally conglomeratic with clasts of reworked calcrete as well as exotic pebbles. The limestones may be secondarily silicified and incorporate blocks of the underlying Precambrian carbonate rocks. The older, Pliocene - Pleistocene calcretes in the broader Kalahari region, including sandy limestones and calcretised conglomerates, have been assigned to the Mokalanen Formation of the Kalahari Group. They are possibly related in large part to a globally arid time period between 2.8 and 2.6 million years ago, i.e. late Pliocene (Partridge et al. 2006).

Large areas of unconsolidated, reddish-brown aeolian (i.e. wind-blown) sands of the Quaternary Gordonia Formation are mapped in the Sishen - Kathu region where their thickness is variable. The geology of the Late Cretaceous to Recent Kalahari Group is reviewed by Thomas (1981), Dingle et al. (1983), Thomas & Shaw 1991, Haddon (2000 & 2005) and Partridge et al. (2006). The Gordonia dune sands are considered to range in age from the Late Pliocene / Early Pleistocene to Recent, dated in part from enclosed Middle to Later Stone Age stone tools (Dingle et al., 1983, p. 291). Note that the recent extension of the Pliocene - Pleistocene boundary from 1.8 Ma back to 2.588 Ma would place the Gordonia Formation almost entirely within the Pleistocene Epoch.

Haddon (2005) reports a total thickness of about 80 m of Kalahari Group sediments overlying the Precambrian bedrocks in the Sishen Iron Ore Mine, located some seven kilometres southwest of the Bestwood study area. The lower-lying beds, which may be as old as Late Cretaceous (Partridge et al. 2006, p. 590) are assigned to the Wessels Formation (basal debris flow gravels associated with local faults) and Budin Formation (lacustrine calcareous clays with sparse suspended pebbles associated with palaeodrainage systems). The uppermost 15 m of the Kalahari succession here comprises well-indurated calcretised siltstones, pebbly horizons and clays with the development of solution hollows along joint surfaces within 10 m of the surface. Close to the surface calcretised silcretes showing in situ brecciation are also recognised. It is also noted that there is considerable, rapid horizontal variation in the Kalahari Group rocks.

At Kathu Pan, located some 5.5 km NW of Kathu town (27º 39' 50" S, 23º 0' 30" E), an important succession of stratified, unconsolidated, fossiliferous Quaternary to Holocene sediments up to 12 m thick infilling a series of solution hollows (sinkholes / dolines) within a thick calcrete hardpan has been studied in some detail (e.g. Butzer 1984, Klein 1988, Beaumont 1990, Partridge & Scott 2000, Beaumont 2004, and refs. therein). Porat et al. (2010) provide important recent data on the sedimentology and dating of the site. The Kathu Pan site is indicated by a red triangle in Figure 1 herein. Boreholes within the pan area record a Kalahari Group succession here that is over 70 m thick, including 30 m of basal gravels, clays and sands (Wessels, Budin and possibly also Eden Formations) overlain by over 40 m of calcrete (Mokalanen Formation) and unconsolidated superficial sediments (e.g. Gordonia Formation aeolian sands). The various doline infill successions investigated at Kathu Pan comprise a variety of Mid to Late Pleistocene and Holocene sands, gravels, calcareous silty sands and several peat horizons. Several spring eyes can be identified. Apart from the sterile basal layers overlying the karstified calcrete surface, the sediments are associated with a series of stone artefact assemblages ranging from Early Acheulean through Fauresmith and Middle Stone Age to Later Stone Age.

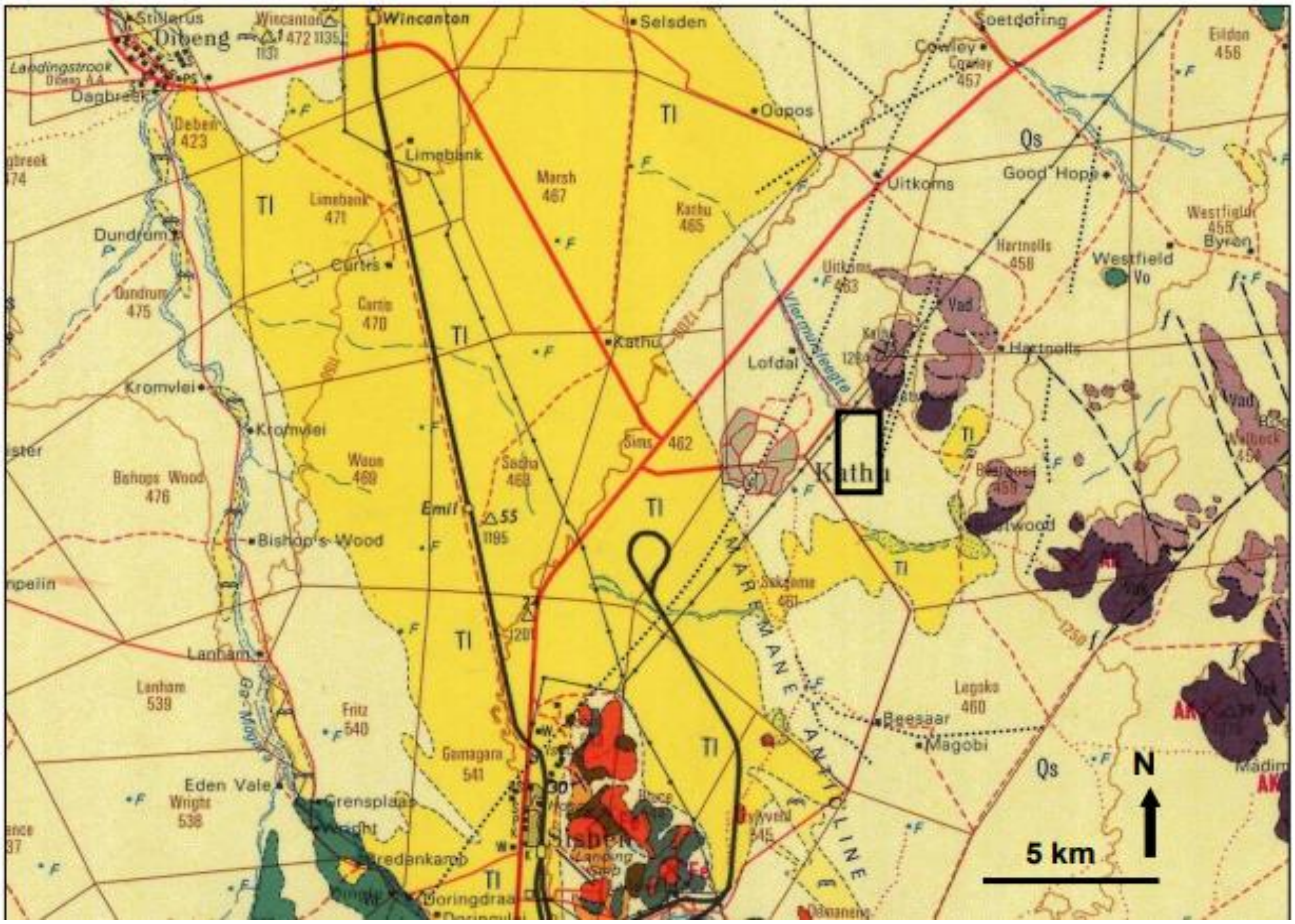

Figure 4: Regional Geological Map (Extract from 1: 250 000 geological map 2722 Kuruman (Council for Geoscience, Pretoria) showing the approximate prospecting area).

Topography

The landscape of the Gamagara Local Municipality may be seen as relatively flat, with a series of dry bedded rivers crossing the area. Mountainous areas do however occur in some parts of the municipal area" (Gamagara SDF 2010: 9). The geologically groups found in the municipal area are the Griquatown, Kalahari and Olifantshoek group.

Hydrology

Kathu situated at quaternary catchment D41J, which is located in the Vaal Water Management Area. The quaternary covers an area of 3 847 km². The catchment system is endorreic with Gamagara Drainage into Kuruman River close to Hotazel. The non-perennial Gamagara River flows across the municipality to the North wast of the town (Shangoni Management Services, Kumba Iron Ore EIA Report: 2017). There are two perennial wetlands on site as per NFEPA.

BIOPHYSICAL ENVIRONMENT

Biodiversity

The Savanna Biome is the largest biome in southern Africa, covering about 46% of its area. The term savanna is widely accepted as describing a vegetation type with a well-developed grassy layer and an upper layer of woody plants. Many environmental factors correlate with the distribution of different savannah vegetation types, including landform, climate, soil types, fire and a very specific fauna. South African savannas of nutrient-poor substrates are characteristically broad-leaved

and without thorns, while those of nutrient-rich substrates are fine-leaved and thorny. Nutrient-rich savannas have high grass layer productivity and the grasses are acceptable to grazers, resulting in a high grazing capacity (Knobel, 1999).

The DFFE describes the biodiversity of the area as mixed low and “very high sensitivity” theme as presented in Figure 5 below. According to the DFFE (2021) a very high sensitivity rating measn critical biodiversity Area 2, Ecological Support Area or South African Protected Areas. The primary cause of loss of biological diversity is habitat degradation and loss (IUCN, 2004; Primack, 2006). In the case of this study special attention was given to the identification of sensitive species or animal life and birds on site. The following section will discuss the state of biodiversity on the site in more detail.

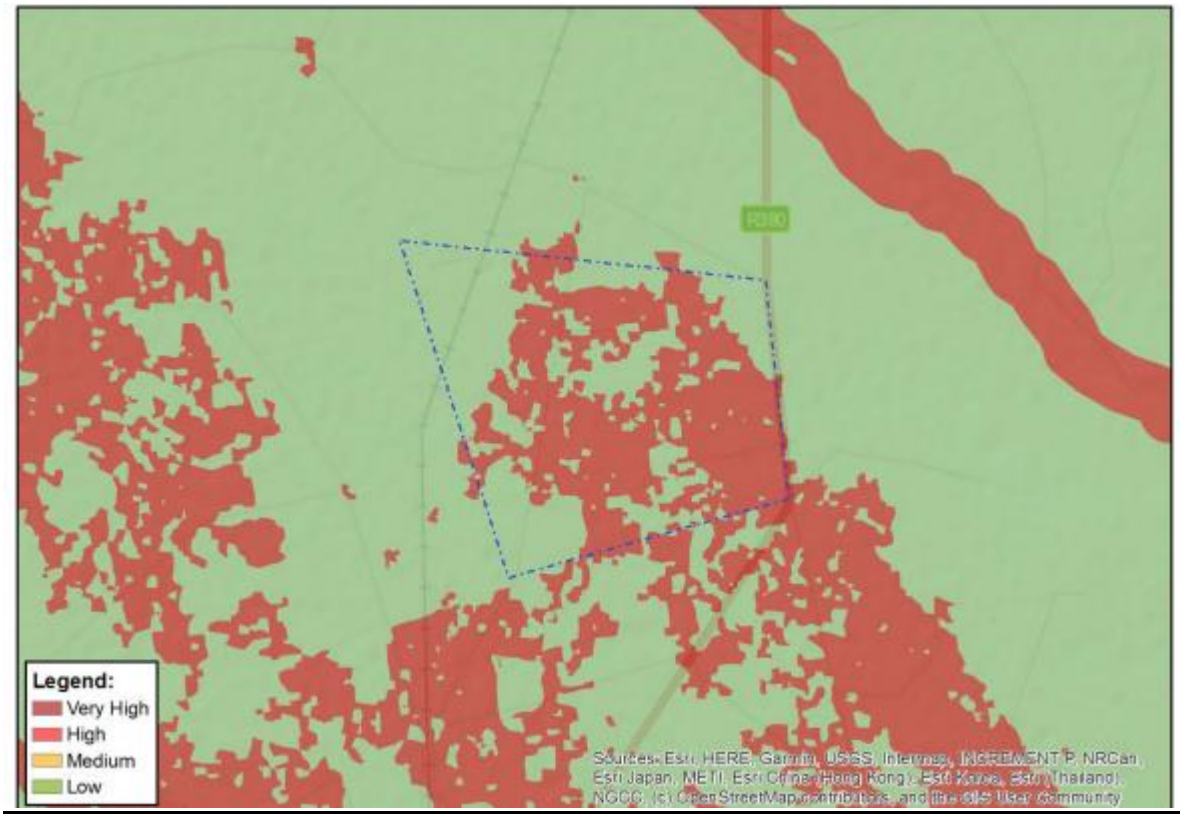

Figure 5: Regional Palaeontological Map (DEA National Screening Tool Report).

Avifauna

This section has been informed by the avifaunal study conducted for Boitshoko PV plant. Boitshoko PV plant in situated on farm Lime Bank 471 South of Chertsey 430. Both sites present same biophysical hence it is referenced for the purpose of this report. The proposed prospecting area has vegetation dominated by dense stands of A. melifera and a few tall Camelthorn trees (Vachellia erioloba). Grass cover is highly variable depending on rain and grazing pressure. During the assessment, rain had fallen, thunderstorms were active in the area and the veld was green, the trees were in leaf and some grass sward layer was apparent. Thus, this can be seen as a wet-season assessment with a flush of vegetation and grass. Seventy-six (76) avian species in or around Lime Bank farm of which 4 are collision-prone (Martial Eagle Polemaetus bellicosus, Black-chested Snake-Eagle Circaetus pectoralis, Pale Chanting Goshawk Melierax canorus, Greater Kestrel Falco rupicoloides). The Martial Eagle, an Endangered species, occurred on the pylons just outside the area.

In the thicket, relatively low species richness of smaller birds (ave 16 species km-1) but healthy numbers of birds (36 birds km-1) were found. The Passage rate of the large collisionprone birds was 0.0 birds per of observation, as none were observed traversing either the preferred or alternative sites. Other species that may be attracted to the panels such as wetland birds (2 sp) or sandgrouse were present but in low numbers. Territorial Yellowbilled Hornbills Tockus leucomelas that may pose a risk to the panels by attacking their own reflections were recorded on site in low numbers.

Fauna

Through a literature research the Ecological Fauna confirmed that no animals recorded in the study area were restricted or endemic to the area. The plausible reptile species richness of the area (28 species were identified) was negatively affected by the wealth of crown cover as well as a lack of rockiness or sandy substrates interspersed throughout the farm. For the most part of the year the likelihood of any amphibians occurring in the area is low but there is no doubt some species would gather at the pans after good rain. No physical record of the listed butterfly occurring in the area exists, but has been included due to the close proximity of the nearest record (i.e., Hotazel) and its "Data deficient" status. Furthermore, the species is endemic to the region and has habitat preferences corresponding with the environmental characteristics of the farm. The area is visibly transformed with signs of overgrazing (bush encroachment). Some areas are very densely populated by trees and large shrubs. The area is not particularly sandy with ground cover showing some regeneration after the farm-owner removed his cattle. No ecosystems that are threatened and in need of protection according to the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) was recorded in or in the vicinity of the study area.

Vegetation

Vegetation type classifications have evolved over the years; for the purpose of clarity, all of these existingclassifications for the area are included. For the purpose of the report the latest classification, that is Mucina & Rutherford (2006), has been applied. Vegetation classifications for the area are as follows:

Eastern Kalahari Bushveld:

Biomes were defined by Rutherford & Westfall (1994) on combinations of dominant life forms and climatic features. The assessment site occurs within the Savanna Biome. Furthermore, Mucina & Rutherford (2006) define bioregions as being spatial terrestrial units, which have similar biotic, physical features and processes at regional scale. In terms of this classification of bioregions the assessment site occurs within the Eastern Kalahari Bushveld Bioregion.

Kathu Bushveld:

This vegetation type is considered least concern with a target of 16%, with nothing conserved in statutory conservation areas. More than 1% already transformed, including the iron ore mining locality at Sishen, one of the biggest open-cast mines in the world and erosion is very low (Mucina & Rutherford, 2006). The Kathu Bushveld vegetation type has a medium-tall tree layer with Acacia erioloba in places, but is mostly open, with Boscia albitrunca as the predominant trees. Shrub layer generally most important with species such as A. millifera, Diospyros lycioides and Lycium hirsutum. Grass layer is variable in cover (Mucina & Rutherford, 2006). The following flora is indicators of the Kathu Bushveld vegetation type.

- Tall tree: *Acacia erioloba* (d)
- Small trees: *Acacia mellifera subsp. detinens* (d), *Boscia albitrunica* (d), *Terminalia sericea.*

- Tall shrubs: *Diospyros lycioides subsp. lycioides* (d), *Dichrostachys cinerea, Grewia flava, Gymnosporia buxifolia, Rhigozum brevispinosum.*
- Low Shrubs: *Aptosimum decumbens, Grewia retinervis, Nolletia arenosa, Sida cordifolia, Tragia dioica*
- Graminoids: *Aristida meridionalis* (d), *Brachiaria nigropedata (*d), *Centropodia glauca* (d), *Eragrostis lehmanniana* (d), *Schmidtia pappophoroides* (d), *Stipagrostis ciliata* (d), *Aristida congesta, Eragrostis biflora, E. chloromelas, E.heteromera, E. pallens, Melinis repens, Schmidtia kalahariensis, Stipagrostis uniplumis, Tragus berteronianus*.
- Herb: *Acrotome inflata, Erlangea misera, Glisekia africana, Heliotropium ciliatum, Hermbstaedtia fleckii, H. odorata, Limeum fenestratum, L. Viscosum, Lotononis platycarpa, Senna italica subsp. aravhoides, Tribulus terrestris*.

Kuruman Thornveld:

This vegetation type is considered least threatened with a target of 16% with nothing conserved in statutory conservation areas. Only 2% already transformed and erosion is very low (Mucina & Rutherford, 2006). Characteristic of the Kuruman Thornveld vegetation type is the flat rock plains and some sloping hills with a well-developed, closed shrub layer and well-developed open tree stratum consisting of Acacia erioloba (Mucina & Rutherford, 2006). The following flora is indicators of the Kuruman Thornveld vegetation type.

- Tall tree: *Acacia erioloba* (d)
- Small tree: *Acacia mellifera subsp. detinens*), *Boscia albitrunca* (d)
- Tall shrubs: *Grewia flava* (d), *Lycium hirsutu*m (d), *Tarchonanthus camphoratus* (d), *Gymnosporia buxifolia.*
- Low shrub: *Acacia hebeclada subsp. hebeclada, Monechma divaricatum* (d), *Gnidia polycephala, Helichrysum zeyheri, Hermannia comosa, Pentzia calcarea, Plinthus sericeus. Geoxylic suffrutex: Elephantorrhiza elephantina*.
- Graminoids: *Arisitda meridionalis* (d), *Aristida stipitata subsp. stipitata* (d), *Eragrostis lehmanniana* (d),
- *Eragrostis echinochloidea, Melinis repens.*
- Herbs: *Dicoma schinzii, Gisekia africana, Harpagophytum procumbens subsp. procumbens, Indigofera daleoides, Limeum fenestratum, Nolletia ciliaris, Seddera capensis, Tripteris aghillana, Vahlia capensis subsp. vulgaris.*

Kuruman Mountain Bushveld

This vegetation type is considered least threatened with a target of 16% and nothing conserved in statutory conservation areas. Very little transformation is evident and erosion is very low to low. Some parts in the north are heavily utilised for grazing (Mucina & Rutherford, 2006).

The *Kuruman Mountain Bushveld* has rolling hills with generally gentle to moderate slopes and hill pediment areas with an open shrubveld with Lebeckia macrantha prominent in places and the grass layer is well developed (Mucina & Rutherford, 2006). The following flora is indicators of the *Kuruman Mountain Bushveld* vegetation type:

- Small trees: *Rhus lacea*

- Tall trees: *Diospyros austro-africana, Euclea crispa subsp. crispa, Euclea undulata, Olea europaea subsp. Africana, Rhus pyroides var. pyroides, Rhus tridactyla, Tarchonanthus camphoratus, Tephrosia longipes. Low*
- shrubs: *Rhus ciliata* (d), *Amphiglossa triflora, Anthospermum rigidum subsp. pumilum, Gomphocarphus fruticosus subsp. fruticosus, Helichrysum zeyheri, Lantana rugosa, Wahlenbergia nodosa.*
- Succulent shrubs: *Ebracteola wilmaniae, Hertia pallens*
- Herbaceous climber: *Rhynchosia totta*
- Graminoids: *Andropogon chinensis* (d), *Andropogon schirensis* (d), *Anthephora pubescens* (d), *Aristida congesta* (d*), Digitaria eriantha subsp. eriantha* (d), *Themeda triandra* (d), *Triraphis andropogonoides* (d), *Aristida diffusa, Brachiaria nigropedata, Bulbostylis burchellii, Cymbopogon caesius, Diheteropogon amplectens, Elionurus muticus, Eragrostis chloromelas, Eragrostis nindensis, Eustachys paspaloides, Heteropogon contortus, Melinis repens, Schizachyrium sanguineum, Trichoneura grandiglumis.*

Olifantshoek Plains Thornveld:

This vegetation type is considered least threatened with a target of 16%; only 0.3% statutorily conserved in the Witsand Nature Reserve. Only about 1% of the area has been transformed and erosion is very low (Mucina & Rutherford, 2006). A very wide and diverse unit on plains with usually open tree and shrub layers with species such as Acacia luederitzii, Boscia albitrunca and Rhus tenuinervis and with a usually sparse grass layer (Mucina & Rutherford, 2006). The following flora is indicators of the Olifantshoek Plains Thornveld vegetation type:

- Tall tree: *Acacia erioloba*
- Small tree: *Boscia albitrunca* (d), *Acacia mellifera subsp. detinens, Teminalia sericea*
- Tall shrubs: *Lessertia frutescens, Lycium hirsutum, Rhigozum obovatum, Rhus tridactyla, Tarchonanthus camphorates Low shrubs: Aptosimum procumbens, Grewia retinervis, Hoffmannseggia burchellii, Lycium pilifolium, Solanum tomentosum*
- Succulent shrubs: *Lycium cinereum, Talinum caffrum*
- Graminoids: *Schmidtia pappophoroides* (d),*Stipagrostis uniplumis* (d), *Aristida congesta, Brachiaria serrata, Digitaria eriantha subsp. eriantha, Melinis repens*
- Herbs: *Acanthosicyos naudinianus, Gisekia pharnaciodes, Hermannia tomentosa, Ipomoea magnusiana, Oxygonum delagoense, Pollichia campestris, Tephrosia purpurea, subsp. Leptostachya*

According to Mucina & Rutherford (2006) the study area falls in the Kathu Bushveld vegetation type. The habitat characteristics of the study area largely resemble the description given Kathu Busheveld. The areas studied (i.e., the preferred and alternative sites) are mostly flat sandy plains with shrubs and few tall trees. Soils are sandy and vary in depth from shallow to moderately deep. Rockiness of the soil surface also varies. A number of nonperennial pans were observed in the area and some drainage lines were also recorded on the alternative site. From a total of 151 species recorded in SANBI's database, the study area houses 130 species, 45 families and 101genera. Two major vegetation units (VU) were identified on site.

- VU 1: *Acacia mellifera* semi-closed rocky shrubland
- VU 2: Non-perennial pans

Table 5: List of species from site.

VU 1	VU 2
Tarchonanthus camphoratus, Acacia mellifera subsp. detinens, Grewiaflava and Lycium c.f. grandicalyx. Prominent, but not dominant trees are Boscia albitrunca and Acacia erioloba. Dominant graminoids are Bulbostylis hispidula, Schmidtia pappophoroides, Stipagrostis uniplumis, S. obtusa, Oropetium capense, Eragrostis trichophora, Enneapogon cenchroides, E. desvauxii and Tragus berteronianus. Herbaceous shrubs, dwarf shrubs and forbs include Aptosimum marlothii, Barleria rigida, Indigofera alternans, Pentzia calcarea, Phyllanthus maderaspatensis, Peliostomum leucorrhizum, Limeum sulcatum, Geigeria ornativa and Tribulus terrestris.	Diospyros lycioides, Grewia flava, Ziziphus mucronata, Tarchonanthus camphoratus and Acacia mellifera. The most significant graminoids are Panicum impeditum, P. lanipes, Eragrostis rotifer, Echinochloa holubii, Enneapogon desvauxii, Cenchrus ciliaris and Cyperus squarrosus. The herbaceos shrubs and forbs that mostly occur are the indigenous Vahlia capensis, Lotononis species, Mollugo cerviana, Heliotropium species and the exotic Gomphrena celosioides and Verbesina encelioides.

Conservational Status of the Area

The conservation status of SVk12 is Least Threatened. A conservation target of 16% is envisioned by conservation authorities, but to date no portion of SVk12 is statutorily conserved. More than 1% is totally transformed by mainly mining activities and settlements. This vegetation type resembles the description of Acocks' (1953) Kalahari Thornveld and Shrub Bushveld (VT 16) and also the description in Low and Rebelo (1996) of Kalahari Plains Thorn Bushveld (LR 30).

Red Data, Protected and Endemic Plant Species

10 plant species of specific conservation significance were recorded in the study area during the study period. Two are listed by Raimondo et al (2009) in the South African Red Data list as Declining species. Two tree species are included in the protected tree species list published by the National Forests Act (Act no.84 of 1998) (NFA, 1998), and nine of the 10 are listed as protected by the Northern Cape Nature Conservation Act (Act no. 9 of 2009) (NCNCA, 2009). No species listed as Threatened or Protected Species (ToPS) by the National Environmental Management: Biodiversity Act's (Act No. 10 of 2004) list of ToPS as published in Government Gazette no. 36375 of 16 April 2013 (NEMBA ToPS, 2013), were recorded in the study area during this study table 6-2 lists the recorded Red Data listed and protected species.

Table 6: Red Data Species on site (Source, Boitshoko Solar PV EIA).

SPECIES NAME	FAMILY	GROWTH FORM
Acacia erioloba	FABACEAE	Tree
Ammocharis coranica	AMARYLLIDACEAE	Geophyte
Asclepias aurea	APOCYNACEAE	Geophytic herb
Boscia albitrunca	CAPPARACEAE	Tree
Crinum c.f. macowanii	AMARYLLIDACEAE	Geophyte
Gomphocarpus fruticosus subsp. fruticosus	APOCYNACEAE	Herbaceous shrub
Gymnosporia buxifolia	CELASTRACEAE	Tree
Nerine laticoma	AMARYLLIDACEAE	Geophyte
Oxalis species	OXALIDACEAE	Geophyte
Pergularia daemia	APOCYNACEAE	Herb, climber

SOCIO-ECONOMIC CONDITIONS

The proposed prospecting will bring about variety of associated socioeconomic benefits. In terms of employment the construction phase will great employment opportunities over a period of 18 – 24 months. It is reported by the John Taolo Gaetsewe District Municipality IDP of 2012 – 2016 that in 2007 the mining sector in the district was the most significant contributor to the district's GDP (49.6%). Other contributors included the government services sector (12.6%), the trade sector (9.1%) and the finance and business services (7.7%). Through these figures it is evident that this district heavily relies on the mining sector. The IDP of John Taolo Gaetsewe District Municipality sets out the following objectives for the integrated development of the Gamagara Local Municipality: (1) to render quality, effective and sufficient services; (2) to promote the general wellbeing through a safe and healthy environment amongst all residents; (3) to promote equality and fairness in the allocation of resources; and (4) to promote sound and sustainable economic growth in the municipal area. According to the 2011 Census the population of this municipal area consist of 41 617 people.

According to the Gamagara IDP of 2015/2016 the population increased with 79% from 2001 to 2011 and is growing at a rate of 5.84% yearly. The majority of the population is considered to be black (55%), while 28.7% are coloured and 14% of the population white. Afrikaans and Tswana are also the most spoken languages in this municipal area. The IDP of 2015/2016 of the Gamagara Local Municipality indicates that the literacy level of this municipal area is low with only 24.9% of the population with matric and only 3.6% that went through higher education. With regards to employment, the majority of the employment sector is male, with most of the females unemployed or as discouraged work seekers. According to the IDP most of the job creation initiatives should be targeted at females for the majority of the females are economically inactive.

The IDP further states that according to the 2011 Census 17.7% of the Gamagara population were unemployed and 65% of those constitute to the youth. The majority of the population in this area also have no monthly income, therefore development initiatives should be directed towards them. According to the Gamagara Draft IDP of 2015-2017, the mining sector is the key economic driver for this municipal area. The IDP states that 43% of the employed population in this municipal area are employed in the formal sector, while 5% are employed in the informal sector.

Cultural and heritage aspects

A desktop Heritage Impact Assessment was carried out for the purpose of a prospecting rights application on the farm Chertsey 430, located about 10 km northeast of Deben, next to the R380 provincial road between Kathu and Hotazel. The study areas covers ~2500 ha of low-lying terrain capped by geologically recent surface limestone and wind-blown sand. Potential BIF outcrop will not require further palaeontological investigation. The likelihood of impact on cf. late Neogene/Quaternary fossils is considered low given the low topography terrain, apparent absence of pans and no indication of proper fluvial conditions within the footprint. However, a wide range of tangible heritage resources, including dense Stone Age surface occurrences and capped localities, Late Iron Age and historical structural remnants represent a rich archaeological record for the region. Fortunately, where exposed, sites like these are generally easily detectable by means of a foot survey. It is therefore recommended that any planned development at Chertsey 430 be preceded by a field assessment of proposed area(s) of impact in the form of a Phase 1 Archaeological Impact Assessment.

Archaeological

According to Russouw, 2022, (Heritage desktop study), the 1 : 250 000 scale geological map of the region (2722 Kuruman) indicate that the study area is underlain by surface limestones (Tl), and unconsolidated (Quaternary) wind-blown sands (Qs), unconformably resting on Precambrian banded iron-formation sediments (BIF) of the Asbestos Hills Subgroup (Transvaal Supergroup) To the east of Chertsey 430, older carbonate rocks of the Cambellrand Subgroup, located lower down in the Ghaap Group facies, contain stromatolite- and microfossilbearing dolomite, dolomitic limestone and chert members that were formed by the precipitation of carbonate rocks when colonies of stromatolites thrived in shallow, tropical marine environments towards the end of the Archaean Eon, 2.6 billion years ago.

The shallow marine and lacustrine stromatolites and organic-walled microfossils preserved within the dolomites provide a record of early microbial dominated life in shallow seas and lakes during the Early / Mid Precambrian (c. 2.7-2.5 Ga). Stromatolites are layered mounds, columns, and sheet-like sedimentary rocks, originally formed by the growth of layer upon layer of cyanobacteria, a single-celled photosynthesizing microbe that lives today in a wide range of environments ranging from the shallow shelf to lakes, rivers, and even soils. Bacteria, including the photosynthetic cyanobacteria, were the only form of life on Earth for the first 2 billion years that life existed on Earth. At the eastern edge of the Ghaap Plateau, about 130 km due east of Kuruman, the Precambrian dolomites have been incised at various points by drainage lines that created gorges in which travertine deposits have formed.

As a result, the tufas at Norlim (Buxton) near Taung contain solution caves, which are fossiliferous, including the one within the Thabaseek Tufa that produced the type specimen of Australopithecus australis. Situated about 600m north-west of the A. australis type site, another solution cavity called Equus Cave yielded the Quaternary fossil remains of more than 40 mammalian species, including the extinct taxa Equus capensis, 5 Antidorcas bondi and Megalotragus priscus. About 150 km to the southeast of Kuruman, the lower Vaal River basin and its tributaries represent important repositories of late Neogene fossil remains. Dating back to the late Cretaceous, the Vaal River is one of the principal fluvial conduits in southern Africa and its alluvial formations have yielded rare mammal fossils and stone tools so that at the turn of the 19th century, the Vaal River gravels represented the foremost fossil mammal locality in sub-Saharan Africa. Abundant ESA and MSA stone tool assemblages are known from several sites around Kathu.

Kathu Pan, situated to the west of the town of Kathu, is a significant archaeological and paleontological site with several localities that is in the process of being proclaimed a national heritage site. The Kathu Pan dolines were investigated by Beaumont and colleagues (Butzer et al., 1978; Beaumont et al., 1984; Butzer, 1984; Beaumont, 1990, 2006), and provides an excellent archaeological, palaeontological, sedimentary and palaeoclimatic sequence for the region. The Kathu Pan 1 site represents one of a series of 11 dolines that are developed within the Tertiary sequence of the Kalahari Group. Further south, the Dikbosch rock shelter located in travertine deposits of the Ghaap Plateau between Kimberley and Griekwastad, has yielded LSA artefacts associated with faunal remains. Exposed valley floors along the Kuruman River valley are at places decorated with rock engravings that reflect colonial and LSA/Iron Age frontier interactions. Rock art sites in the region, including rock engraving as well as paintings, are known from Wonderwerk Cave (paintings) and the Danielskuil Townlands (engravings).

Rock art sites found northwest of Kuruman, include Gamohaan, Maropeng, Batlharos and Mahakane. The Iron Age archaeological footprint in the region is primarily represented by stone wall remnants of the early 19th century BaTlaping capital Dithakong, located near the modern village of Dithakong about 60 km northeast of Kuruman. At the time of the 1801-1803 Borcherds and Somerville expedition, Dithakong was an important BaTlhaping (BaTswana) capital. It was calculated that the number of huts there were at least not less than 1 500 and the number of occupants at somewhere between 8 000 and 25 000 (Maingard, 1933; Beaumont 1983; Morris 1990). Extensive stonewall enclosures are found on the adjacent hils and archaeological investigations during the 1980's have revealed that the ruins were built during the 15th century A.D. and possibly by sedentary Khoi groups. The area consists of primary and secondary enclosures and cover a total area of about 1 km2 comprising hundreds of circles of varying size Archaeological and historical evidence suggest that the most southerly distribution of Late Iron Age Tswana 6 settlements in the region during the 18th century AD ranged between the Langeberge and what is known today as Witsand.

Palaeontology

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening paleontologically sensitive areas at the onset of a project. When the footprint of the prospecting area is placed on the PSM, it shows the study area to extend over an area of high (orange) to moderate (green) concern as presented in Figure 6 below.

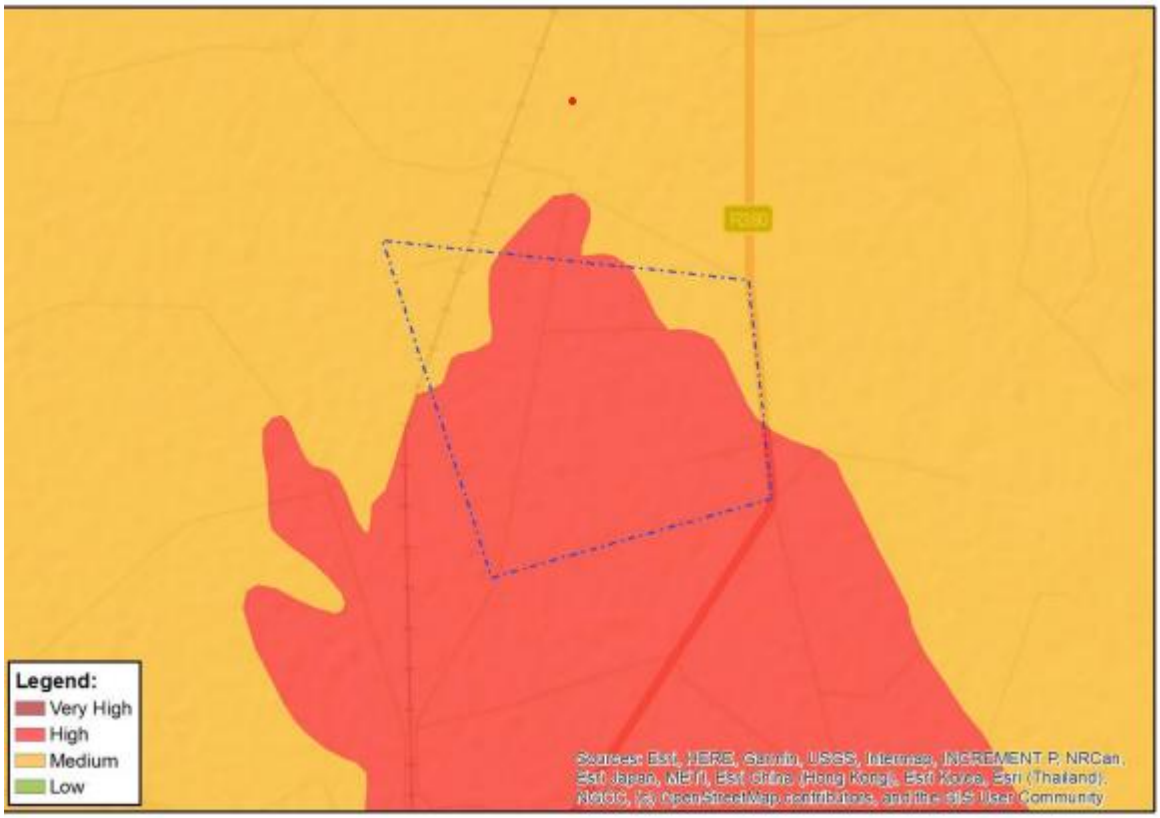

Figure 6. Palaeontology map (extracted from the DEA National Screening Tool Report).

b) Description of the current land uses.

The current land uses were identified using GIS maps as well as on site observation and has been classified as natural area as indicated in Figure 10. Falling within the Savannah biome, the area is dominated woodlands and grasslands. Farm Chertsey 430 has a three wetland as and a borehole. The farm is mainly used for livestock grazing. Some cultivated land exists within the farm but not for commercial purposes. No perennial river running through the farm were observed. In addition, hiking trails and powerlines were also observed on the project area. it can be concluded that agricultural activities are taking place in the area highlighted by the presence of cultivated land, kraals and wind and water pumps. Currently, there are no mining activities that were observed on site and two mining/quarry activities were observed on the remaining extend of Chertsey 430. Figure below shows the mining activities on RE/430.

Figure 7. Mining activities in the vicinity of the proposed area.

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

Some environmental features observed on the proposed project site include wetlands and some coastal rocks. Current infrastructure include: farm houses, powerlines, boreholes and access roads. The area is identified as Ecological Support Area as per Figure 8 and 9. Though the area possesses the red data species, there area is not deemed a critical biodiversity area.

d) Environmental and current land use map.

(Show all environmental, and current land use features)

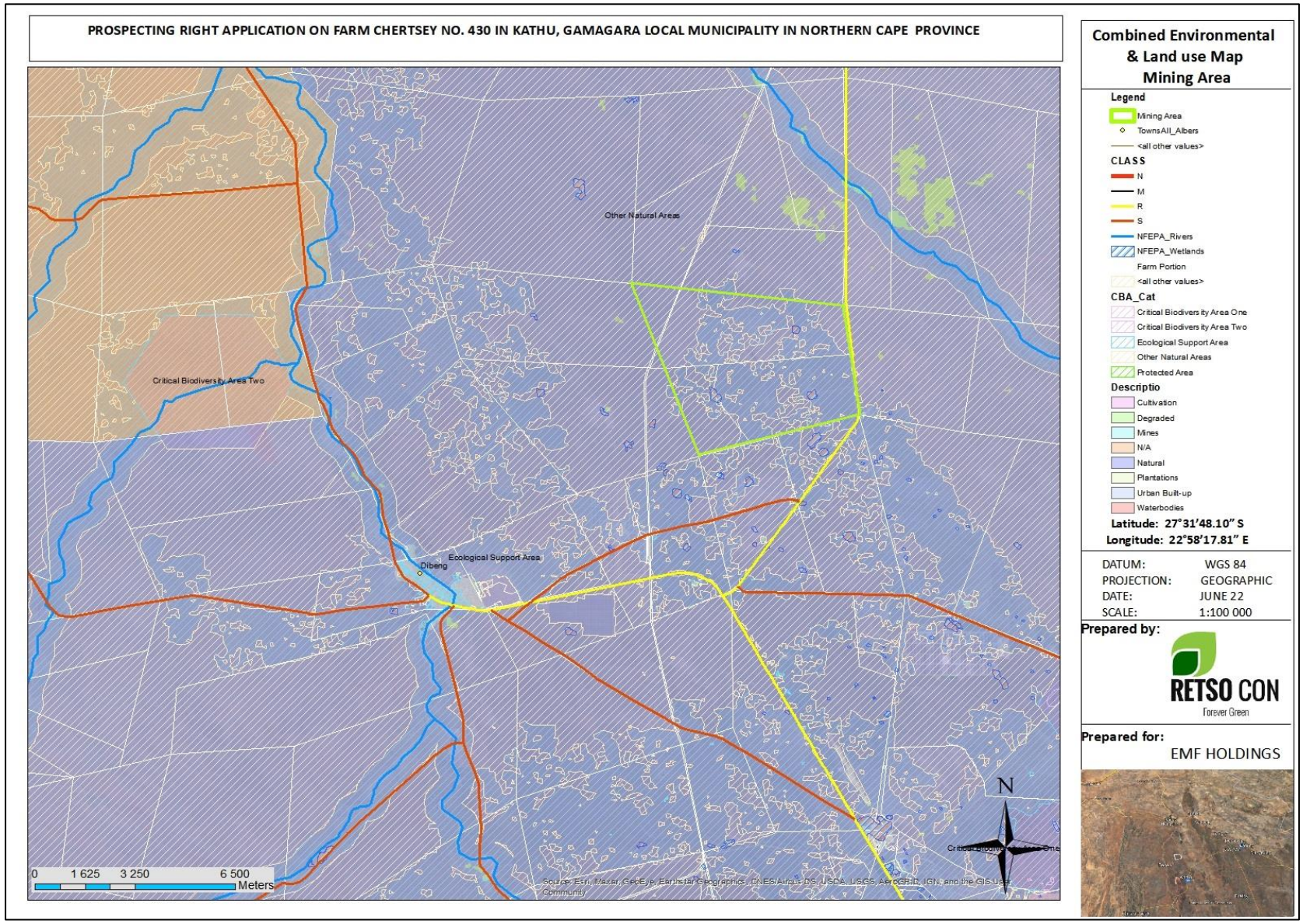

Figure 8: Combined Environmental and Land-use map of the proposed mining area.

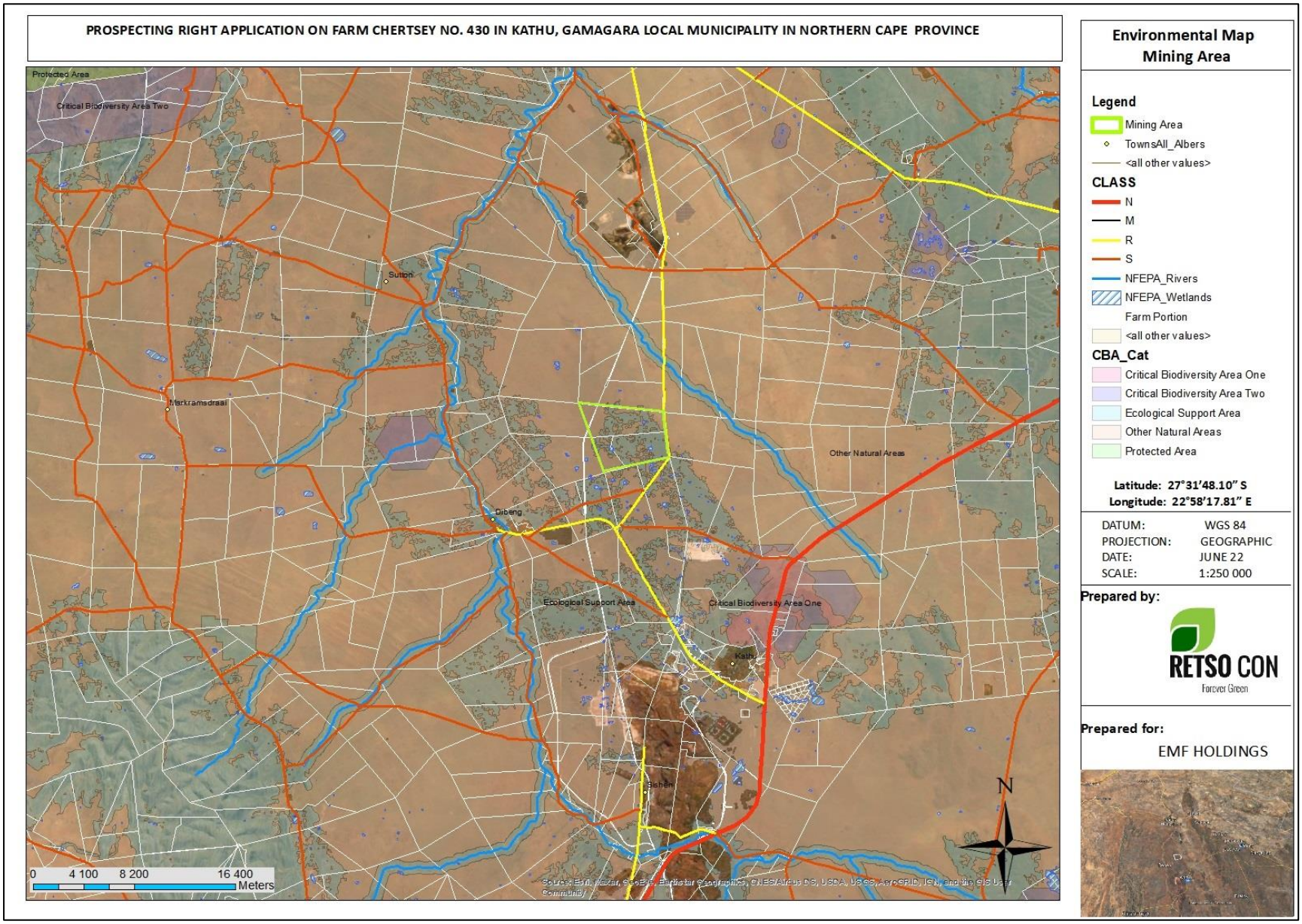

Figure 9. Environmental sensitivity map of the proposed mining area.

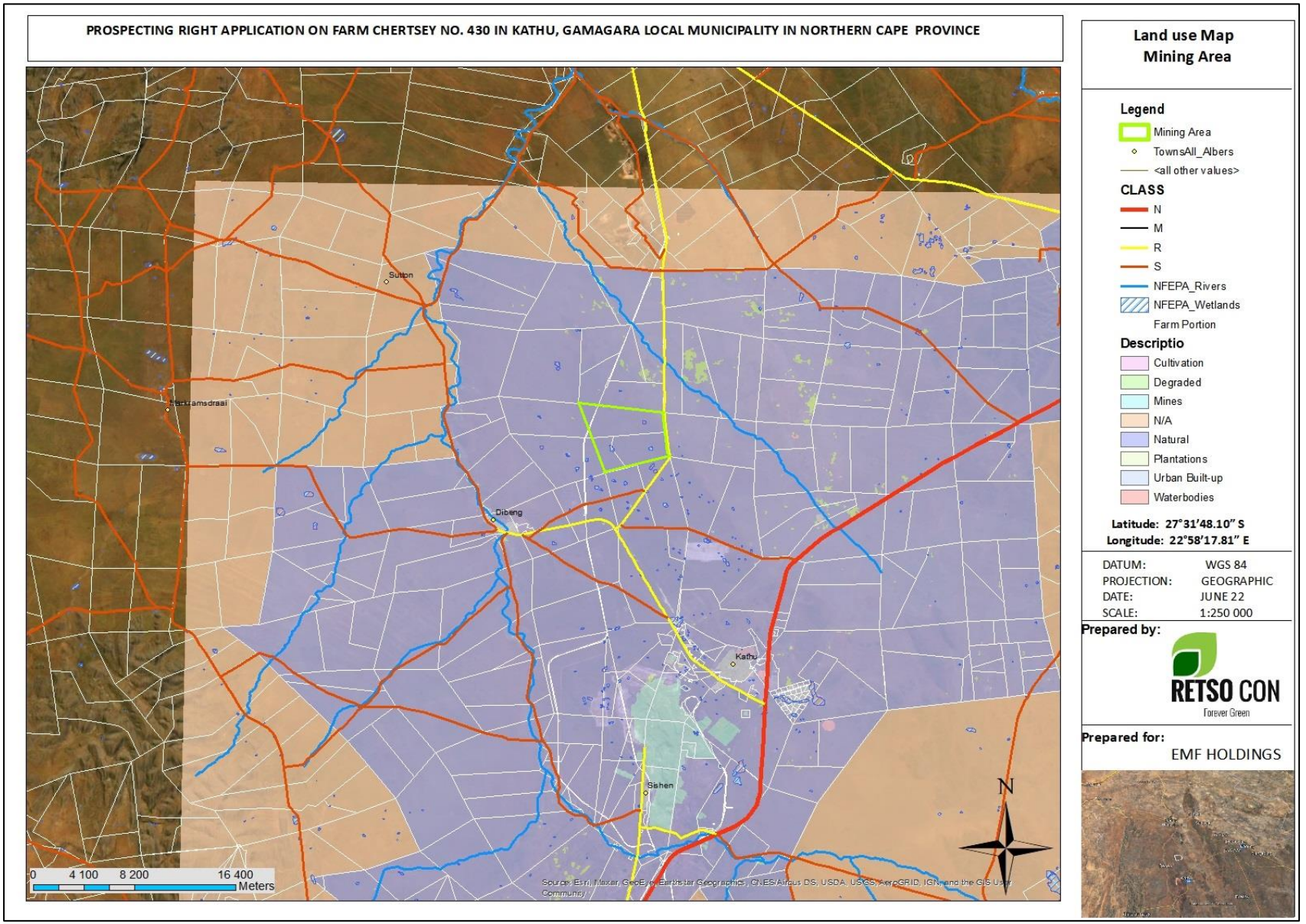

Figure 10. Land-use map of the proposed mining area.

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

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the impacts. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed or mitigated).

The following potential impacts were identified of each main activity in each phase of the project. The significance rating was determined using the methodology as explained under vi) Methodology Used in Determining and Ranking the Significance. The impact rating listed below was determined for each impact prior to bringing the proposed mitigation measures into consideration. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

Table 7: Impact Assessment.

PROJECT ALTERNATIVE	POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT	ENVIRONMENTAL SIGNIFICANCE																		MITIGATION
		BEFORE MITIGATION									AFTER MITIGATION									
		Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	
CONSTRUCTION PHASE																				
Impacts on Biodiversity																				
Preferred Alternative 1 & Alternative 2	**Destruction of terrestrial fauna species**	1	1	1	2	2	2	14	L	L	2	1	1	1	0	2	10	L	L	• In case of observation of any species during construction phase, an experienced person should be consulted to deal with translocation of such species. • No killing or attempt to relocate species should be undertaken by contractors. • All construction vehicles should adhere to a low-speed limit to avoid collisions with susceptible species. • Hooting by construction vehicle must be prohibited.
Preferred Alternative 1 & Alternative 2	**Transformation and loss of terrestrial habitat**	5	1	3	3	6	4	72	M	L	5	1	3	3	4	2	32	L	L	• All construction vehicles should be adhered to construction sites and avoid off road movement to minimise impact on vegetation and soil. • All the areas disturbed during construction work needs to be landscaped to its original state before replacement of topsoil.

PROJECT ALTERNATIVE	POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT	ENVIRONMENTAL SIGNIFICANCE																	MITIGATION
		BEFORE MITIGATION									AFTER MITIGATION								
		Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	
Preferred Alternative 1 & Alternative 2	**Destruction of vegetation cover**	5	1	4	4	6	4	80	M	L	5	1	2	1	4	2	26	L	L	• Restoration measures will be required to reinstate functionality in the disturbed soil and vegetation. • All construction vehicles should be adhered to construction sites and avoid off road movement to minimise impact on vegetation and soil. • Any accidental fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.
Preferred Alternative 1 & Alternative 2	**Loss or destruction of fertile topsoil**	5	1	1	2	2	5	55	M	L	2	1	1	1	0	2	10	L	L	• Topsoil should be removed approximately 300mm and stored for later use during final rehabilitation around the facility.
Impacts on Access Roads																			
Preferred Alternative 1 & Alternative 2	**Erosion and dilapidation of the access route**	2	2	0	1	2	4	28	L	L	2	1	0	1	0	2	8	L	L	• At the start of construction, the contractor must upgrade the access road. • The contractor must maintain the quality of the access road during the construction period to ensure it does not deteriorate.
Impacts on Air Quality																			

PROJECT ALTERNATIVE	POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT	ENVIRONMENTAL SIGNIFICANCE																		MITIGATION
		BEFORE MITIGATION									AFTER MITIGATION									
		Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	
Preferred Alternative 1 & Alternative 2	**Dust nuisance from the access roads, excavation and stockpiled materilals from the construction site**	2	1	0	1	2	4	24	L	L	1	1	0	1	0	2	6	L	L	• Implement dust suppression measures e.g., regular watering to prevent dust pollution. • A speed restriction of 40km/h must be enforced and monitored on site for all construction vehicles.
Impacts on Arable Land																				
Preferred Alternative 1 & Alternative 2	**Loss of available grazing fields and arable land**	3	1	1	1	2	3	24	L	L	1	1	1	1	0	2	8	L	L	• Locate stockpiles and construction camp site outside of areas currently used for grazing. • Ensure that caution is taken not to temper with preserved arable land.

PROJECT ALTERNATIVE	POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT	ENVIRONMENTAL SIGNIFICANCE																		MITIGATION
		BEFORE MITIGATION									AFTER MITIGATION									
		Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	
Preferred Alternative 1 & Alternative 2	**Uncontrollable fire outbreak**	2	2	2	1	6	2	26	L	L	1	0	1	0	2	1	4	L	L	• Establish and maintain fire breaks around the facility as required by applicable legislation. • Plan the creation of fire breaks before commencement of the activity. • Ensure that all employees involved have received adequate training with regards to the handling of fires. • Ensure that the facility is equipped with adequate firefighting equipment. This includes at least one fire extinguisher that is regularly serviced. • No fires will be allowed on site. • Any fuels, chemicals and gas must be stored in a secure, bunded area. • Smoking must only be allowed in designated areas.
Noise Impacts																				

PROJECT ALTERNATIVE	POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT	ENVIRONMENTAL SIGNIFICANCE																		MITIGATION
		BEFORE MITIGATION									AFTER MITIGATION									
		Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	
Preferred Alternative 1 & Alternative 2	**Noise emanating from construction activities**	2	2	0	0	4	4	32	L	L	1	1	0	0	2	2	8	L	L	• Noise impacts from grinding, hammering and welding are not continuous which will limit their nuisance level. • Construction activities on site should be limited between 08h00 and 17h00 on weekdays and Saturdays. • Local noise by laws and standards should be strictly enforced.
Traffic Impacts																				
Preferred Alternative 1 & Alternative 2	**Potential traffic implications due to on site construction and civil works**	2	2	0	1	2	2	14	L	L	2	2	0	0	0	1	4	L	L	• Implement road safety signage prior to construction commencing and flag bearers where appropriate.
Socio Economic Impacts																				

PROJECT ALTERNATIVE	POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT	ENVIRONMENTAL SIGNIFICANCE																		MITIGATION
		BEFORE MITIGATION									AFTER MITIGATION									
		Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	
Preferred Alternative 1 & Alternative 2	**Potential positive socio-economic implications**	2	2	0	0	4	4	32	L	L	1	1	0	0	2	2	8	L	L	• Noise impacts from grinding, hammering and welding are not continuous which will limit their nuisance level. • Construction activities on site should be limited between 08h00 and 17h00 on weekdays and Saturdays. • Local noise by laws and standards should be strictly enforced**.**
Visual Impacts																				
Preferred Alternative 1 & Alternative 2	**stockpiling and construction machinery may alter the visual quality of the area**	2	2	0	1	2	2	14	L	L	2	2	0	0	0	1	4	L	L	• Removal of vegetation must be limited. • Top soil stockpiling may not exceed 2 meters in height and must be covered to avoid wind and water erosion. • Un Vegetated areas must be rehabilitated after construction in the area is completed by using top soil.
Geological Impacts																				

PROJECT ALTERNATIVE	POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT	ENVIRONMENTAL SIGNIFICANCE																	MITIGATION
		BEFORE MITIGATION									AFTER MITIGATION								
		Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	
Preferred Alternative 1 & Alternative 2	Excavation for foundations may lead to geological disturbance	5	2	3	5	3(-)	1	18	L	L	1	1	1	1	1	1	5	L	L	• Before casting may commence, the engineer or geologist must check the foundation to ensure sufficiency. • Water ingress in and around the foundations must be prevented. • Excavations which will be excavated deeper than 1.5 meter must be cut back not more than 75º. • The engineer must ensure that all fills are strong enough and mixed accordingly to carry the required weigh.
Impacts on Surface Water																			
Preferred Alternative 1 & Alternative 2	Contamination of runoff by poor materials/waste handling practices;	2	2	4	4	4(-)	3	48	L	L	1	1	0	1	2	2	10	L	L	• Restoration measures will be required to reinstate functionality in the disturbed soil and vegetation. • All construction vehicles should be adhered to construction sites and avoid off road movement to minimize impact on vegetation and soil. • Any accidental fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.

PROJECT ALTERNATIVE	POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT	ENVIRONMENTAL SIGNIFICANCE																		MITIGATION
		BEFORE MITIGATION									AFTER MITIGATION									
		Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	
Preferred Alternative 1 & Alternative 2	Handling of waste and transport of materials cause various types of spills (domestic waste, sewage water, hydrocarbons) which can infiltrate and cause contamination of the groundwater system	2	3	4	4	4(-)	3	51	M	L	1	1	0	1	2	2	10	L	L	• All spillages will need to be cleaned up as soon as practically possible; Proper management of stormwater drainage infrastructure should be ensured. • Maintain construction vehicles and encourage contractors to report, react and manage all spills and leaks so that action can be taken to immediately minimise contamination to the groundwater. • Spill kits will be made available in areas of likely spillage. • All hydrocarbon storage containers will be stored within a bunded areas which are water tight and able to contain 110% of the stored volume. • All equipment utilising hydrocarbons will be stored on a hard standing surface.
OPERATIONAL PHASE																				
Impacts on Surface Water																				

PROJECT ALTERNATIVE	POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT	ENVIRONMENTAL SIGNIFICANCE																		MITIGATION
		BEFORE MITIGATION									AFTER MITIGATION									
		Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	
Preferred Alternative 1 & Alternative 2	Impact on water quality and availability as a result in ineffective dirty water separation, and dirty water entering into the stream	2	2	4	4	4(-)	3	48	L	L	1	1	0	1	2	2	10	L	L	• A waste management plan will be compiled and approved for implementation of site. This management plant should focus on the waste hierarchy of the NEM:WA. • No waste may be disposed of to land without the necessary legal permits. • Waste will be removed from site by an accredited waste removal company and legally disposed of. Disposal certificates will be kept on site for audit purposes. • Sufficient waste receptacles will be placed around the site allowing the separation of waste as source.
Impacts Groundwater																				

PROJECT ALTERNATIVE	POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT	ENVIRONMENTAL SIGNIFICANCE																		MITIGATION
		BEFORE MITIGATION									AFTER MITIGATION									
		Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	
Preferred Alternative 1 & Alternative 2	Handling of waste and transport of materials cause various types of spills (domestic waste, sewage water, hydrocarbons) which can infiltrate and cause contamination of the groundwater system	2	3	4	4	4(-)	3		51	L	1	1	0	1	2	2	10	L	L	• All spillages will need to be cleaned up as soon as practically possible; Proper management of storm water drainage infrastructure should be ensured. • Maintain construction vehicles and encourage contractors to report, react and manage all spills and leaks so that action can be taken to immediately minimize contamination to the groundwater. • Groundwater monitoring should continue as per the WUL and approved monitoring programme. • Spill kits will be made available in areas of likely spillage. • All hydrocarbon storage containers will be stored within a bunded areas which are water tight and able to contain 110% of the stored volume. • All equipment utilising hydrocarbons will be stored on a hard standing surface.
Impacts on Access Road																				
Preferred Alternative 1 & Alternative 2	**Erosion and dilapidation of the access route**	2	2	0	1	2	4	28	L	L	2	1	0	1	0	2	8	L	L	• The contractor must maintain the quality of the access road during the operational period to ensure it does not deteriorate.

PROJECT ALTERNATIVE	POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT	ENVIRONMENTAL SIGNIFICANCE																		MITIGATION
		BEFORE MITIGATION									AFTER MITIGATION									
		Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	
Preferred Alternative 1 & Alternative 2	**Pollution of groundwater by contaminated water from the waste water**	5	2	3	1	3	1	14	L	L	1	1	1	1	1	1	5	L	L	• Storm water management plans should be in place for the control of storm water runoff.
Preferred Alternative 1 & Alternative 2	**Social Impacts – job creation**	0	0	0	0	8	5	+40	M	M	0	0	0	0	8	5	+40	M	M	• No mitigation measures were suggested.
Visual Impacts																				

PROJECT ALTERNATIVE	POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT	ENVIRONMENTAL SIGNIFICANCE																	MITIGATION
		BEFORE MITIGATION									AFTER MITIGATION								
		Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	
Preferred Alternative 1 & Alternative 2	**Potential visual impacts as result of four production houses**	5	2	3	1	3	1	14	L	L	1	1	1	1	1	1	5	L	L	• Landscape treatment such as green roof to soften the surface of built structures and mitigate the landscape and visual impact. • Maintenance of natural plantations upon completion. • Sensitive treatment and design to external finishes of the built structure to ensure elements' colour, texture and tonal quality are compatible with the existing landscape context. • Ensure controlled movement of distribution vehicles in and out of the farm. • Communicate with the residents any potential destructions in relation to abnormal activities that may affect the lighting or the view of the area. • Make use of grey water to suppress dust around the distribution area.
DECOMMISSIONING PHASE																				
Preferred Alternative 1 & Alternative 2	**Potential traffic implications due to on site construction and civil works**	2	2	0	1	2	2	14	L	L	2	2	0	0	0	1	4	L	L	• Implement road safety signage prior to construction commencing and flag bearers where appropriate.

PROJECT ALTERNATIVE	POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT	ENVIRONMENTAL SIGNIFICANCE																		MITIGATION
		BEFORE MITIGATION									AFTER MITIGATION									
		Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	Duration	Extent	Irreplaceable	Reversibility	Magnitude	Probability	TOTAL (SP)	Significance	CUMULATIVE	
Noise Impacts																				
Preferred Alternative 1 & Alternative 2	**Noise emanating from construction activities**	2	2	0	0	4	4	32	L	L	1	1	0	0	2	2	8	L	L	• Noise impacts from grinding, hammering and welding are not continuous which will limit their nuisance level. • Construction activities on site should be limited between 08h00 and 17h00 on weekdays and Saturdays.
Preferred Alternative 1 & Alternative 2	**Dust nuisance from the access roads, decommissioning of the facility**	2	1	0	1	2	4	24	L	L	1	1	0	1	0	2	6	L	L	• Implement dust suppression measures e.g., regular watering to prevent dust pollution. • A speed restriction of 40km/h must be enforced and monitored on site for all construction vehicles.

vi. 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).

The identification and assessment of environmental impacts is a multi-faceted process, which combines quantitative and qualitative descriptions and evaluations. It involves the application of scientific measurements and professional judgement to determine the significance of environmental impacts associated with the proposed project. The process involves consideration of inter alia: the purpose and need for the project; views and concerns of interested and affected parties, public interest; and environmental legislation and guidelines.

The generic criteria and systematic approach used to identify, describe and assess impacts are. Outlined below. The assessment of the impacts will be conducted according to a synthesis of criteria required by the integrated environmental management procedure.

Impact Rating Method

The impacts will be evaluated by applying the methodology as described below. The impact is defined and the significance is rated from Low to High as indicated in the table below with an explanation of the impact magnitude and a guide that reflects the extent of the proposed mitigation measures deemed necessary.

For each potential impact, the **Duration** (time scale), **Extent** (spatial scale), **Irreplaceability** (loss of resources), **Reversibility** of the potential impacts, **Magnitude** (negative or positive impacts) and the **Probability** (occurrence of the potential impacts) must be assessed. The assessment of the above-mentioned criteria will be used to determine the **Significance** of each impact, with and without the implementation of the proposed mitigation measures. The scale used to assess these variables and define the ratings is tabulated in **Table 8** and **Table 9** below.

Table 8: Evaluation components, scale ranking and description (criteria).

Evaluation component	Ranking scale and description (criteria)
MAGNITUDE of NEGATIVE IMPACT (at the indicated spatial scale)	**10 - Very high**: Bio-physical and/or social functions and/or processes might be *severely* altered. **8 - High**: Bio-physical and/or social functions and/or processes might be *considerably* altered. **6 - Medium**: Bio-physical and/or social functions and/or processes might be *notably* altered. **4 - Low** : Bio-physical and/or social functions and/or processes might be *slightly* altered.

Evaluation component	Ranking scale and description (criteria)
	2 - Very Low: Bio-physical and/or social functions and/or processes might be *negligibly* altered. **0 - Zero**: Bio-physical and/or social functions and/or processes will remain *unaltered.*
MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)	**10 - Very high (positive)**: Bio-physical and/or social functions and/or processes might be *substantially* enhanced. **8 - High (positive)**: Bio-physical and/or social functions and/or processes might be *considerably* enhanced. **6 - Medium (positive)**: Bio-physical and/or social functions and/or processes might be *notably* enhanced. **4 - Low (positive)**: Bio-physical and/or social functions and/or processes might be *slightly* enhanced. **2 - Very Low (positive)**: Bio-physical and/or social functions and/or processes might be *negligibly* enhanced.
	0 - Zero (positive): Bio-physical and/or social functions and/or processes will remain *unaltered.*
DURATION	**5 – Permanent** **4 - Long term**: Impact ceases after operational phase/life of the activity > 60 years. **3 - Medium term**: Impact might occur during the operational phase/life of the activity – 60 years. **2 - Short term**: Impact might occur during the construction phase - < 3 years. **1 – Immediate**
EXTENT (or spatial scale/influence of impact)	**5 - International**: Beyond National boundaries. **4 - National**: Beyond Provincial boundaries and within National boundaries. **3 - Regional**: Beyond 5 km of the proposed development and within Provincial boundaries. **2 - Local**: Within 5 km of the proposed development. **1 - Site-specific**: On site or within 100 m of the site boundary. **0 –** None

Evaluation component	Ranking scale and description (criteria)
IRREPLACEABLE loss of resources	**5 – Definite** loss of irreplaceable resources. **4 – High** potential for loss of irreplaceable resources. **3 – Moderate** potential for loss of irreplaceable resources. **2 – Low** potential for loss of irreplaceable resources. **1 – Very low** potential for loss of irreplaceable resources. **0 – None**
REVERSIBILITY of impact	**5 –** Impact **cannot** be reversed. **4 – Low** potential that impact might be reversed. **3 – Moderate** potential that impact might be reversed. **2 – High** potential that impact might be reversed. **1 –** Impact **will be** reversible. **0 –** No impact.
PROBABILITY (of occurrence)	**5 - Definite**: >95% chance of the potential impact occurring. **4 - High probability**: 75% - 95% chance of the potential impact occurring. **3 - Medium probability**: 25% - 75% chance of the potential impact occurring **2 - Low probability**: 5% - 25% chance of the potential impact occurring. **1 - Improbable**: <5% chance of the potential impact occurring.
Evaluation component	**Ranking scale and description (criteria)**
CUMULATIVE impacts	**High**: The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern. **Medium**: The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern. **Low**: The activity is localized and might have a negligible cumulative impact. **None**: any cumulative impact on the environment.

Once the evaluation components have been ranked for each potential impact, the significance of each potential impact will be assessed (or calculated) using the following formula:

SP (Significance Point) = (Duration + Extent + Irreplaceability + Reversibility + Magnitude) x Probability

The maximum value is 150 SP (Significance Points). The unmitigated and mitigated scenarios for each potential environmental impact should be rated as per **Table 9** below.

Table 9: Definition of Significant rating (positive and negative).

Significance Points	Environmental Significance	Description
125 – 150	**Very high (VH)**	An impact of very high significance will mean that the project cannot proceed, and that impacts are irreversible, regardless of available mitigation options.
100 – 124	**High (H)**	An impact of high significance which could influence a decision about whether or not to proceed with the proposed project, regardless of available mitigation options.
75 – 99	**Medium-high (MH)**	If left unmanaged, an impact of medium-high significance could influence a decision about whether or not to proceed with a proposed project. Mitigation options should be relooked.
40 – 74	**Medium (M)**	If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project.
<40	**Low (L)**	An impact of low is likely to contribute to positive decisions about whether or not to proceed with the project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation.
+	**Positive impact (+)**	A positive impact is likely to result in a positive consequence/effect, and is likely to contribute to positive decisions about whether or not to proceed with the project.

Alternative Assessments

As there have been no identified highly environmental sensitivities on the property, no design alternatives have been considered. The proposed design maximises the school layout in terms of the site footprint. The consideration of such alternatives is to include the option of achieving the same goal by using a different method or process (e.g. to reduce resource demand and increase resource use efficiency.) In a building type development, technology could be applied to enhance energy efficiency, water saving, waste management etc, depending on the nature and scale of the development. The development area of the two-alternative technology of the same type of vegetation, and do not differ in any significant way as far as the impacts on ecology is concerned. Therefore, there is no significant difference in the potential impacts associated with the alternatives, and the impacts for the technology alternatives considered are not comparatively assessed in the impact assessment below.

vii. 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).

No alternatives have been considered for this project. There are no drainage lines within the prosecting area.

- No bulk sampling is proposed; thereby minimising the footprint of disturbance and the resultant impact on the receiving environment.
- No large trees or vegetation of significance will be removed to allow prospecting activities as the position of the borehole can be altered when needed.
- No formal roads have to be constructed to allow for the continuation of the activity.
- Upon closure, the entire prospecting area will be returned to agricultural use with no residual impacts.

Project associated positive impacts:

- The proposed drill plan allows for proper prospecting of the approved area;
- Upon closure, the entire prospecting area will be returned to agricultural use with no residual impacts; and,
- During construction/site establishment, there will be local job creation.

Project associated positive impacts:

- Visual intrusion due to prospecting operation;
- Dust nuisance due to prospecting operation;
- Noise nuisance due to prospecting operation;
- Soil contamination associated with littering and hydrocarbon spills;
- Potential negative impact on the FEPA, area of biodiversity concern and/or drainage line;
- Negative impact on the natural vegetation of the footprint;
- Infestation of the prospecting area with invader plant species;
- Potential impact on fauna within the footprint area;
- Potential impact on areas/infrastructure of heritage or cultural concern; and/or,
- Deterioration of the access road to the prospecting area.

Decommissioning phase:

- Uncapped boreholes left by contractor;
- Potential impact associated with litter/hydrocarbon spills left in the prospecting area; and/or,
- Erosion of access roads or vehicle tracks.

viii. 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).

The following mitigation measures are proposed to address/minimize the impact of the prospecting activity on the receiving/surrounding environment:

CONSTRUCTION PHASE:

Potential Impact on Biodiversity

The risk of construction/site establishment activities having impact on biodiversity can be minimised to low significance by implementation of the following measures:

- In case of observation of any species during construction phase, an experienced person should be consulted to deal with translocation of such species;
- No killing or attempt to relocate species should be undertaken by contractors;
- All construction vehicles should adhere to a low-speed limit to avoid collisions with susceptible species;
- All construction vehicles should be adhered to construction sites and avoid off road movement to minimise impact on vegetation and soil;
- All construction vehicles should be adhered to construction sites and avoid off road movement to minimise impact on vegetation and soil;
- Any accidental fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill;
- All the areas disturbed during construction work needs to be landscaped to its original state before replacement of topsoil; and,
- Restoration measures will be required to reinstate functionality in the disturbed soil and vegetation.

Potential Impact on Soil

- Topsoil should be removed approximately 300mm and stored for later use during final rehabilitation around the facility;
- At the start of construction, the contractor must upgrade the access road; and,
- The contractor must maintain the quality of the access road during the construction period to ensure it does not deteriorate.

Potential Impacts on Air Quality

- Implement dust suppression measures e.g., regular watering to prevent dust pollution; and,
- A speed restriction of 40km/h must be enforced and monitored on site for all construction vehicles.

Potential Socio-Economic Impacts

- Noise impacts from grinding, hammering and welding are not continuous which will limit their nuisance level;
- Construction activities on site should be limited between 08h00 and 17h00 on weekdays and Saturdays; and,
- Local noise by laws and standards should be strictly enforced.

Potential Impact on Waste Management

- All spillages will need to be cleaned up as soon as practically possible; Proper management of stormwater drainage infrastructure should be ensured;
- Maintain construction vehicles and encourage contractors to report, react and manage all spills and leaks so that action can be taken to immediately minimise contamination to the groundwater;
- Spill kits will be made available in areas of likely spillage;
- All hydrocarbon storage containers will be stored within a bunded areas which are watertight and able to contain 110% of the stored volume; and,
- All equipment utilising hydrocarbons will be stored on a hard standing surface.

OPERATIONAL PHASE:

Visual intrusion due to prospecting operation

- The risk of the prospecting activities having a negative impact on the aesthetic quality of the surrounding environment is deemed to be of low significance should the following mitigation measures be implemented;
- Prospecting must be contained to the approved boundaries;
- Every borehole site must have a neat appearance and be always kept in good condition;
- The drilling contractor must limit vegetation removal (if applicable), and avoid the removal of large trees (>20 cm stem) or vegetation of significance (identified by the ECO); and,
- Upon closure every borehole site must be rehabilitated and landscaped to address any residual impact.

Dust nuisance due to prospecting operation

The risk of dust, generated due to the prospecting activities, having a negative impact on the surrounding environment can be reduced to being low through the implementation of the following mitigation measures:

- The liberation of dust into the surrounding environment must be effectively controlled (when applicable) by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g., DAS products);
- Speed on the access road must be limited to 40 km/h to prevent the generation of excess dust;
- Areas devoid of vegetation, which could act as a dust source, must be minimized; and,

- All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).

Noise nuisance due to prospecting operation

The risk of noise, generated by the prospecting activity, having a negative impact on the surrounding environment can be reduced to being low through the implementation of the mitigation measures listed below:

- The PR Holder must ensure that employees and staff conduct themselves in an acceptable manner while on site;
- No loud music may be permitted at the prospecting area;
- All project related vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996); and,
- Best practice measures shall be implemented in order to minimize potential noise impacts.

Soil contamination associated with littering and hydrocarbon spills

The risk of uncontrolled waste generation having a negative impact on the surrounding environment can be reduced to being low through the implementation of the mitigation measures listed below:

- Regular vehicle maintenance, repairs and services may only take place at an off-site workshop and service area, and none of the above is allowed in the prospecting footprint. When a breakdown occurs, the contractor must arrange for the removal of the machine, within 6 hours, to a recognised workshop where it can be mended.
- Ablution facilities must be provided in the form of a chemical toilet that is placed near the area being prospected. The chemical toilet must be serviced at least once every two weeks for the duration of the prospecting activities.
- The use of any temporary, chemical toilet facilities may not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the PR Holder.
- If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site.
- A spill kit must be available on-site which can be operated by trained employees for the *ad hoc* remediation of minor chemical and hydrocarbon spillages.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility.
- Should spillage occur, such as oil or diesel leaking from a burst pipe, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof must be filed.

- General waste must be contained in the site vehicles and daily removed from the prospecting area to a recognised general waste landfill site.
- No waste may be buried or burned on the site.
- No chemicals or hazardous materials may be stored at the prospecting area.
- It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the activities is reported to the Department of Water and Sanitation and other relevant authorities.

Potential negative impact on the FEPA, area of biodiversity concern and/or drainage line

The potential of the prospecting activity having a negative impact on the FEPA, area of conservation importance and/or the ephemeral drainage line is deemed to be of low significance, should the following mitigation measures be implemented:

- No activities may take place, without the necessary authorisation from the DWS, within a horizontal distance of 100 m from any watercourse (including the drainage line);
- Should a water use authorisation become applicable to the project, the PR Holder must at all times adhere to the conditions thereof; and,
- Upon closure, the PR Holder must remove all prospecting related equipment/machinery from the footprint.

Storm Water Mitigation

The following mitigation measures are proposed regarding storm water handling:

- Drainage must be controlled to ensure that runoff from the prospecting area does not culminate in off-site pollution; flooding or result in damage to storm water discharge points;
- Storm water must be diverted around the access roads and/or tracks to prevent erosion;
- Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system (if applicable);
- Dirty water must be collected and contained in a system separate from the clean water system; and,
- Dirty water must be prevented from spilling or seeping into clean water systems.

Negative impact on the natural vegetation of the footprint

Mitigating the Potential Impact on Vegetation Cover:

The risk of the prospecting activity having a negative impact on the vegetation cover of the footprint can be reduced to being low through the implementation of the mitigation measures listed below:

- All areas outside the prospecting boundary must be declared a no-go area, and all employees must be educated accordingly;
- No plants may be removed without the approval of an environmental control officer (ECO); and,

- Vehicle traffic must as far as possible be contained to the exiting farm roads. No crisscrossing through undisturbed areas may be allowed.

Infestation of the prospecting area with invader plant species

Management of Invasive Plant Species:

The risk of weeds or invader plants invading the disturbed area can be reduced to being low through the implementation of the mitigation measures listed below:

- An invasive plant species management plan must be implemented on site to control weeds and invasive plants on denuded- and reinstated areas in terms of the NEM:BA, 2004 and CARA, 1983.
- Management must take responsibility to control declared invader or exotic species that germinate on rehabilitated areas. The following control methods can be used:
  - ✓ The plants can be uprooted, felled or cut off and can be destroyed completely.
  - ✓ The plants can be treated chemically by a registered pest control officer (PCO) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.

Potential impact on fauna within the footprint area

The risk resulting from the prospecting activity on the fauna of the footprint area as well as the surrounding environment, can be reduced to low through the implementation of the mitigation measures listed below:

- The site manager must ensure no fauna is caught, killed, harmed, sold or played with;
- Workers must be instructed to report any animals that may be trapped in the working area; and,
- No snares may be set or nests raided for eggs or young.

Potential impact on areas/infrastructure of heritage or cultural concern; and/or Archaeological, Heritage and Palaeontological Aspects

The impact on archaeological, heritage and palaeontological aspects, as a result of the prospecting activities, can be reduced to being low through the implementation of the mitigation measures listed below:

- All prospecting must be confined to the approved footprint area.
- Known heritage resources must be avoided with a buffer zone of 30 m.
- Existing roads must be used as far as possible.
- Any future listed activity (not yet approved) must be subjected to an HIA.
- The ECO for the project must assess drill locations when these become available prior to drilling to confirm there are no graves, stone walling or any heritage features.
- If during the operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or

heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.

- It is the responsibility of the senior on-site manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.
- The senior on-site manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify SAHRA.
- Work may only continue once the go-ahead was issued by SAHRA.

Deterioration of the access road to the prospecting area

Access Road and Infrastructure Management:

The impact on the access road, as a result of the prospecting activities, can be reduced to being low through the implementation of the mitigation measures listed below:

- Storm water must be diverted around the access road to prevent erosion.
- Vehicular movement must be restricted to the existing access road and crisscrossing of tracks through undisturbed areas must be prohibited.
- Rutting and erosion of the access road caused as a direct result of the prospecting activities must be repaired by the PR Holder.
- Prior to commencement, all contractors must sign an agreement confirming their responsibility towards the movement of their employees.
- Damages to fences (by prospecting employees) must be repaired/reinstated by the responsible contractor. Losses, due to gates left open by prospecting employees, must be compensated by the responsible entity.

ix. Motivation where no alternative sites were considered.

Project Alternative 1 was identified during the assessment phase of the environmental impact assessment as the preferred and only site alternative. The following matters contributed to the identification of the preferred project proposal:

- **Visual Characteristics** – The viewshed analysis showed that the visual impact of the prospecting operation will be of low significance. The small scale of the proposed operation, and the continued reinstatement of the boreholes contributes to the low visual significance. Should the PR Holder successfully rehabilitate the borehole sites (upon closure), no residual visual impact is expected upon closure.

- **Air and Noise Quality** – The proposed activity will contribute the emissions of one drill rig and two to three site vehicles at a time to the receiving environment for the duration of the operational phase. Should the PR Holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use. The

potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the current farm equipment.

- **Geology and Soil –** The prospecting activities does not require bulk sampling, nor the excavation of trenches or pits, and therefore the impact of the operation on the geology of the study area is deemed to be of low significance, with no residual impact once the boreholes were capped.

- **Hydrology –** Prospecting will not affect the integrity of the FEPA if the proposed buffer area around the ephemeral drainage line is maintained; nor will it have an impact on the surface- or groundwater of the footprint area as very little process water (±1 000 l/day) is needed to allow the drilling of the boreholes.

- **Biodiversity and Groundcover –** Should the PR Holder implement the proposed 100 m buffer around the drainage line the conservation status of the area will be adequately protected, and in light of this the impact of the prospecting operation on the identified area of conservation importance is deeded to be of low significance. The prospecting activities does not require the removal of any large trees or vegetation of significance. Due to the small footprint of a borehole, the drill position can be manipulated to drill between the trees. In light of this, the impact of the prospecting operation on the vegetation cover of the receiving environment is deemed to be of low significance

- **Fauna -** The fauna within the PR footprint will not be impacted by the prospecting activities as they will be able to move away or through the site, without being harmed. Workers will be educated and managed to ensure that no fauna of the site is harmed.

- **Cultural and Heritage Environment** - The HIA concluded that the impact of the proposed drilling on heritage resources will not have a significant impact on the heritage resources of the Northern Cape, and recommended that the project can commence on the condition that SAHRA approves the proposal and the recommendation of the report is implemented.

- **Site Specific Infrastructure** – No prospecting activities are planned for any of the developed areas on the farm. Other infrastructure within the PR footprint comprises of power lines, farm roads, fences and water reservoirs. None of these structures will be impacted by the prospecting activities.

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

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

i) 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 are 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.)

Please refer to Section VI above.

j) 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).

Table 10: Potential Significant Impact and Risk.

NAME OF ACTIVITY **(E.g., For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **E.g. For mining**, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	**POTENTIAL IMPACT** (Including the potential impacts for cumulative impacts) (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc…)	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated (e.g., Construction, commissioning, operational Decommissioning, closure, post-closure)	**SIGNIFICANCE** if not mitigated	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g., noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control Control through management and monitoring through rehabilitation.	**SIGNIFICANCE** if mitigated
Site establishments and Drilling	Disturbance of Biodiversity	Vegetation cover, fauna and flora	Construction and Operational Phase	Medium	Control: Minimise the removal of vegetation and confining vehicular movement to existing roads/tracks. Control & Stop: Implementing good management practices.	Low

Site establishments and Drilling	Dust generation during site clearing and prospecting activities	Increased dust generation will impact on the air quality of the receiving environment.	Construction and Operational Phase	Medium	Control: Dust suppression methods and proper housekeeping.	Low
Site establishments and Drilling	Soil contamination due to hydrocarbon spills	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the PR Holder.	Construction and Operational Phase	Low	Control & Remedy: Proper housekeeping and implementation of an emergency response plan.	Low
Site establishments and Drilling	Surface water contamination	Contamination of surface water due to oil spills and poor management of waste	Construction and Operational Phase	Low	Control: Implementing proper housekeeping.	Low
Drilling	Visual intrusion due to prospecting operation.	The visual impact may affect the aesthetics of the landscape.	Operational Phase	Low	Control: Implementing proper housekeeping.	Low
Drilling	Noise nuisance due to prospecting activities.	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Operational	Low	Control: Noise suppression methods and proper housekeeping. Control: Noise suppression methods and proper housekeeping.	Low
Drilling	Infestation of the prospecting area with invader plant species.	This will impact on the biodiversity of the receiving environment.	Operational	Low	Control: Implementing invader plant control measures.	Low
Drilling	Potential impact on area/infrastructure	This could impact on the cultural and heritage	Operational	Low	Control & Stop: Implementing good management practices, as well as the chance-find protocol.	Low

	of heritage or cultural concern.					
Drilling Decommissioning and Rehabilitation	Deterioration of the access road to the prospecting area. Erosion of access roads or vehicle tracks.	Collapse of the road infrastructure will affect the landowners.	Operational Phase	Low-Medium	Control & Remedy: Maintaining the access road for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to prospecting.	Low
Decommissioning and Rehabilitation	Uncapped boreholes left by contractor.	Uncapped boreholes will pose a safety risk to the animals and humans of the area.	Operational Phase	Low-Medium	Control: Implementing the mitigation measures and rehabilitation plan.	Low

(The supporting impact assessment conducted by the EAP must be attached as an appendix, marked **Appendix).**

k) Summary of specialist reports

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

Table 11: Specialist Studies.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Heritage Impact Assessment	Heritage Desktop Assessment of farm Chertsey 430, Kuruman Magisterial District, NC Province	BIF outcrop will not require further palaeontological investigation and the likelihood of impact on cf. late Neogene/Quaternary fossils is considered low given the low topography terrain, apparent absence of pans and no indication of proper fluvial conditions within the footprint. However, a wide range of tangible heritage resources including dense Stone Age surface occurrences and capped localities, Late Iron Age and historical structural remnants represent a rich archaeological record. Fortunately, where exposed, sites like these are generally easily detectable by means of a foot survey. It is therefore recommended that any planned development at Chertsey 430 be	Section IV, and Part A(1)(h)(viii)

		preceded by a field assessment of proposed area(s) of impact in the form of a Phase 1 Archaeological Impact Assessment.	

(Attach copies of Specialist Reports as Appendix G).

I) Environmental impact statement

i. Summary of the key findings of the environmental impact assessment

Based on the baseline studies carried out and a comprehensive impact assessment, several impacts were noted for the proposed prospecting activity. The first activity will be the establishment of the drilling / camp site and the construction of access roads. This step will result in vegetation clearing which results in spread of alien invasive species, dust and soil erosion. Any identified alien invasive species will be cut and burnt. Eroded soil may be washed by rain water and impact watercourses. No erosion was observed in the area however it is recommended that erosion control mechanisms to be installed prior to starting invasive exploration activities.

Drill rigs will be operating during the exploration activities with water for cooling and fly rock being obtained from the local municipality and being stored in plastic-lined water sumps before being mixed with drill fluids and additives. It will be recycled to reduce water use. Rigs produce vibration and noise. This will be mitigated by operating during the day as well as bringing in well serviced machinery. Well serviced machinery produce less vibrations, noise and emissions. Additional devices can be fitted to the drill rigs and generators to reduce noise and greenhouse gas emissions. Biodegradable drill fluids and additives will be used to reduce the contamination of soil and ground water.

Despite the many impacts that seem possible from the exploration activities, the actual project spatial footprint is very small and will be deliberately minimised to keep the significance and extent of negative impacts minimal. For example, the camp site will take up about 0.09 hectares and each drilling site will use 1 metre by metre of space.

An ECO will also be on site to ensure that mitigation, minimisation and avoidance measures are effectively put in place. Should economically viable iron ore and manganese resources be discovered, the mining activities that follow will result in benefits such as local community development, economic growth, employment creation and availability of a market for local goods and services. At the end of this exploration project, the drill boreholes will be backfilled, access roads ripped and revegetated and all campsite equipment removed. The goal will be to rehabilitate the project site to its original state or better.

ii. Final Site Map

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

The site layout maps for the proposed overall activity and its associated structures and infrastructure are attached as Appendix B. There are no sensitive environmental features on site.

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

The positive impacts associated with the project include:

- The proposed drill plan allows for intensive prospecting of the approved area; and,
- Upon closure, the entire prospecting area will be returned to agricultural use with no residual impacts.

The potential negative impacts associated with the project are all of low significance after mitigation:

- Visual intrusion due to prospecting operation;
- Dust nuisance due to prospecting operation;
- Noise nuisance due to prospecting operation;
- Soil contamination associated with littering and hydrocarbon spills;
- Potential negative impact on the FEPA, area of biodiversity concern and/or drainage line;
- Negative impact on the natural vegetation of the footprint;
- Infestation of the prospecting area with invader plant species;
- Potential impact on fauna within the footprint area;
- Potential impact on areas/infrastructure of heritage or cultural concern;
- Deterioration of the access road to the prospecting area.
- Uncapped boreholes left by contractor;
- Potential impact associated with litter/hydrocarbon spills left in the prospecting area; and/or,
- Erosion of access roads or vehicle tracks.

m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr

Based on the assessment and where applicable the recommendations from specialist reports, 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.

Table 12: Proposed EMPr.

MANAGEMENT OBJECTIVES	*ROLE*	MANAGEMENT ACTION	MANAGEMENT OUTCOME
VISUAL CHARACTERISTICS Mitigating the visual impact.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Contain prospecting to the approved boundaries. • Ensure every borehole site has a neat appearance and is kept in good condition at all times. • Limit vegetation removal, and avoid the removal of large trees (>20 cm stem) or vegetation of significance (identifiedby ECO). • Rehabilitate and landscape every borehole site to address any residual impact.	• Minimise the impact of the proposed project on the visual characteristics of the receiving environment during the operational phase, and ensure no residual impact remains after closure.
AIR QUALITY Dust management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Control the liberation of dust into the surrounding environment by the use of; inter alia, straw, water sprayingand/or environmentally friendly dust-allaying agents that contains no PCB's (e.g., DAS products). • Limit speed on the access roads to 40 km/h to prevent thegeneration of excess dust. • Minimise areas devoid of vegetation. • Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS • 1137:2012).	• Dust prevention measures are applied to minimise the generation of dust.
NOISE AMBIANCE Noise mitigation.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure that employees and staff conduct themselves in anacceptable manner while on site. • No loud music may be permitted at the prospecting area. • Ensure that all project related vehicles are equipped with • silencers and maintained in a road worthy condition interms of the National Road Traffic Act, 1996.	• Prevent unnecessary noise to the environment by ensuring that noise from development activityis mitigated.

	Compliance to be monitored by the Environmental Control Officer.	• Do not remove plants without the approval of an environmental control officer (ECO). • Contain vehicle traffic (as far as possible) to the existing farm roads. Do not allow crisscrossing through undisturbed areas.	
GEOLOGY AND SOIL Waste management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure regular vehicle maintenance, repairs and services takes place at an off-site workshop and service area, and that none of the above is allowed in the prospecting footprint. When a breakdown occurs, arrange for theremoval of the machine within 6 hours to a recognised workshop where it can be mended. • Provide ablution facilities in the form of a chemical toilet that is placed near the area being prospected. Ensure thetoilet is serviced at least once every two weeks for the duration of the prospecting activities. • Ensure that the use of any temporary, chemical toilet facilities does not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately. • Equip the diesel bowser with a drip tray if used on site. Thenozzle of the bowser must rest in a sleeve to prevent dripping after refueling. • Clean drip trays after use. Do not use dirty drip trays. • Keep a spill kit on site. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Collect the contaminated soil from spillage that occurred, such as oil or diesel leaking from a burst pipe, within the first hour of occurrence, in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. File proof.	• Wastes are appropriately handled and safelydisposed of at a recognised waste facility.

HYDROLOGY Storm water management.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Control drainage to ensure that runoff from the prospectingarea does not culminate in off-site pollution, flooding or result in damage to storm water discharge points. • Divert storm water around the access roads and/or tracks to prevent erosion. • Keep clean water clean, and route it to a natural watercourse by a system separate from the dirty water system (if applicable). • Collect dirty water and contain it in a system separate fromthe clean water system. • Prevent dirty water from spilling or seeping into clean water systems.	• Uncontrolled storm water impact to the environment is avoided.
GROUNDCOVER Mitigating invader plants.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Implement an invasive plant species management plan to control all invasive plant species on denuded- and reinstated areas in terms of NEM:BA, 2004 and CARA, 1983. • Control declared invader or exotic species on the rehabilitated areas.	• Prospecting area is kept free of invasive plant species.
FAUNA Mitigating the fauna component.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young.	• Disturbance to fauna is minimised.
CULTURE/HERITAGE Mitigating cultural/heritageaspects.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	▪ Confine all prospecting to the footprint area. ▪ Demarcate known heritage resources with a 30 m buffer zone and manage as a no-go area. ▪ Use existing roads as far as possible. ▪ Subject any future listed activity (not yet approved) to an HIA. ▪ Ensure that the ECO for the project assess drill locations prior to drilling to confirm there are no graves, stone walling or any heritage features. ▪ Implement the following change find procedure when discoveries are made on site: ▪ If during the operations or closure phases of this project,any person employed by the developer, one of its subsidiaries,	▪ Impact to cultural/heritage resources is avoided or at least minimised.

		contractors and subcontractors, or service provider, finds any artefact of cultural significance or	
EXISTING INFRASTRUCTURE Control of access road.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	▪ Divert storm water around the access road to prevent erosion. ▪ Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas. ▪ Repair rutting and erosion of the access road caused as a direct result of prospecting. ▪ Sign an agreement, prior to commencement, confirming responsibility towards the movement of employees. ▪ If responsible, repair/reinstate damaged fences and/or compensate losses due to gates left ajar.	▪ The access road remains accessible to the road users during the operational phase, and upon closure the road is returned in a better, or at least the same state as received by the PR Holder.
GENERAL Health and safety aspects.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	▪ Ensure adequate ablution facilities and water for human consumption is daily available on site. ▪ Ensure that workers have access to the correct PPE as required by law. ▪ Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). ▪ Cover boreholes daily. ▪ Seal and cap all boreholes as prescribed in the rehabilitation plan, upon closure.	▪ Employees work in a healthy and safe environment.

n) Aspects for inclusion as conditions of Authorisation

Any aspects which must be made conditions of the Environmental Authorisation

- Proponent must commit to follow and implement recommended mitigation measures outlined in the EMPr. However, the ECO can substitute or improve on the measures for best results and intended outcomes.
- The proponent must produce evidence of consulting and cooperating with landowners / occupiers in the vicinity of the project site.
- The PR holder must appoint qualified ECO at the site for the duration of the project.
- Proponent must put in place erosion control mechanisms before starting drilling activities.

o) Description of any assumptions, uncertainties and gaps in knowledge

(Which relate to the assessment and mitigation measures proposed)

This Basic Assessment was based on the assumption that all the information gathered in during desktop studies is correct and gathered professionally. Using all information gathered during desktop studies and site visit, enough evidence is available to predict possible impacts and avert them. It must also be noted that in the process of converting spatial data to final output drawings, several steps were followed and these may affect the accuracy of delineated areas even though due diligence was done to preserve accuracy.

Filed survey was conducted during the early Autumn season and it was a daytime survey only. Most of the different habitats at the site were investigated and it was therefore possible to complete a rapid survey and obtain information on the habitats that are present and the site, or that are likely to occur there. Access to portions of the nature reserve were not possible.

No assumptions should be made unless opinions are specifically indicated and provided.
Data presented in this BAR may not explain all possible conditions that may exist given the limited nature of the enquiry.

p) Reasoned opinion as to whether the proposed activity should or should not be authorised

i. Reasons why the activity should be authorized or not.

Retso- Con (Pty) Ltd has taken into account all possible impacts and provided migration measures thereof. **Retso- Con (Pty) Ltd** can only give informed decision on whether the project be authorized or not after the comments have been received after public participation process.

ii. Conditions that must be included in the authorisation

Retso- Con (Pty) Ltd advices that appointment of ECO should be added as condition in the authorization. All mitigation measures as stipulated in the EMPr should be implemented. Monthly ECO report must be shared with DMR and all finding rectified within specified timeframe.

q) Period for which the Environmental Authorisation is required

The validity period of the EA should tally with the validity period of PR; thus, a five-year period validity is requested.

r) 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.

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.

s) Financial Provision

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

i. Explain how the aforesaid amount was derived

The average annual amount required to manage and rehabilitate the environment wasestimated to be ±R 74 097. The table below shows the proposed cost regarding siterehabilitation of the applicable invasive phases of the prospecting activity.

Calculation of Quantum							
Mine: EFM Holdings				**Location: Farm Chertsey 430, Khathu, Northern Cape**			
Evaluator: Liketso Tsotetsi				**Date: 15 Mar 2022**			
No	**Description**	**Unit**	**A Quantity**	**B Master Rate**	**C Multiplication factor**	**D Weighting factor 1 E=A*B*C*D**	**Amount (Rands)**
		Step 4.5	**Step 4.3**	**Step 4.3**	**Step 4.4**		
1	Dismantling of processing plant and related structures (Including overland conveyors and power lines)	m3	0	6,82	1,00	1,00	R0,00
2(A)	Demolition of steel buildings and structures	m2	0	95,00	1,00	1,00	R0,00
2(B)	Demolition of rein forced concrete buildings and structures	m2	0	140,00	1,00	1,00	R0,00
3	Rehabilitation of access roads	m2	200	17,00	1,00	1,00	R3 400,00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	165,00	1,00	1,00	R0,00
4(B)	Demolition and rehabilitation of non-electrified rail way lines	m	0	90,00	1,00	1,00	R0,00

5	Demolition of housing and/or administration facilities	m2	0	190,00	1,00	1,00	R0,00
6	Opencast rehabilitation including final voids and ramps	Ha	0	96700,00	1,00	1,00	R0,00
7	Sealing of shafts, adits and inclines	m3	0	51,00	1,00	1,00	R0,00
8(A)	Rehabilitation of overburden and spoils	Ha	0	66400,00	1,00	1,00	R0,00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt producing waste)	Ha	0	82700,00	1,00	1,00	R0,00
8©	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	Ha	0	240200,00	0,51	1,00	R0,00
9	Rehabilitation of subsided areas	Ha	0	55600,00	1,00	1,00	R0,00
10	General surface rehabilitation	Ha	0,8	52600,00	1,00	1,20	R50 496,00
11	River diversions	Ha	0	52600,00	1,00	1,00	R0,00
12	Fencing	Ha	0	60,00	1,00	1,00	R0,00
13	Water management	Ha	0	20000,00	0,17	1,00	R0,00
14	2 to 3 years of maintenance and aftercare	ha	0,8	700,00	1,00	1,00	R560,00
15(A)	Specialist study	Sum					
15(B)	Specialist study	Sum					
(Sum * of items 1 to 15 above) = R 54 456,00							
Multiply Sum * of 1 – 15 by Weighting factor 2 (Step 4.4)			1,02	R54 456,00		R55 545,12	
		Add 6% of Subtotal 1 if Subtotal 1 R 100,000,000.00				R3 332,71	
1	Preliminary and General	Add 12% of Subtotal 1 if Subtotal 1 R 100,000,000.00				R0,00	
2	Contingencies	**Add 10% of Subtotal 1**				R5 554,51	
		Sub Total 2 (Subtotal 1 plus sum of management and contingency)				R8 887,22	
		Sub Total 3				R64 432,34	
		VAT @ 14 % of Subtotal 3				R9 664,85	
		GRAND TOTAL (Subtotal 3 plus VAT)				R74 097,19	

ii. 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 or Prospecting Work Programme as the case may be).

EFM prospecting operation will be furnished by group of private companies and SAFLOG. Enough funds have been secured to fund the EFM prospecting operation (as presented in the PWP).

t) Specific Information required by the competent Authority

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

1. 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, attach the investigation report as an **Appendix**.

The following potential impacts were identified that may impact on socio-economicconditions of directly affected persons:

Visual intrusion associated with the prospecting activities

The prospecting activities does not require the removal of vegetation and no permanent infrastructure will be erected. In light of this, the potential impact ofthe prospecting operation on the visual characteristics of the receiving environment is deemed to be of insignificance importance.

Dust nuisance caused as a result of the prospecting activities

The prospecting activity will contribute the emissions of one drill rig and two tothree site vehicles at a time for the duration of the invasive operational phase.Dust generated as result of the prospecting will also stem from the movementof these vehicles. Should the PR Holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.

Noise nuisance as a result of prospecting activities

The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the machinery alreadyoperating in the area. The distance of the prospecting area from residential infrastructure further lessens the potential noise impact.

Prospecting affecting surface water or aggravating the scarcity of water

The prospecting activity requires ±1 000 l of water/day that is bought in a controlled manner from the landowners. No prospecting will take place withinthe identified drainage line or other water resources (if identified). In light of this, the potential of prospecting impact the water resources of the footprint area is deemed very low.

Access control and management of existing infrastructure

As mentioned earlier, the drilling campaign will be headed by a drill contractor.Site management will at all times be responsible for the movement of their employees. No prospecting personnel will be allowed to wander outside the approved footprint. The contractor will sign an agreement to this affect upon appointment and will be held responsible for damages to fences or gates left ajar by prospecting personnel.

2. 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).

BIF outcrop will not require further palaeontological investigation and the likelihood of impact on cf. late Neogene/Quaternary fossils is considered low given the low topography terrain, apparent absence of pans and no indication of proper fluvial conditions within the footprint. However, a wide range of tangible heritage resources including dense Stone Age surface occurrences and capped localities, Late Iron Age and historical structural remnants represent a rich archaeological record. Fortunately, where exposed, sites like these are generally easily detectable by means of a foot survey. It is therefore recommended that any planned development at Chertsey 430 be preceded by a field assessment of proposed area(s) of impact in the form of a Phase 1 Archaeological Impact Assessment.

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

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as **Appendix 4)**.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

a) Draft environmental management programme

i. 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).

The details and expertise of Liketso Tsotetsi from **Retso- Con (Pty) Ltd** that acts as EAP on this project has been included in Part A Section 1(a) as well as Appendix J as required.

ii. 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).

The aspects of the activity that are covered by the draft environmental management programme has been described and included in Part A, section (1)(h).

iii. 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 any areas that should be avoided, including buffers).

As mentioned under Part A, section (1)(l)(ii) this map has been compiled and is attached as Appendix C to this document.

iv. Description of Impact management objectives including management statements

i. <u>Determination of closure objectives.</u>

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

The end objective is for all the boreholes to be sealed and capped to, in the end, returnthe area to agricultural use. No buildings/infrastructure, other than the chemical toiletand drill rig, need to be demolished/removed, and the access roads/tracks will remainintact to be used by the landowners.

- Removal of all prospecting equipment from site;
- Sealing and capping of all the boreholes; and,
- Landscaping of any/all compacted areas.

The PR Holder will comply with the minimum closure objectives as prescribed DMRand detailed below:

<u>FINAL REHABILITATION</u>

Final rehabilitation of the surface area shall entail landscaping, levelling, maintenance, and clearing of invasive plant species (if applicable). All equipment,plant and other items used during the prospecting period will be removed from site

(section 44 of the MPRDA, 2002). Waste material of any description will be removed entirely from the prospecting area and disposed of at a recognized landfillfacility. It will not be permitted to be buried or burned on the site. The managementof invasive plant species will be done in a sporadic manner during the life of the activity. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site. Final rehabilitationshall be completed within a period specified by the Regional Manager.

ii. Volumes and rate of water use required for the operation

The drilling operation require ±1 000 l of water per day, and potable water is brought to site daily.

iii. Has a water use licence has been applied for?

No Section 21 activities were identified. In case the prospecting extends to the 32 buffer of the wetlands, EFM will be advised to apply for water use license in terms of Section 39 of the NWA, 1998 for water uses as defined in section 21(c) and 21 (i).

iv. Impacts to be mitigated in their respective phases

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

ACTIVITIES **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **E.g. For mining**,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE OF DISTURBANCE** (volumes, tonnages and hectares or m²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-.. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
• Percussion Drilling	Operational Phase	100 m² per borehole site(±2 ha)	**Visual Mitigation** • Prospecting must be contained to theapproved boundaries. • Every borehole site must have a neat appearance and be kept in good condition atall times. • The drilling contractor must limit vegetation removal (if	Management of the prospecting area must be in accordance with the: • MPRDA, 2008 • NEMA, 1998	Throughout the operational phase.

			applicable), and avoid the removal of large trees (>20 cm stem) or vegetation of significance (identified byECO). • Upon closure every borehole site must be rehabilitated and landscaped to address anyresidual impact.		
• Percussion Drilling	Operational Phase	100 m² per borehole site(±2 ha)	**Fugitive Dust Emission Mitigation:** • The liberation of dust into the surrounding environment must be effectively controlled (when applicable) by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). • Speed on the access road must be limited to40 km/h to prevent the generation of excessdust. • Areas devoid of vegetation, which could act as a dust source, must be minimized. • All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of	Dust generation must bemanaged in accordance with the: • NEM:AQA. 2004 Regulation 6(1) • National Dust Control Regulations, GN No R827 • ASTM D1739 (SANS 1137:2012)	Throughout the operational-, and decommissioning phase.

			2004) and ASTM D1739 (SANS 1137:2012).		
Percussion Drilling Decommissioning and Rehabilitation	Operational Phase& Decommissioning Phase	100 m² per borehole site(±2 ha)	**Waste Management:** • Regular vehicle maintenance, repairs and services may only take place at an off-site workshop and service area, and none of the above is allowed in the prospecting footprint. When a breakdown occurs, the contractor must arrange for the removal of the machine, within 6 hours, to a recognised workshop where it can be mended. • Ablution facilities must be provided in the form of a chemical toilet that is placed near the area being prospected. The chemical toilet must be serviced at least once every two weeks for the duration of the prospecting activities. • The use of any temporary, chemical toilet facilities may not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or	Prospecting related waste must be managed in accordance with the: • NWA, 1998 • NEM:WA, 2008 • NEM:WA, 2008: Nationalnorms and standards for the storage of waste (GN 926) • NEMA, 1998 (Section 30)	Throughout the operational-, and decommissioning phase.

			sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the PR Holder. • If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refueling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refueling. • Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site.		
• Percussion Drilling	Operational Phase	100 m² per borehole site(±2 ha)	**<u>Mitigating the potential impact on the FEPA, area of biodiversity concern and/or drainage line:</u>** • No activities may take place, without the necessary authorisation from the DWS, • Should a water use authorization become applicable to the project, the PR Holder mustat all times adhere to the conditions thereof.	The biodiversity of the area must be managed in accordance with the: • NEM:BA 2004 • NWA, 1998	Throughout the operational phase.

			• Upon closure, the PR Holder must remove ○ all prospecting related equipment/machineryfrom the footprint.		
Percussion Drilling	Operational Phase	100 m² per borehole site(±2 ha)	**Storm Water Mitigation:** Drainage must be controlled to ensure that runoff from the prospecting area does not culminate in off-site pollution, flooding or result in damage to storm water discharge points. Storm water must be diverted around the access roads and/or tracks to preventerosion. Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system (if applicable). Dirty water must be collected and containedin a system separate from the clean water system. Dirty water must be prevented from spilling or seeping into clean water systems.	Storm water must be managed in accordance with the: CARA, 1983 NEMA, 1998 NWA, 1998	Throughout the operational phase.
Percussion Drilling	Operational Phase	100 m² per borehole site(±2 ha)	**Mitigation the Potential Impact and VegetationCover:**	Vegetation cover must be managed in accordance with the:	Throughout the operational phase.

			• All areas outside the prospecting boundary must be declared a no-go area, and all employees must be educated accordingly. No plants may be removed without the approval of an environmental control officer (ECO). Vehicle traffic must as far as possible be contained to the exiting farm roads. No crisscrossing through undisturbed areas may be allowed	✓ CARA, 1983 ✓ NEMA, 1998 ✓ NEM:BA 2004	
Percussion Drilling Decommissioning and Rehabilitation	Operational Phase & Decommissioning Phase	100 m² per borehole site(±2 ha)	**Management of Invader Plant Species:** An invasive plant species management planmust be implemented on site to control weeds and invasive plants on denuded- and reinstated areas in terms of the NEM:BA, 2004 and CARA, 1983. Management must take responsibility to control declared invader or exotic species that germinate on rehabilitated areas. The following control methods can be used: ▪ The plants can be uprooted, felled or cut off and can be destroyed completely.	Invader plants must be managedin accordance with the: CARA, 1983 NEM:BA 2004	Throughout the operational, and decommissioning phase.

			▪ The plants can be treated chemically by a registered pest control officer (PCO) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.		
Percussion Drilling	Operational Phase	100 m² per borehole site(±2 ha)	**Protection of Fauna:** The site manager must ensure no fauna is caught, killed, harmed, sold or played with. Workers must be instructed to report any animals that may be trapped in the working area. No snares may be set or nests raided for eggs or young.	Fauna must be managed in accordance with the: NEM:BA 2004	Throughout the and operationalphase.
Percussion Drilling	Operational Phase	100 m² per borehole site(±2 ha)	**Archaeological, Heritage and Paleontological Aspects:** All prospecting must be confined to the approved footprint area. Known heritage resources must be avoided with a buffer zone of 30 m. Existing roads must be used as far as possible.	Cultural/heritage aspects must be managed in accordance with the: NHRA, 1999	Throughout the operational phase.

			• Any future listed activity (not yet approved) must be subjected to an HIA. • The ECO for the project must assess drill locations when these become available priorto drilling to confirm there are no graves, stone walling or any heritage features. • If during the operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. • It is the responsibility of the senior on-site manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area. • The senior on-site manager must inform theECO of the chance find and its		

			immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify SAHRA.		
• Percussion Drilling	Operational Phase	100 m² per borehole site(±2 ha)	**Access Road and Infrastructure Mitigation:** • Storm water must be diverted around the access road to prevent erosion. • Vehicular movement must be restricted to the existing access road and crisscrossing of tracks through undisturbed areas must be prohibited. • Rutting and erosion of the access road caused as a direct result of the prospecting activities must be repaired by the PR Holder. • Prior to commencement, all contractors must sign an agreement confirming their responsibility towards the movement of theiremployees. • Damages to fences (by prospecting employees) must be repaired/reinstated by the responsible contractor. Losses, due to gates left	The site infrastructure must be managed in accordance with the: • NRTA, 1996 • MPRDA, 2002	Throughout the operational phase.

			open by prospecting employees, must be compensated by the responsible entity.		
• Percussion Drilling	Operational Phase	100 m² per borehole site(±2 ha)	**Management of Health and Safety Risks:** • Adequate ablution facilities and water for human consumption must daily be availableon site. • Workers must have access to the correct personal protection equipment (PPE) as required by law. • All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).	Health and safety aspects must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS, 18001	Throughout the operational and decommissioning phase.

v. Impact Management Outcomes

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

ACTIVITY whether listed or not listed (E.g., Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport,Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc.)	**POTENTIAL IMPACT** (e.g., dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.)	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated (e.g., Construction, commissioning, operational Decommissioning, closure, post-closure)	**MITIGATION TYPE** (modify, remedy, control, or stop)through (e.g., noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.) E.g. • Modify through alternative method. • Control through noise control • Control through management andmonitoring Remedy through rehabilitation.	**STANDARD TO BE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Percussion Drilling	Visual intrusion due to prospectingoperation.	The visual impact may affect the aesthetics of the landscape.	Operational Phase	Control: Implementing proper housekeeping.	Management of the prospecting areamust be in accordance with the: MPRDA, 2008 NEMA, 1998

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
• Percussion Drilling	• Dust nuisance due to prospecting activities.	Increased dust generation willimpact on the airquality of the receiving environment.	Operational Phase	Control: Dust suppression methods andproper housekeeping.	Dust generation must be managed in accordance with the: • NEM:AQA. 2004 Regulation 6(1) • National Dust Control Regulations, GN No R827 • ASTM D1739 (SANS1137:2012)
• Percussion Drilling	• Noise nuisance dueto prospecting activities.	Should noise levels become excessive it may have an impacton the noise ambiance of thereceiving environment.	Operational Phase	Control: Noise suppression methods andproper housekeeping.	Noise generation must be managed in accordance with the: • NEM:AQA. 2004 Regulation 6(1) • NRTA, 1996
• Percussion Drilling • Decommissioning a ndRehabilitation	• Soil contamination associated with littering a ndhydrocarbon spills. • Potential impact associated with litter/hydrocarbon spills left in the prospecting area.	Contamination of the footprint area will negatively impact thesoil, surface runoff and potentially the groundwater. It will also incur additional costs to the PRHolder.	Operational Phase	Control & Remedy: Proper housekeeping and implementation of an emergency responseplan.	Prospecting related waste must be managed in accordance with the: • NWA, 1998 • NEM:WA, 2008 • NEM:WA, 2008: National norms and standards for the storage ofwaste (GN 926) • NEMA, 1998 (Section 30)

• Percussion Drilling	• Potential negativeimpact on the FEPA, area of biodiversity concern and/ ordrainage line.	This will impact onthe biodiversity of the receiving environment.	Operational Phase	Control: Keeping prospecting operations tothe approved boundaries and out of the bufferarea.	The biodiversity of the area must be managed in accordance with the: • NEM:BA 2004 • NWA, 1998 • MPRDA, 2002
• Percussion Drilling	• Negative impact on the natural vegetationof the footprint.	This will impact onthe biodiversity of the receiving environment.	Operational Phase	Control: Minimise the removal of vegetation and confining vehicular traffic to existing roads/tracks.	Vegetation cover must be managed in accordance with the: • CARA, 1983 • NEMA, 1998 • NEM:BA 2004
• Percussion Drilling	• Infestation of the prospecting are with invader plant species.	This will impact onthe biodiversity of the receiving environment.	Operational Phase	Control: Implementing invader plant controlmeasures.	Invader plants must be managed in accordance with the: • CARA, 1983 • NEM:BA 2004
• Percussion Drilling	• Potential impact on fauna within the footprint area.	This will impact on the biodiversity of the receiving environment.	Operational Phase	Control & Stop: Implementing good management practices.	Fauna must be managed inaccordance with the: • NEM:BA 2004
• Percussion Drilling	• Potential impact on area/infrastructure of heritage or cultural concern.	This could impact onthe cultural and heritage legacy of the receiving environment.	Operational Phase	Control & Stop: Implementing good management practices, as well as the chance-find protocol.	Cultural/heritage aspects must bemanaged in accordance with the: • NHRA, 1999
• Percussion Drilling • Decommissioning a ndRehabilitation	• Deterioration of the access road to the prospecting area. • Erosion of access roads or vehicle tracks.	Collapse of the road infrastructure wil l affect the landowners.	Operational Phase	Control & Remedy: Maintaining the access road for the duration of the operational phase,as well as leaving it in a representative or better condition than prior to prospecting.	The site infrastructure must bemanaged in accordance with the: • NRTA, 1996 • MPRDA, 2002

• Decommissioning and Rehabilitation	• Uncapped boreholes left by contractor.	Uncapped boreholes will pose a safety risk to the animals and humans of the area.	Operational Phase	Control: Implementing the mitigation measures and rehabilitation plan.	Rehabilitation must take place in accordance with the: • MPRDA, 2002 Rehabilitation Plan

vi. 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).

ACTIVITY whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)	**POTENTIAL IMPACT** (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.) E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring Remedy through rehabilitation.	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Percussion Drilling	Visual intrusion due to prospecting operation.	Control: Implementing proper housekeeping.	Throughout the operational phase.	Management of the prospecting areamust be in accordance with the: MPRDA, 2008 NEMA, 1998
Percussion Drilling	Dust nuisance due to prospecting activities.	Control: Dust suppression methods and proper housekeeping.	Throughout the operational phase.	Dust generation must be managed in accordance with the: NEM:AQA. 2004 Regulation 6(1)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
				• National Dust Control Regulations, GN No R827 • ASTM D1739 (SANS 1137:2012)
• Percussion Drilling	• Noise nuisance due to prospecting activities.	Control: Noise suppression methods and proper housekeeping.	Throughout the operational phase.	Noise generation must be managedin accordance with the: • NEM:AQA. 2004 Regulation 6(1) • NRTA, 1996
• Percussion Drilling • Decommissioning and Rehabilitation	• Soil contamination associated withlittering and hydrocarbon spills. • Potential impact associated with litter/hydrocarbon spills left in the prospecting area.	Control & Remedy: Proper housekeeping andimplementation of an emergency response plan.	Throughout the operational,and decommissioning phase.	Prospecting related waste must be managed in accordance with the: • NWA, 1998 • NEM:WA, 2008 • NEM:WA, 2008: National norms and standards for the storage ofwaste (GN 926) • NEMA, 1998 (Section 30)
• Percussion Drilling	• Potential negative impact on the FEPA, area of biodiversity concern and/or drainage line.	Control: Keeping prospecting operations to theapproved boundaries and out of the buffer area.	Throughout the operational phase.	The biodiversity of the area must be managed in accordance with the: • NEM:BA 2004 • NWA, 1998 • MPRDA, 2002
• Percussion Drilling	• Negative impact on the naturalvegetation of the footprint.	Control: Minimise the removal of vegetation andconfining vehicular traffic to existing roads/tracks.	Throughout the operational phase.	Vegetation cover must be managedin accordance with the: • CARA, 1983 • NEMA, 1998 • NEM:BA 2004

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Percussion Drilling	Infestation of the prospecting arawith invader plant species.	Control: Implementing invader plant controlmeasures.	Throughout the operational phase.	Invader plants must be managed in accordance with the: CARA, 1983 NEM:BA 2004
				National Dust Control Regulations, GN No R827 ASTM D1739 (SANS 1137:2012)
Percussion Drilling	Noise nuisance due to prospecting activities.	Control: Noise suppression methods and proper housekeeping.	Throughout the operational phase.	Noise generation must be managedin accordance with the: NEM:AQA. 2004 Regulation 6(1) NRTA, 1996
Percussion Drilling Decommissioning and Rehabilitation	Soil contamination associated withlittering and hydrocarbon spills. Potential impact associated with litter/hydrocarbon spills left in the prospecting area.	Control & Remedy: Proper housekeeping andimplementation of an emergency response plan.	Throughout the operational,and decommissioning phase.	Prospecting related waste must be managed in accordance with the: NWA, 1998 NEM:WA, 2008 NEM:WA, 2008: National norms and standards for the storage ofwaste (GN 926) NEMA, 1998 (Section 30)
• Percussion Drilling	Potential negative impact on the FEPA, area of biodiversity concern and/or drainage line.	Control: Keeping prospecting operations to theapproved boundaries and out of the buffer area.	Throughout the operational phase.	The biodiversity of the area must be managed in accordance with the: NEM:BA 2004 NWA, 1998 MPRDA, 2002

• Percussion Drilling	Negative impact on the naturalvegetation of the footprint.	Control: Minimise the removal of vegetation andconfining vehicular traffic to existing roads/tracks.	Throughout the operational phase.	Vegetation cover must be managedin accordance with the: CARA, 1983 NEMA, 1998 NEM:BA 2004
Percussion Drilling	Infestation of the prospecting arewith invader plant species.	Control: Implementing invader plant controlmeasures.	Throughout the operational phase.	Invader plants must be managed in accordance with the: CARA, 1983 NEM:BA 2004

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
• Percussion Drilling	• Potential impact on fauna withinthe footprint area.	Control & Stop: Implementing good management practices.	Throughout the operational phase.	Fauna must be managed inaccordance with the: • NEM:BA 2004
• Percussion Drilling	• Potential impact on area/infrastructure of heritage orcultural concern.	Control & Stop: Implementing good management practices, as well as the chance-find protocol.	Throughout the operational phase.	Cultural/heritage aspects must bemanaged in accordance with the: • NHRA, 1999
• Percussion Drilling • Decommissioning and Rehabilitation	• Deterioration of the access roadto the prospecting area. • Erosion of access roads or vehicletracks.	Control & Remedy: Maintaining the access road for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to prospecting.	Throughout the operational- and decommissioning phase.	The site infrastructure must bemanaged in accordance with the: • NRTA, 1996 • MPRDA, 2002
• Decommissioning and Rehabilitation	• Uncapped boreholes left bycontractor.	Control: Implementing the mitigation measuresand rehabilitation plan.	Throughout the decommissioning phase.	Rehabilitation must take place inaccordance with the: • MPRDA, 2002 • Rehabilitation Plan

vii. Financial Provision - Determination of the amount of Financial Provision.

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

The closure objectives entail removing the drill rig and any foreign material from the site; sealing and capping of the drill holes and landscaping any compacted areas (if needed). Invasive plant species will be controlled on thereinstated areas during a 12 months' aftercare period to address germinationof problem plants. The PR Holder will comply with the minimum closure objectives as prescribed by DMR.

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

This report, the Draft Basic Assessment Report, includes all the environmentalobjectives in relation to closure and will be made available for perusal by the landowner, registered I&AP's and stakeholders over a 30-days commenting period.

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.

The requested rehabilitation plan is attached as Appendix F.

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

The decommissioning phase will entail the final rehabilitation of the prospecting footprint. Final landscaping, levelling and top dressing will be done. The rehabilitation of the prospecting area as indicated on the rehabilitation plan attached as Appendix will comply with the minimum closure objectives as prescribed by DMR and detailed below, and therefore isdeemed to be compatible:

- **Final Rehabilitation:**

Final rehabilitation of the surface area shall entail landscaping, levelling,maintenance, and clearing of invasive plant species (if applicable). All equipment, plant and other items used during the prospecting period will be removed from site (section 44 of the MPRDA, 2002). Waste material of any description will be removed from the prospecting area and disposedof at a recognized landfill facility. It will not be permitted to be buried or burned on the site. The management of invasive plant species will be done(if applicable) in a sporadic manner during the life of the activity. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site. Final rehabilitation shall be completed within a period specified by the RegionalManager.

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

Calculation of Quantum							
Mine: EFM Holdings				**Location: Farm Chertsey 430, Khathu, Northern Cape**			
Evaluator: Liketso Tsotetsi				**Date: 15 Mar 2022**			
No	**Description**	**Unit**	**A Quantity**	**B Master Rate**	**C Multiplication factor**	**D Weighting factor 1 E=A*B*C*D**	**Amount (rands)**
		Step 4.5	**Step 4.3**	**Step 4.3**	**Step 4.4**		
1	Dismantling of processing plant and related structures (Including overland conveyors and power lines)	m3	0	6,82	1,00	1,00	R0,00
2(A)	Demolition of steel buildings and structures	m2	0	95,00	1,00	1,00	R0,00
2(B)	Demolition of rein forced concrete buildings and structures	m2	0	140,00	1,00	1,00	R0,00
3	Rehabilitation of access roads	m2	200	17,00	1,00	1,00	R3 400,00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	165,00	1,00	1,00	R0,00
4(B)	Demolition and rehabilitation of non-electrified rail way lines	m	0	90,00	1,00	1,00	R0,00
5	Demolition of housing and/or administration facilities	m2	0	190,00	1,00	1,00	R0,00
6	Opencast rehabilitation including final voids and ramps	Ha	0	96700,00	1,00	1,00	R0,00
7	Sealing of shafts, adits and inclines	m3	0	51,00	1,00	1,00	R0,00
8(A)	Rehabilitation of overburden and spoils	Ha	0	66400,00	1,00	1,00	R0,00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds(basic, salt producing waste)	Ha	0	82700,00	1,00	1,00	R0,00
8©	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	Ha	0	240200,00	0,51	1,00	R0,00
9	Rehabilitation of subsided areas	Ha	0	55600,00	1,00	1,00	R0,00
10	General surface rehabilitation	Ha	0,8	52600,00	1,00	1,20	R50 496,00
11	River diversions	Ha	0	52600,00	1,00	1,00	R0,00
12	Fencing	Ha	0	60,00	1,00	1,00	R0,00
13	Water management	Ha	0	20000,00	0,17	1,00	R0,00
14	2 to 3 years of maintenance and aftercare	ha	0,8	700,00	1,00	1,00	R560,00
15(A)	Specialist study	Sum					
15(B)	Specialist study	Sum					
(Sum * of items 1 to 15 above) = R 54 456,00							
Multiply Sum * of 1 – 15 by Weighting factor 2 (Step 4.4)		1,02		R54 456,00		R55 545,12	
		Add 6% of Subtotal 1 if Subtotal 1 R 100,000,000.00				R3 332,71	
1	Preliminary and General	Add 12% of Subtotal 1 if Subtotal 1 R 100,000,000.00				R0,00	

2	Contingencies	**Add 10% of Subtotal 1**	R5 554,51
		Sub Total 2 (Subtotal 1 plus sum of management and contingency)	R8 887,22
		Sub Total 3	R64 432,34
		VAT @ 14 % of Subtotal 3	R9 664,85
		GRAND TOTAL (Subtotal 3 plus VAT)	R74 097,19

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

Herewith I, the person, whose name is stated below confirm that I am the person authorised to act as representative of the PR Holder in terms of the resolution submitted with the application. I herewith confirm that the companywill provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines.

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

a) Monitoring of Impact Management Actions
b) Monitoring and reporting frequency
c) Responsible persons
d) Time period for implementing impact management actions
e) Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORINGPROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTINGIMPACT MANAGEMENT ACTIONS
• Percussion Drilling	**Visual Characteristics:** • Visual intrusion due to prospecting operation.	• Minimize the visualimpact of the activity on the surrounding environment through proper site management and implementing good housekeeping practices.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Contain prospecting to the approved boundaries. • Ensure every borehole site has a neatappearance and is kept in good condition at all times. • Limit vegetation removal, and avoid the removalof large trees (>20 cm stem) or vegetation of significance (identified by ECO). • Rehabilitate and landscape every borehole site to address any residual impact.	Applicable throughout operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.
• Percussion Drilling	**Air Quality:** • Dust nuisance due to prospecting activities.	• Dust suppression equipment such as a water car (when needed).	Role: • Site Manager to ensure day-to-day compliancewith the guidelines as stipulated in the EMPR.	Applicable throughout operational-, and decommissioning phases.

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		• Signage that clearly reduce the speed on the access roads.	• Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Control the liberation of dust into the surroundingenvironment by the use of; inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DASproducts). • Limit speed on the access roads to 40 km/h to prevent the generation of excess dust. • Minimise areas devoid of vegetation. • Ensure dust generating activities comply with theNational Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012).	• Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

• Percussion Drilling	**Noise Ambiance:** • Noise nuisance due to prospecting activities.	• Silencers fitted to all project related vehicles, and the use of vehiclesthat are in road worthy condition in terms of the National Road Traffic Act,1996.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the prospecting area. • Ensure that all project related vehicles are equipped with silencers and maintained in a roadworthy condition in terms of the National Road Traffic Act, 1996. • Implement best practice measures to minimise potential noise impacts.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

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			receptacle and removed from the site, either for resale or for appropriate disposal at a recognizedfacility. • Collect the contaminated soil from spillage that occurred, such as oil or diesel leaking from a burst pipe, within the first hour of occurrence, in a suitable receptacle and removed from the site,either for resale or for appropriate disposal at a recognized facility. File proof. • Contain general waste in site vehicles and daily remove waste from the prospecting area to a recognized general waste landfill site. • Prevent the burning or burying of waste on site. • Do not store chemicals or hazardous materials at the prospecting area. • Report any significant spillage of chemicals, fuels etc. during the lifespan of the prospecting activities to the Department of Water and Sanitation and other relevant authorities.	

• Percussion Drilling	**Hydrology and Mining Biodiversity** • Potential negative impact on the FEPA, area of biodiversity concern and/or drainageline.	• Visible beacons indicating the boundary of the buffer area.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Do not allow any activities within a horizontal distance of 100 m from any watercourse(including the drainage line), without the necessary authorization from the DWS. • Adhere to the conditions of the water use authorization (if authorization is applicable). • Remove all prospecting related equipment/machinery from the footprint upon closure.	Applicable throughout site establishment-, andoperational phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

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• Percussion Drilling	**Hydrology** • Storm water management.	• Storm water management structures such as berms to direct storm- and runoff water around the work area (when needed).	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Control drainage to ensure that runoff from the prospecting area does not culminate in off-site pollution, flooding or result in damage to storm water discharge points. • Divert storm water around the access roads and/or tracks to prevent erosion. • Keep clean water clean, and route it to a naturalwatercourse by a system separate from the dirty water system (if applicable). • Collect dirty water and contain it in a system separate from the clean water system. • Prevent dirty water from spilling or seeping into clean water systems.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

• Percussion Drilling	**Groundcover** • Negative impact on the natural vegetation of thefootprint.	• Pre-clearance go-aheadfrom ECO. • Employee induction meetings.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Declare the area outside the prospecting boundary a no-go area, and educate all employees accordingly. • Do not remove plants without the approval of an environmental control officer (ECO).	Applicable throughout site establishment-, andoperational phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTINGIMPACT MANAGEMENT ACTIONS
			• Contain vehicle traffic (as far as possible) to the existing farm roads. Do not allow crisscrossing through undisturbed areas.	
• Percussion Drilling	**Groundcover:** • Infestation of theprospecting area with invader plant species.	• Designated team to cut or pull out invasive plantspecies that germinatedon site. • Herbicide application equipment.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. • Control declared invader or exotic species on the rehabilitated areas.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.
• Percussion Drilling	**Fauna:** • Potential impact on fauna within the footprintarea.	• Toolbox talks to educate employees how to handle fauna that enter the work areas.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Ensure no fauna is caught, killed, harmed, soldor played with. • Instruct workers to report any animals that maybe trapped in the working area. • Ensure no snares are set or nests raided for eggs or young.	Applicable throughout site establishment-, andoperational phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

• Percussion Drilling	• Potential impact on areas/infrastructure of heritage or cultural concern.	• Contact number of an archaeologist that can be contacted when a discovery is made on site.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Confine all prospecting to the footprint area. • Demarcate known heritage resources with a 30m buffer zone and manage as a no-go area. • Use existing roads as far as possible. • Subject any future listed activity (not yet approved) to an HIA. • Ensure that the ECO for the project assess drill locations prior to drilling to confirm there are no graves, stone walling or any heritage features. • Implement the following change find procedure when discoveries are made on site: ▪ If during the operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritagesite, this person must cease work at the site ofthe find and report this find to their immediate supervisor, and through their supervisor to thesenior on-site manager. ▪ It is the responsibility of the senior on-siteManager to make an initial assessment of the extent of the find, and confirm the extent of thework stoppage in that area. ▪ The senior on-site Manager will inform theECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

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			assessment of the finds who will notifySAHRA. ▪ Work may only continue once the go-aheadwas issued by SAHRA.	
Percussion Drilling	**Existing Infrastructure:** Deterioration of the access road to theprospecting area. Erosion of access roads or vehicle tracks.	Grader to restore the road surface when needed.	Role: Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: Divert storm water around the access road to prevent erosion. Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas. Repair rutting and erosion of the access road caused as a direct result of the prospecting activities. Sign an agreement, prior to commencement,confirming responsibility towards the movement of employees. If responsible, repair/reinstate damaged fences and/or compensate losses due to gates left ajar.	Applicable throughout operational phases. Daily compliance monitoring by site management. Annual compliance monitoring of site by an Environmental Control Officer.

• Percussion Drilling	**General:** • Potential health and safety risks to employees.	• Stocked first aid box. • Level 1 certified firstaider. • All appointments in terms of the Mine Healthand Safety Act, 1996.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.	Applicable throughout operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

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

The Environmental Audit Report in accordance with Appendix 7 as prescribed in Regulation 34 of the EIA Regulations, 2014 (as amended) will annually be submitted to DMR for compliance monitoring purposes or in accordance with the time period stipulatedby the Environmental Authorisation.

x. Environmental Awareness Plan

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

Once the Section 102 amendment application was approved a copy of the amended EMPR will be handed to the site manager for his perusal. An induction meeting will beheld with all the site workers to inform them of the Basic Rules of Conduct about the environment.

ii. Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment

The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments before any prospecting continues. An Environmental Control Officer needs to check compliance of the prospecting activity tothe management programmes described in the EMPR.

The following list represents the basic steps towards environmental awareness, whichall participants in this project must consider whilst carrying out their tasks.

Site Management

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

Water Management and Erosion

- Check that rainwater flows around work areas and are not contaminated.
- Report any erosion.
- Check that dirty water is kept from clean water.

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

- Never mix general waste with hazardous waste.
- Use only sealed, non-leaking containers.
- Keep all containers closed and store only in approved areas.
- Always put drip trays under vehicles and machinery.
- Empty drip trays after rain.
- Stop leaks and spills, if safe:
    - Keep spilled liquids moving away.
    - Immediately report the spill to the site manager/supervision.
    - Locate spill kit/supplies and use to clean-up, if safe.
    - Place spill clean-up wastes in proper containers.
    - Label containers and move to approved storage area.

Discoveries

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

Air Quality

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

Driving and Noise

- Use only approved access roads.
- Respect speed limits.
- Only use turn-around areas – no crisscrossing through undisturbed areas.

- Avoid unnecessary loud noises.
- Report or repair noisy vehicles.

Vegetation and Animal life:

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

Fire Management:

- Do not light any fires on site, unless contained in a drum at demarcated area.
- Put cigarette butts in a rubbish bin.
- Do not smoke near gas, paints or petrol.
- Know the position of firefighting equipment.
- Report all fires.
- Don't burn waste or vegetation.

xi. Specific information required by the Competent Authority
(Among others, confirm that the financial provision will be reviewed annually).

The PR Holder undertakes to annually review and update the financial provision calculation, upon which it will be submitted to DMR for review and approved as being sufficient to cover the environmental liability at the time and for closure of the mine at that time.

UNDERTAKING

The EAP herewith confirms

f) the correctness of the information provided in the reports ☒

g) the inclusion of comments and inputs from stakeholders and I&APs ; ☒

h) the inclusion of inputs and recommendations from the specialist reports where relevant; ☒and

i) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected. parties are correctly reflected herein. ☒

Signature of the environmental assessment practitioner:

Retso Con (Pty) Ltd

Name of company:

26 April 2022

Date:

-END-

APPENDIX A1 - REGULATION 42 PROSPECTING PLAN

APPENDIX A2 - REGULATION 2(2) PROSPECTING PLAN

APPENDIX B - LOCALITY MAP

APPENDIX D - LAND USE MAP

APPENDIX D - COMPOSITE MAP

APPENDIX E - REHABILITATION PLAN

APPENDIX F - PHOTOGRAPHS OF THE SITE

APPENDIX G - SPECIALIST STUDIES

APPENDIX H - DETAILS OF EAP