



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

DMR REF NO: LP 30/5/1/1/3/2/1 (13543) EM.

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	YSA (Pty) Ltd
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EMAIL ADDRESS	bonginkosi@peneul.com
FILE REFERENCE NUMBER SAMRAD	LP 30/5/1/1/3/2/1 (13544) EM.

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Note: Color pages are used to separate the sections

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 the 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.

3. LIST OF ABBREVIATIONS & ACRONYMS

DMR- Department of Mineral Resources

EA- Environmental Authorisation

EAP- Environmental Assessment Practitioner

EIA- Environmental Impact Assessment

EMPr- Environmental Management Programme Report

EP- Environmental Practitioner

IDP- Integrated Development Plan

MPRDA- Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

NEMA- National Environmental Management Act, 1998 (Act 107 of 1998)

NEMAQA- National Environmental Management Air Quality Act, 2004 (Act 39 of 2004)

PPP- Public Participation Process

SANS- South African National Standards

SHE Manager- Safety, Health and the Environmental Manager

WML- Waste Management Licence

4. EXECUTIVE SUMMARY

YSA Group (Pty) Ltd is applying for prospecting rights for limestone on Portion 1, 2, 3 and 4 of the Farm Rietfontein 736 KS. The project is located within Greater Mable Hall Magisterial District in the Limpopo province of South Africa. The application bears the following reference number: **LP 30/5/1/1/3/2/1 (13543) EM**. The proposed prospecting site is about 9 km North East of Mable Hall town, in the agricultural zone, access to the site is via N11.

Prospecting is the first stage of the geological analysis in search for mineral deposits such as Limestone , especially by drilling. Drilling rig machines are used to create a small hole in the earths subsurface. Before the Limestone can be established, a number of tests and surveys must be conducted to ensure that the project is economically viable, technically feasible, and environmentally sound.

The commencement of the proposed prospecting project will result in the undertaking of activities that are considered as listed activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) as amended in 2017. In terms of the above-mentioned legislation, an integrated application for an environmental authorization and waste management license was submitted to the Department of Mineral Resources (DMR).

The application was lodged on the **26 June 2019** and acknowledged on the **4 July 2019**. The application was accepted on the **31 July 2019**. Hence, a basic environmental assessment must be undertaken in support of the environmental authorization application for the proposed listed activities. In view of the above, YSA (Pty) Ltd has appointed Basia Environmental Consultant, as an Independent Environmental Assessment Practitioner, to undertake and manage the environmental authorization application and the environmental impact assessment for the proposed Prospecting project. Basia Environmental Consultants has undertaken site assessment and public participation process, together with associated stakeholders and landowner's engagement as wells to develop and provide environmental documentation.

This document provides a basic assessment study with identified environmental impacts, mitigation measures and Environmental Management Plan (EMP) for the proposed prospecting rights application for Limestone. This document which concerns

the assessment of environmental impacts and a programme for the management of impacts of the proposed activities “prospecting rights” is compiled in terms of the EIA Regulations, 2017.

Before an EAP submits a final report they must have given registered I&APs access to, and an opportunity to comment on the report prior to the submission of the final report to the competent authority for approval. I&AP’s and stakeholders are therefore invited to participate in the public review period of the Draft BAR, which will take a period of 30 days (**from 4 October 2019 to 4 November 2019**). After the public review period has lapsed, the report will be updated with comments received from I&AP’s and stakeholders as well as comments received during the public participation meeting.

The updated Final BAR will be submitted to the competent authority (DMR), an extension of 30 days will be requested from the DMR, hence the final report will be submitted before or on the **30 November 2019**. The DMR will consider the findings in consultation with various authorities and make a decision whether environmental authorisation should be granted for the proposed prospecting project.

Basia Environmental Consultants recommends that the prospecting rights should be granted, following a thorough site investigation, stakeholder and landowner engagements. The geographic and environmental setting of the proposed area are suitable for prospecting and future mining.

PART A

**SCOPE OF ASSESSMENT AND BASIC
ASSESSMENT REPORT**

CONTACT PERSON AND CORRESPONDENCE ADDRESS

(i) Details of the EAP

Name of the Practitioner	Tshia Malehase
Tel No	079 263 0597
Fax No	086 226 4397
Email address	info@basiec.co.za
Company Name	Basia Environmental Consultant
Postal Address	Unit 10 Oakview, 40 Lynn Road, Karenpark Ext 42, Akasia, 0182

(ii) Expertise of the EAP

(1) The qualifications of the EAP

He hold M.Tech in Environmental Management from Tshwane University of Technology (TUT) which was completed in 2016. His research project was titled "Determination of mercury and its fractionation products in gold mine tailings dams and their surrounding areas in Gauteng. He was able to publish two scientific papers in reputable journals from this project and co-authored two scientific publication. He also hold BSc (Hon) degree in Environmental Science from Walter Sisulu University. His research project was titled "The impacts of Transkei Quarry on nearby water resources in Libode, Umtata, Eastern Cape.

He is currently lecturing and doing PhD in Environmental Management. His project is aiming to quantify organic-mercury species in different consumer products and environmental samples and their environmental risk assessments. He is registered as a Professional Natural Scientist with SACNASP in the field of Environmental Science (SACNASP: Reg no; 117391).

(2) Summary of the EAP's experience

Mr. Tshia Malehase is an Environmental Assessment Practitioner with extensive experience in a wide-range of environmental related projects, processes and prospecting rights applications.

Mr T. Malehase have been trained and worked in different Environmental Consulting Company for five (5) years, where he was groomed and exposed into different environmental applications, processes and documentation. This includes Environmental Impact Assessment, Basic assessment, Water Use Licences. He also had a privilege to work at the Department of Mineral resources where he worked with the applications for prospecting rights, mining permit and mining rights applications including the contingency plans and rehabilitation strategies.

He has undertaken environmental compliance (including basic assessments, water use license applications, social and environmental management systems, mining permits and prospecting right applications) and public participation processes. Overall, he has been in the field of environmental science and management, environmental chemistry and mining for over ten (10) years. Please refer to Appendix A for Malehase's CV which provides a detailed list of projects which illustrate Mr Malehase's competence in carrying out the EIA process.

(iii) Applicant's Contact Details

ITEM	COMPANY CONTACT DETAILS
Name	YSA GROUP (PTY) LTD
Tel no	013 650 9902
Fax no:	086 505 2943
Cellular no	082 876 2494
E-mail address	bonginkosi@peneul.com
Postal address	Portion 237 Olifant Kromdraai

a) Location of the overall Activity

TABLE 1: LOCATION OF OVERALL ACTIVITY

Farm Name	Portion 1, 2, 3 and 4 of Farm Rietfontein 736 KS.
Application area (Ha)	1101,156497 ha
Magisterial district	Sekhukhune District
Distance and direction from nearest town	The proposed prospecting site is about 9 km North East of Mable Hall town.
21 digit Surveyor General Code for each farm portion	

TABLE 2: DETAILS OF THE FARM

DEEDS SEARCH LIST OF LAND OWNERS AND CORRESPONDING CONTACTS OBTAINED ON THE GROUND				
FARM NAME	PORTION	OWNER	DEEDS NUMBERS	CONTACT PERSON
Rietfontein	1	Gouws Ivor Gustav	T49222/2011PT A	KRÜGEL HEINSEN INCORPORATED ATTORNEY mandi@krugels.co.za (013) 653 6400
	2	Clisa 39 CC	T56926/2010PT A	
	3	Rietfontein Eiendoms Trust	T134265/2006PT A	
	4	Kwekwe Farm (Pty) Ltd	T103344/2013PT A	Tommy Bowman 0765734437 bowman.tommy@gmail.com

b) Locality map

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

The proposed prospecting project is located within the Ephraim Mogale Local Municipality. The 21st of January 2010 was a turning point when the Ephraim Mogale Local Municipality was officially declared, replacing the name Greater Marble Hall Local Municipality by member of the Executive of Limpopo Local Government and Housing. The Ephraim Mogale Local Municipality lies ideally in the Cultural heartland of the Sekhukhune District, Limpopo Province.

The municipality borders Makuduthamaga Local Municipality in the south, Elias Motsoaledi Local Municipality in the east, Lepelle-Nkumpi Local Municipality in Capricorn District, Mookgopong Local Municipality in Waterberg and Mpumalanga's Dr JS Moroka Local Municipality. It is situated about 150 km from Polokwane, 100 km from Mokopane,

145 km from Pretoria and 250 km from Mbombela. The municipality is the second smallest of five local municipalities in the district, constituting 14,4 % of the area with 191107 square kilometers. Land ownership is mostly traditional and the municipality is predominantly rural with about 56 settlements, most of which are villages. The municipality has 16 Wards; of those 16 wards the proposed project is located in Ward No 16 which has a total population of 9083.

The whole Ephraim Mogale Local Municipality has a total population of 123 648. The population in the municipality constitutes of 97,8% black Africans, with other groups making up the remaining 0,6%. Of those aged 20 years and older 13.9% have some primary education, 5.4% have completed primary education, 34.0% have some secondary education and 18.8% have completed matric. Only 5.1% have a higher qualification and 22.7 have no form of schooling. The Ephraim Mogale Local Municipality is the tourism hub of the district. Some of tourist attractions within the municipality include the Flag Boshielo Dam, Bush Fellows Game Reserve, Matlala Aloe Park, Crocodile farm, Schuinsdraai Nature Reserve and more. There are different modes of transport in the municipal area such as buses, taxis and private cars. The Great North Transport is the only bus service operating in Ephraim Mogale Local Municipality and not in all the committees.

The prospecting of Limestone will be undertaken on Portion 1, 2, 3 and 4 of Farm Rietfontein 736 KS. Access through the site is via the N11 and the R33 route. Figure 1 below shows the Locality map of the proposed site and figure 2 shows the farm portions that are affected by the application.

The application for a Prospecting Right on Portion 1, 2, 3 & 4 of RIETFOONTEIN 736 KS, situated on Sekhukhune District Municipality, Ephraim Mogale Local Municipality, Ward no. 16, LIMPOPO PROVINCE.

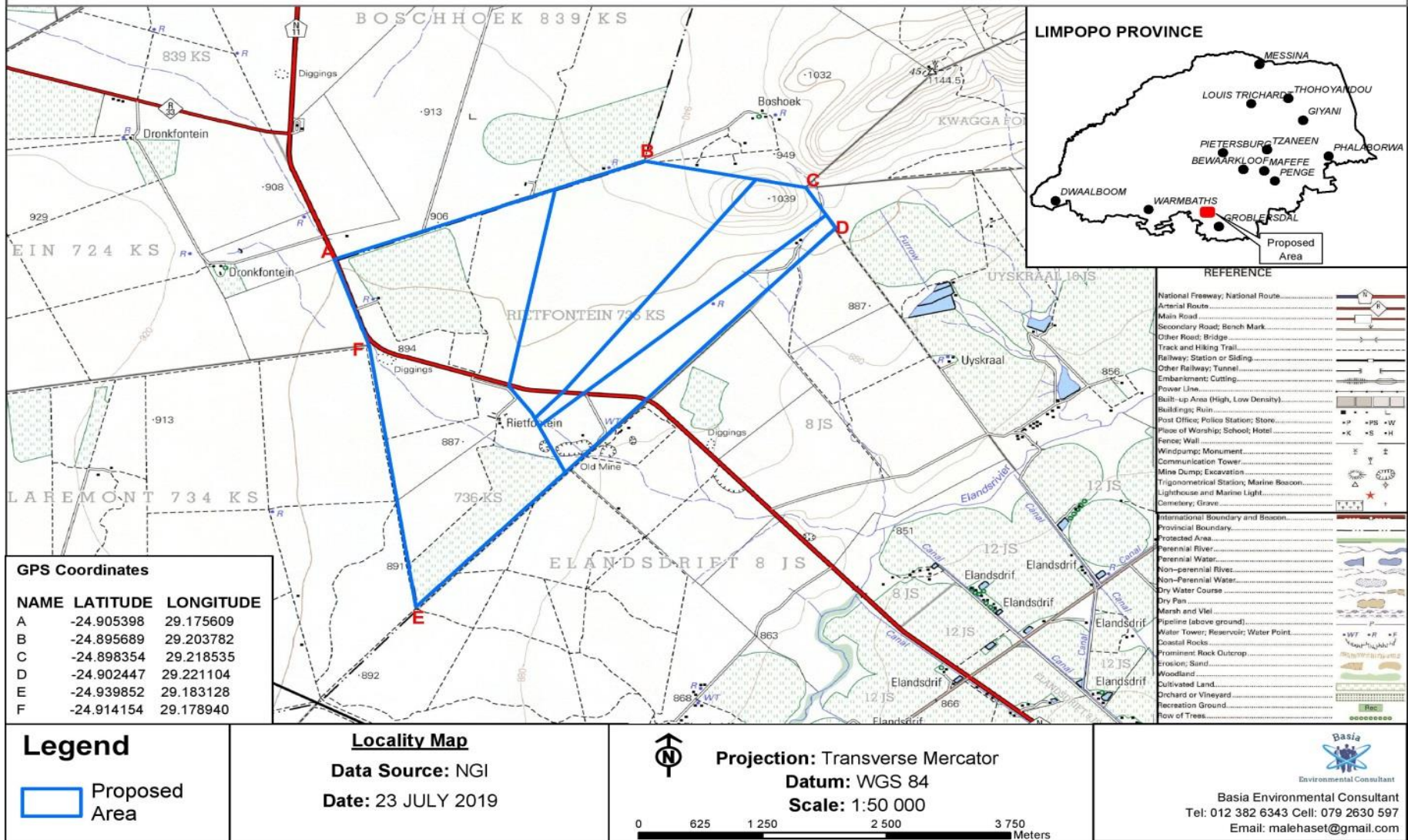


Figure1: Locality Map of the proposed prospecting right application

The application for a Prospecting Right on Portion 1, 2, 3 & 4 of RIETFontein 736 KS, situated on Sekhukhune District Municipality, Ephraim Mogale Local Municipality, Ward no. 16, LIMPOPO PROVINCE.

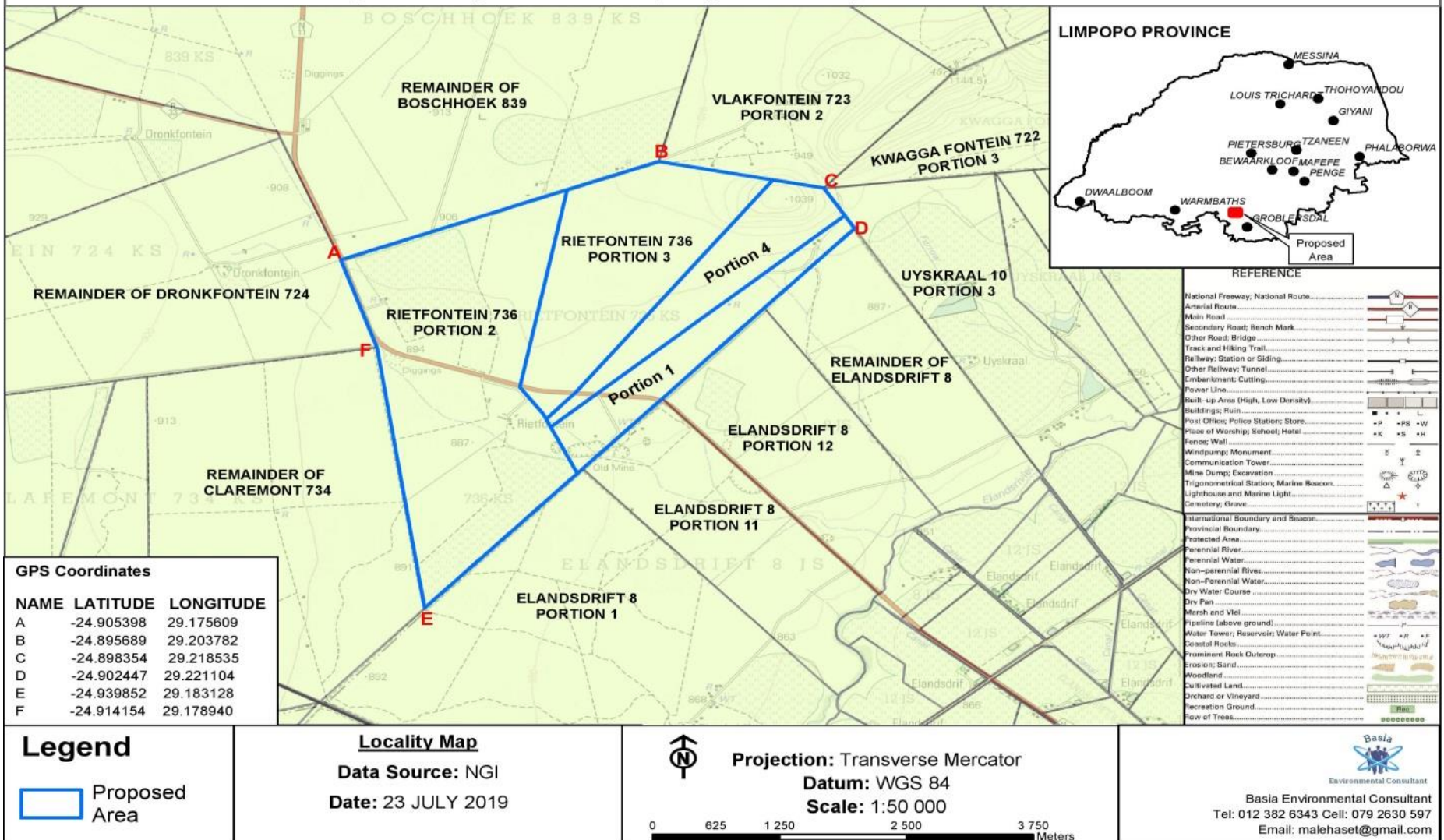


Figure 2: Locality Map showing the different farm portions

the prospecting right application is for all the above mentioned farm portions in Figure 2. The landowners of the farms that will be affected by the proposed prospecting project are listed in Table 3 above.

c) 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 application is for a prospecting right in respect of Limestone using drilling method. Prospecting is the first stage in the potential utilisation of a mineral deposit by searching for ores or other valuable minerals such as Limestone. The detailed Limestone potential of the area is relatively unknown, and as such exploration work will commence from a very basic level.

The initial prospecting activities will be non-invasive and restricted to a desktop study, which will include a literature survey, plus aerial photograph and satellite image interpretation, ground validation of targets, and geophysical surveys.

Subsequent phases will be of the invasive-type, typically drilling, a combination of Reverse Circulation (RC) drilling and core drilling (also known as diamond core drilling), aimed at collecting suitably representative samples for analytical and physical test-work at suitably accredited laboratories.

A summary of the project phases and requirements is provided below:

Phase 1: Desktop Study and Walkover Survey (Non-invasive)

The Desktop Study will include a literature survey based on existing information, the interpretation of aerial/satellite images, ground validation of targets as well as geophysical surveys. Available geological and geophysical data will be compiled from the following sources:

- Recent high-resolution aerial photography;
- Gravity data;
- Airborne radiometric data;
- Aeromagnetic data;
- Regional soil geochemistry data;

- Regional geological mapping; and
- LandSat imagery.

Purpose:

- Identification of areas with the best Limestone bearing potential;
- To maximize the use of existing data and local experience;
- Propose a number of feasible sites; and
- Create a conceptual drilling model for future prospecting activities.

Following the Desktop study, a site geological mapping exercise will be undertaken i.e. “Walkover survey”. “Walkover survey” refers to a visual, non-intrusive, assessment of an area associated with site for the purpose of mapping geological exposures and identifying test positions, access restrictions and existing sources of construction materials. Thus, areas with potential Limestone outcrops identified during the desktop study will be visited and verified.

Consultation with landowners

Mining Rights Officers will visit the respective land owners prior to the proposed prospecting and arrange all issues relating to the envisaged prospecting programme such as dates, access routes, availability of water, and rehabilitation of the drill sites and any other items of mutual concern. The discussion and agreement between the parties will be captured in writing.

5.1 Prospecting work to be performed

5.1.1 Diamond drilling

Diamond drilling operations will be carried out for the purpose of retrieving core samples and laboratory analyses will be performed on the core samples to establish the quality and rock properties. No pits or trenches will be done. **Twelve (10) exploration boreholes will be executed over the period of 3 years**, each up to a depth of approximately 50 m are planned for the current application. A 20% additional or reduction of boreholes may be necessary depending on the new geological information gathered during the initial stages of the drilling program. The rate **per meter**

is R300 on average a borehole takes approximately five days to complete.

5.1.2 Percussion drilling

Percussion (open-hole) boreholes may be drilled and geophysical surveyed to gather additional geological information between other boreholes. For this purpose, down-hole geophysical instruments and methods may be used to gather rock thickness and quality information and the overlying strata. This may take up to three days per percussion borehole.

5.1.3 Directional drilling

Possible directional percussion (open-hole) boreholes will be drilled laterally (up to 50 m depth) and geophysically surveyed to gather additional geological information between other boreholes. For this purpose, down-hole geophysical instruments and methods may be used to confirm lithological types within the rock and overlying strata. This may take up to six months per directional drilling site.

5.1.4 Geophysical survey work to be undertaken

Down-hole geophysical methods using wire-line geophysical instruments may be used to gather geological and rock quality information in diamond and/or percussion boreholes. Ad hoc down-hole geophysical applications are important to verify lithological and structural properties of sedimentary strata in the reserve areas.

5.1.5 Geohydrological survey

Percussion (open-hole) boreholes may be drilled to gather geohydrological information with specific reference to aquifer yield testing and gathering of water samples for analytical purposes. Baseline preliminary conceptual groundwater flow models to estimate inflow rates into a probable underground mining operation using hydraulic aquifer parameters obtained during aquifer yield-testing will be done after the fieldwork is completed.

5.1.6 Bulk sampling

Should it be necessary to conduct any bulk sampling operations, an application for Ministerial approval in terms of Section 20 of the Mineral and Petroleum Resources Development Act, 2002, which includes an amended Environmental Management Plan (EM Plan), will be submitted once the necessary studies have been conducted.

5.2 Rock distribution and reserve estimation

Rock distribution and reserve estimation relate to computerized desk studies which encompass the following main actions:

5.2.1 Data processing and validation

Data obtained during the drilling project needs to be processed and validated versus stratigraphic, structural and analytical data received and correlated with surrounding boreholes in the reserve area.

5.2.2 Lithofacies and rock quality modelling

Variations in a stratigraphic unit across the reserve area are illustrated by contoured maps showing lateral trends of most significant properties. This is done by the utilization of computerized geological software. Detailed in situ reserve and quality determinations will then be possible through computer based modelling, and qualitative and quantitative calculations.

6 REGULATION 7(1)(h): ALL PLANNED PROSPECTING ACTIVITIES MUST BE CONDUCTED IN PHASES AND WITHIN SPECIFIC TIMEFRAMES

Please refer to Table 9.1 for a breakdown of proposed prospecting activities.

7 REGULATION 7(1)(i): TECHNICAL DATA DETAILING THE PROSPECTING METHOD OR METHODS TO BE IMPLEMENTED AND THE TIME REQUIRED FOR EACH PHASE OF THE PROPOSED PROSPECTING OPERATION

7.1 Prospecting phases and time frames

Prospecting will take place according to the time-frame presented in Table 5.3 below and incorporates the information required in respect of Regulations 7(1)(f), 7(1)(h) and 7(1)(i) of the MPRDA.

8 **Table 5.3: Proposed prospecting phases and time frames**

Phase	Activity	Skill(s) required	Timeframe	Outcome	Timeframe for outcome	What technical expert will sign off on the outcome?
Phase1: Invasive Prospecting						
	Diamond drilling/ Core drilling (10 boreholes)	Geologist	Month 1-36	Borehole core data	Month 1-36	Geologist
				Rock core samples		
				Rock core samples	Month 1-36	Laboratory analyst
				Rock core analyses		
				Rock core analyses		
	Geophysical survey (Optional)	Geophysicist Geologist	Month 1-12	Lithology data Structural data	Month 1-2	Geophysicist
	Geohydrological survey (Optional)	Geohydrologist Geologist	Month 1-12	Borehole water yield Water samples	Month 1-12	Geohydrologist
Phase 1: Non-invasive Prospecting						
	Consultation with landowners	Mining Rights officer	Month 1-12	Legal agreement	Month 1-12	Mining Rights officer
	Data processing and validation	Geologist	Month 1-12	Stratigraphic correct borehole data	Month 1-12	Geologist/Database administrator
				Analytical correct borehole data	Month 1-12	Geologist/Database administrator
	Lithofacies and rock quality modeling	Geologist	Month 1-12	Contour maps Reserve breakdown	Month 1-12	Geologist/Modeler
	Inspection/Consultation with landowners	Mining Rights officer	Month 1-12	Rehabilitation clearance certificate	Month 1-12	Mining Rights officer/ Environmental officer
Phase 2: Invasive Prospecting						
	Geophysical survey (Optional)	Geophysicist Geologist	Month 13-24	Lithology data Structural data	Month 13-24	Geophysicist
	Geohydrological survey (Optional)	Geohydrologist Geologist	Month 13-24	Borehole water yield Water samples	Month 13-24	Geohydrologist
Phase 2: Non-invasive Prospecting						
	Consultation with landowners	Mining Rights officer	Month 13-24	Legal agreement	Month 13-24	Mining Rights officer

	Data processing and validation	Geologist	Month 13-24	Stratigraphic correct borehole data	Month 13-24	Geologist/Database administrator
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Phase	Activity	Skill(s) required	Timeframe	Outcome	Timeframe for outcome	What technical expert will sign off on the outcome?
				Analytical correct borehole data	Month 13-24	Geologist/Database administrator
	Lithofacies and rock quality modeling	Geologist	Month 13-24	Contour maps Reserve breakdown	Month 13-24	Geologist/Modeler
	Inspection/Consultation with landowners	Mining Rights officer	Month 13-24	Rehabilitation clearance certificate	Month 13-24	Mining Rights officer/ Environmental officer
Phase 3: Invasive Prospecting						
	Directional drilling (Optional)	Geologist	Month 25-36	Lithological data	Month 25-36	Geologist
	Geophysical survey (Optional)	Geophysicist Geologist	Month 25-27	Lithology data Structural data	Month 25-27	Geophysicist
	Geohydrological survey (Optional)	Geohydrologist Geologist	Month 25-30	Borehole water yield Water samples	Month 25-30	Geohydrologist
Phase 3: Non-invasive Prospecting						
	Consultation with landowners	Mining Rights officer	Month 25-36	Legal agreement	Month 25-36	Mining Rights officer
	Data processing and validation	Geologist	Month 25-36	Stratigraphic correct borehole data Analytical correct borehole data	Month 25-26 Month 25-36	Geologist/Database administrator Geologist/Database administrator
	Lithofacies and rock quality modeling	Geologist	Month 25-36	Contour maps Reserve breakdown	Month 25-36	Geologist/Modeler
	Inspection/consultation with landowners	Mining Rights officer	Month 25-36	Rehabilitation clearance certificate	Month 25-36	Mining Rights officer/ Environmental officer

2. **REGULATION 7(1)(g): A DESCRIPTION OF THE PROSPECTING METHOD OR METHODS TO BE IMPLEMENTED**

(i) **DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:**

Non – invasive activities which relate to the various prospecting methods can be briefly described as follows:

- **Consultation with landowners:**

Mining Rights Officers will visit the respective land owners prior to the proposed prospecting and arrange all issues relating to the envisaged prospecting programme such as dates, access routes, availability of water, and rehabilitation of the drill sites and any other items of mutual concern. The discussion and agreement between the parties will be captured in writing.

- **Data processing and validation:**

Data obtained during the drilling process needs to be process and validated versus stratigraphic, structural and analytical data received and correlated with surrounding boreholes in the reserve area.

- Electronic procession of borehole data
- Validation of lithological data versus analytical data.
- Stratigraphic correlation of geological horizons.
- Editing and correction of data on database.

- **Lithofacies and rock quality modelling:**

Variations in a stratigraphic unit across the reserve area are generated and illustrated by contoured maps showing lateral trends of most significant properties. This is done by the utilization of computerized geological software.

Detailed in situ reserve and quality determinations will then be possible through computer based modelling, and qualitative and quantitative calculations.

- **Compilation of geology report:**

Information obtained during the exploration phase together with computer generated information is compiled into a geological report.

- **Inspection/Consultation with landowner:**

Mining Rights Officers will visit the boreholes during and after prospecting has been completed. Once confirmation has been obtained that the area had been properly rehabilitated, sign off will be obtained from the landowners and compensation paid for any damages caused as a result of the prospecting.

(ii) DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:

The prospecting work will use one of the two options which is Diamond drilling or Core drilling. In total **10 boreholes** will be executed on the applied area. Each year about 5, 3 and 2 boreholes will drilled over the three years, respectively.

- **Diamond drilling:**

This is a drilling method whereby a solid core is extracted from depth, for examination on the surface. The key technology of the diamond drill is the actual diamond bit itself. It is composed of industrial diamonds set into a soft metallic matrix. As shown in the figure, the diamonds are scattered throughout the matrix, and the action relies on the matrix to slowly wear during the drilling, so as to expose more diamonds. The bit is mounted onto a drill stem, which is connected to a rotary drill. Water is injected into the drill pipe, so as to wash out the rock cuttings produced by the bit and also to reduce the heat produced due to friction which causes less wear and tear of the bits.

The drill rigs are truck-mounted and equipped with diesel driven engines to provide power to the drill. A truck fitted with a water tank is used to provide the water supply for the drilling process. The drill site is not larger than 30 m x 30 m (900 m²) and consists of a drill rig, water pump, caravan and portable chemical toilet.

Except for the sump required by the drill rig, no excavations will be required. The dimension of the boreholes will be ± 30 cm) and the average depth is estimated to be 70 m. On completion, a PVA pipe of the same size with the hole will be inserted up to the bottom, fill with concrete cement and capped.

- **Core drilling:**

Merely advancing the drill by rotary action (and washing) causes a core to be extracted inside the barrel. However, at a depth of perhaps 50 m, there must be a way to retrieve the core and take it to the surface. Constantly withdrawing the entire heavy drill pipe is impractical, so methods were developed to pull up the core inside the barrel. If the rock would always be solid granite, and the core would always break at the drill bit, then it would be a simple matter to stop the drilling, and lower a simple grabbing device by a wire and pull up the core. Unfortunately, many applications require an undisturbed core in fractured rock, which calls for elaborate wire-line devices.

The drill rigs are truck-mounted and equipped with diesel driven engines to provide power to the drill. The drill site is not larger than 30 m x 30 m (900 m²) and consists of a drill rig, water pump, caravan and portable chemical toilet.

Except for the sump required by the drill rig, no excavations will be required. The dimension of the boreholes will be ± 30 cm) and the average depth is estimated to be 50 m. On completion, a PVA pipe of the same size with the hole will be inserted up to the bottom, fill with concrete cement and capped.

9

10 **Other options could might be employed**

11

12 **Percussion drilling:**

The drill site is not larger than 30 m x 30 m (900 m²) and consists of a diesel powered truck mounted drill rig, a truck transporting drill rods and other equipment, a compressor and portable chemical toilet. Rock fragments are blown out the top of the hole and are collected at 1m depth intervals and arranged on the ground to enable continuous detailed lithological descriptions of the stratigraphic horizons to be made. Percussion holes will either be cemented if not further utilized, or will be fitted with a cap and be used for water levels and water quality monitoring.

- **Directional drilling:**

The drill site is not larger than 150 m x 150 m (22 500 m²) and consists of a drilling water sumps, a diesel powered drill rig, a truck transporting drill rods and various other equipment, a generator, portable offices and chemical toilets. There are access control and a security fence around the site. On completion, the site will be rehabilitated to acceptable standards. Rock fragments are washed out the top of the hole and are sampled at 10m depth intervals and collected on small bottles and sent to the laboratory for rock analysis. All percussion holes are sealed with cement up to the depth of start of rock.

- **Geophysical down-hole surveys**

The down-hole geophysical survey is done at the borehole site after the hole has been completed. A range of specialized geophysical tools are lowered into the open borehole and a range of physical lithological characteristics of the rock mass or rock are gathered and sent digitally along the cable to a computer on surface. This data is used to produce a number of profiles reflecting rock strength rock qualities and structural features for the total length of the borehole. A single truck is used which contains all equipment including a mobile generator.

- **Geohydrological survey**

Percussion (open-hole) boreholes may be drilled to gather geohydrological information with specific reference to aquifer yield testing and gathering of water samples for analytical purposes. Baseline preliminary conceptual groundwater flow model to estimate inflow rates into a probable underground mining operation using hydraulic aquifer parameters obtained during aquifer yield-testing. A single truck is used which contains all equipment including a mobile generator.

TABLE 3 : PROJECT PHASES AND REQUIREMENTS

					Timeframe	What technical expert will sign off on the outcome?
Phase1: Invasive Prospecting						
	Diamond drilling (6 boreholes)	Geologist	Month 1-12	Borehole core data Rock core samples	Month 1-12	Geologist
	Geophysical survey	Geophysicist	Month 1-12	Lithology data Structural	Month 1-2	Geophysicist
	Geohydrological survey	Geohydrologist	Month 1-12	Borehole water yield	Month 1-12	Geohydrologist
Phase 1: Non-invasive Prospecting						
	Consultation with	Mining Rights	Month 1-12	Legal agreement	Month 1-12	Mining Rights officer
	Data processing and validation	Geologist	Month 1-12	Stratigraphic correct borehole data Analytical correct borehole data	Month 1-12	Geologist/Database administrator
	Lithofacies and rock quality modeling	Geologist	Month 1-12	Contour maps Reserve breakdown	Month 1-12	Geologist/Modeler
	Inspection/Consultation with landowners	Mining Rights officer	Month 1-12	Rehabilitation clearance certificate	Month 1-12	Mining Rights officer/ Environmental officer
Phase 2: Invasive Prospecting						
	Geophysical survey	Geophysicist	Month 13-24	Lithology data Structural	Month 13-24	Geophysicist
	Geohydrological survey	Geohydrologist	Month 13-24	Borehole water yield	Month 13-24	Geohydrologist
Phase 2: Non-invasive Prospecting						

					Timeframe	What technical expert will sign off on the outcome?
	Consultation with landowners	Mining Rights officer	Month 13-24	Legal agreement	Month 13-24	Mining Rights officer
	Data processing and	Geologist	Month 13-24	Stratigraphic correct	Month 13-24	Geologist/Database
				Analytical correct	Month 13-24	Geologist/Database
	Lithofacies and rock	Geologist	Month 13-24	Contour maps	Month 13-24	Geologist/Modeler
	Inspection/Consultation	Mining Rights	Month 13-24	Rehabilitation clearance	Month 13-24	Mining Rights officer/
Phase 3: Invasive Prospecting						
	Directional drilling	Geologist	Month 25-36	Lithological data	Month 25-36	Geologist
	Geophysical survey	Geophysicist	Month 25-27	Lithology data	Month 25-27	Geophysicist
	Geohydrological survey	Geohydrologist	Month 25-30	Borehole water yield	Month 25-30	Geohydrologist
Phase 3: Non-invasive Prospecting						
	Consultation with	Mining Rights	Month 25-36	Legal agreement	Month 25-36	Mining Rights officer
	Data processing and validation	Geologist	Month 25-36	Stratigraphic correct borehole data Analytical correct borehole data	Month 25-26	Geologist/Database administrator
	Lithofacies and rock	Geologist	Month 25-36	Contour maps	Month 25-36	Geologist/Modeler
	Inspection/consultation	Mining Rights	Month 25-36	Rehabilitation clearance	Month 25-36	Mining Rights officer/

SITE LAYOUT

It is expected that the final site layout will take into account the entire sensitive environments in the area such as graves.

The application for a Prospecting Right on Portion 1, 2, 3 & 4 of RIETFontein 736 KS, situated on Sekhukhune District Municipality, Ephraim Mogale Local Municipality, Ward no. 16, LIMPOPO PROVINCE.

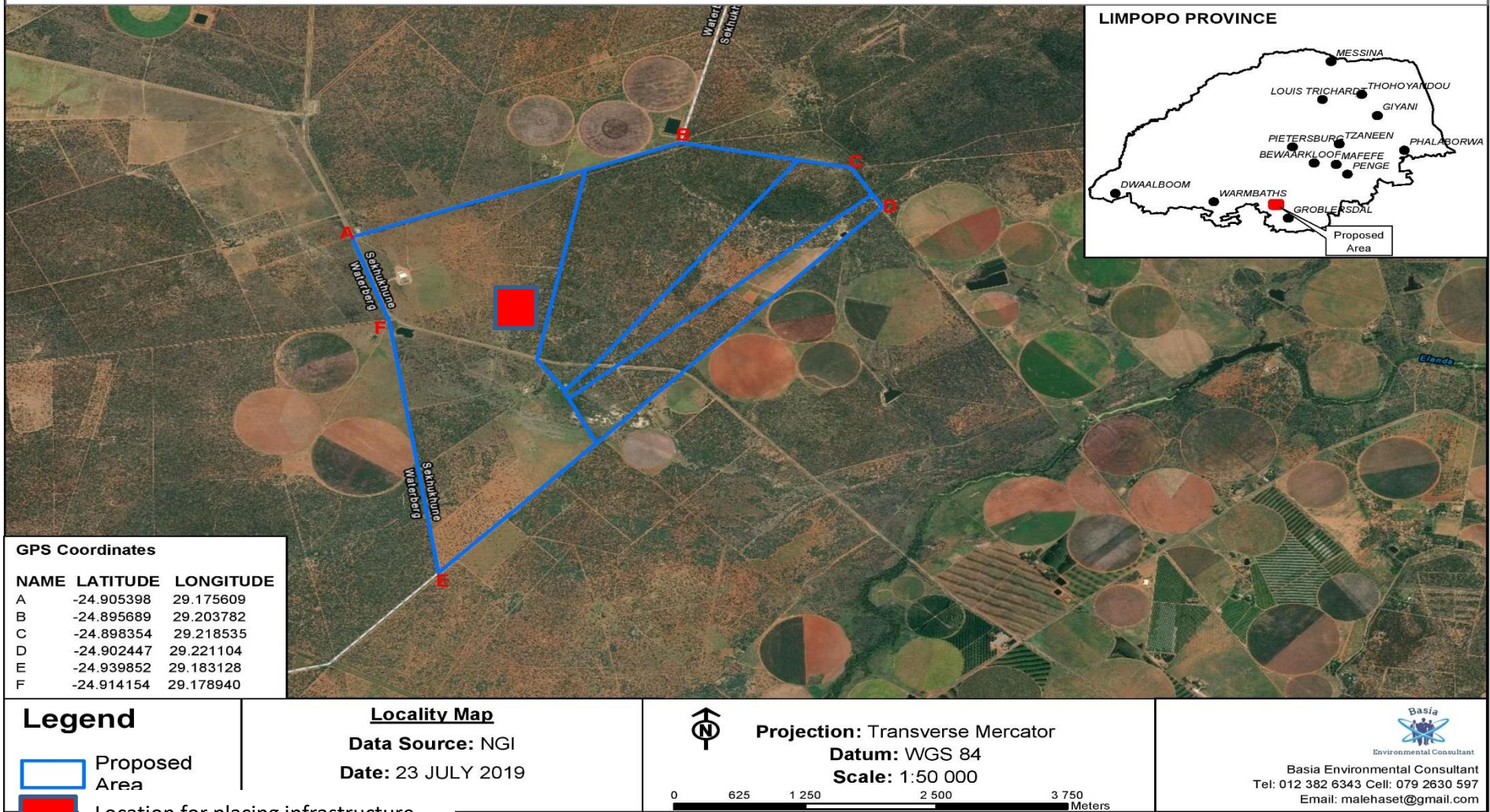
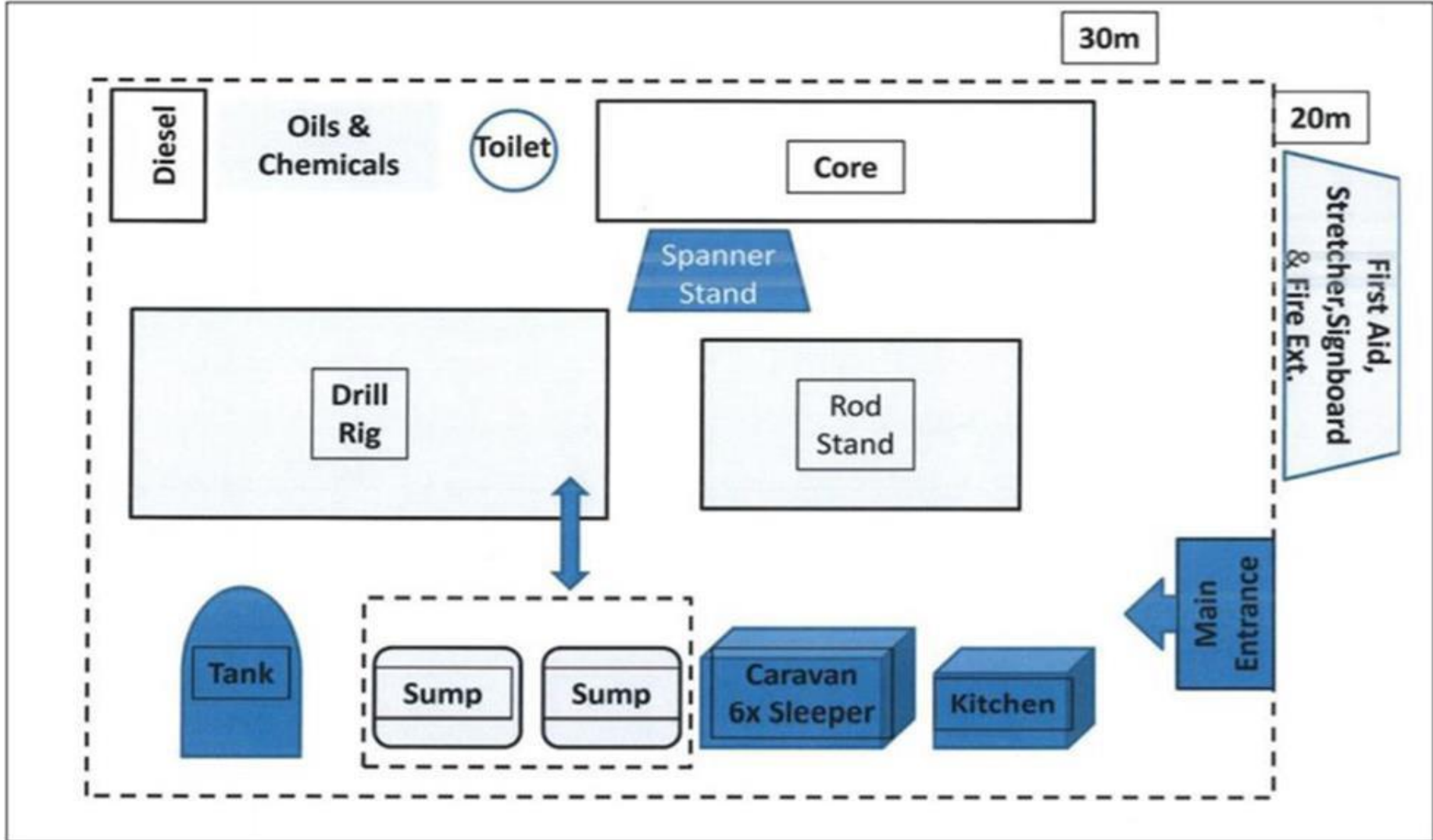


Figure 3: Infrastructure location in the proposed prospecting area



Layout of site during drilling

(i) Listed and specified activities

Section 16 of the MPRDA requires, upon request by the Minister that an EMPr be submitted and that the applicant must notify and consult with Interested and Affected Parties (I&APs). Section 24 of the NEMA requires that listed activities, which may potentially affect the environment negatively, must obtain an environmental authorisation from a relevant authority before the activities may commence.

Such activities are listed under the Environmental Impact Assessment (EIA) Regulations (2014 which has been amended in 2017) and consist of:

- EIA Process (Government Notice Regulation (GNR) 982);
- Listing Notice 1 GNR 983 – Basic Assessment process,
- Listing Notice 2 GNR 984 – Scoping and EIA process;
- Listing Notice 3 GNR 985 – Activities in specific identified geographical areas only.

GNR 982, 983, 984 and 985 have been amended in 2017 through GNR 324, 325, 326 and 327, respectively.

The purpose of these regulations is to avoid negative impacts on the environment, and where these cannot be avoided, ensure the mitigation and management of the impacts to acceptable levels, while optimising positive environmental impacts.

The proposed prospecting activity triggers activities listed in NEMA GNR 327: Listing Notice 1 as follows:

Activity 20: “Any activity including the operation of that activity which requires a prospecting right in terms of Section 16 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002), including associate infrastructure, structures and earthworks, directly related to prospecting of a mineral resource”

TABLE 4: SUMMARY OF NEMA LISTED ACTIVITIES BEING APPLIED FOR

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 983, GNR 984 or GNR 985)
Prospecting	1657,006964 Ha	Activity 20	GNR 983 Listing Notice 1
Drilling	0.2 Ha	Activity 20	GNR 983 Listing Notice 1
Site Camp	80m ²	Activity 20	GNR 983 Listing Notice 1
Ablution facilities	10m ²	Activity 20	GNR 983 Listing Notice 1
Accommodation	30m ²	Activity 20	GNR 983 Listing Notice 1
Equipment storage	50m ²	Activity 20	GNR 983 Listing Notice 1
Sample storage	40m ²	Activity 20	GNR 983 Listing Notice 1
Temporal Site offices	40m ²	Activity 20	GNR 983 Listing Notice 1
Access roads	40m ²	Activity 20	GNR 983 Listing Notice 1

(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)

The following section presents detailed description of all the activities associated with the proposed prospecting application.

Fencing the office and storage site

Fencing of the site for temporal offices and storage site will be required as a means of ensuring safety and restricting trespassers. The fencing however will be ecologically sensitive to ensure that species habitat is not divided. Fences will be clearly demarcated and appropriate signage will be displayed, similar to the signs in the images below. The necessary signage will also be erected in the vicinity of the sites to ensure visitors can easily and safely access the premises.

Temporary site and security offices

The site offices for the project, including a small security hut at the entrance of the office and storage site will consist of container-type offices that is commercially available as off the shelf products, as illustrated in the image below. This ensures minimal construction requirements on site and also minimal degradation footprint. Keeping the disturbance area minimal and ensuring ease of mine closure and rehabilitation after life of mine make the temporary offices ideal, especially considering the short duration of the proposed activities and requirement of these offices. The visual impact associated with the structures will also be considered and natural colour paint will be applied to the structures to blend in with the background features.

Storm water management around the facilities must be considered. No housing facilities will be required as personnel will not be allowed to reside on site for the duration of the project but instead live off site from the mine. The security will however be present 24 hours a day on the mine for the duration of the project and even longer during the mine closure and rehabilitation period.



Image 1: A temporal security office



Image 2: A temporary site offices

4.7. Temporary sanitation (Ablution facilities) and change house

Similar to the structure indicated in the section above, the temporal sanitation and change house will be a container type facilities which can easily be brought to site and also removed after life of mine. A two change rooms must be provided, one for designated for male and the other for females. Four temporal toilets must be provided, two for females and two for males. The mining area will not constitute or host more than 15 people/personnel at the same time. Temporal toilets will be supplied and serviced by an independent contractor whom will be responsible for the management and disposal of waste.

This ensures no major construction and approval is required for a full scale sewage treatment facility. Water requirements relating to ablutions and drinking water are expected to be minimal and will be brought to the site by a tanker. The current expectation is that 15 employees will require 45 liter per person per day (liter pp/day) amounting to 1350 liters per day.



Image 3: A temporal toilet

Drilling (Prospecting):

Please refer above section for a detailed description of the prospecting activities to be undertaken.

Establishment of Temporary Access Roads

There are various main and minor roads passing over the proposed project area. Some of these roads will be used to access the proposed prospecting project area. Where sites cannot be accessed via existing roads, temporary access roads (tracks) will be established. The figure below show the access road to the site (marked with red lines).

Power

Diesel powered vehicles and machinery will be used for the proposed project. There is no need for electricity.

Water Supply

RC drilling in general does not require water while a continuous water supply is needed during core drilling.

The water will be purchased from local contractors and brought onto site by water tank truck to the identified drill sites. Portable on-site storage tanks (water bowsers) will be installed for the water supply. Water bowsers with the capacity of 500 gallon will be

deployed to the sites and filled with water that will be used during the operational phase such as for dust suppression or core drilling. Consumable waste for personnel will be purchased from local stores.



Image 4: Water tank truck to supply water to the site



Image 5: Water bowsers to store water



Image 6: Packaged drinkable water

Waste management

The necessary waste receptacles will be in place for general domestic waste separation and management. Two mobile Waste Skips (one for hazardous waste and one for non-hazardous waste) and four mobile waste bins (two for hazardous waste and two for non-hazardous waste) to be clearly labeled and placed in strategic area on site to ensure easy access. These waste bins will be used for collection of different types of waste and will be removed from the site to a licensed waste facility by a registered and approved contractor. The diagram below shows the mobile waste skips and waste bins. Mobile waste skips ensure minimal impact on the environment they are placed on.



Image 6: Mobile waste skips



Image 7: Mobile waste skips

Waste will be generated from the start to the decommissioning of the project. It is proposed that the waste that would be generated on site would be managed by reducing, reusing and recycling as far as possible. A certified and approved external contractor will be responsible for the removal and disposal of the waste at a registered landfill. The overall aim of the project is to keep the carbon footprint of the entire project as small as possible. This will include the use of “green” products as far as possible.

Several waste streams are likely to originate from the activities associated with day to day activities in the workplace. Some of these waste streams may not be hazardous, but the majority may contain a component(s) that may need special treatment. The nature of these waste streams may also vary due to composition and physical form. In order to make informed decisions on determining the appropriate waste management options to handle, treat and dispose of waste, the different waste streams must be identified in terms of hazardous and non-hazardous wastes.

Waste streams can be categorised into 6 (six) different streams, based on similar health and environmental concerns namely:

- **Inorganic wastes** – acids, alkalis and other solid residues.
- **Oily wastes** – primarily from the processing, storage and use of mineral oils.
- **Organic wastes** – halogenated solvents residues, non-halogenated solvent residues, polycarbon based (PCB) wastes from paint and resin wastes.
- **Putrescible Organic Waste** – wastes from production of edible oils, slaughter houses, tanneries and other *animal based products*.
- **High Volume/Low Hazard Wastes** – waste based on their intrinsic properties present relatively low hazards but may pose problems due to high volumes such as plastics
- **Miscellaneous Wastes** – infectious waste from diseased human/animal tissue, redundant chemicals, laboratory wastes and explosive wastes from manufacturing operations or redundant munitions.

General waste to be generated from the proposed project area will include domestic waste which includes old food, polystyrene, old stationary, discarded Personal Protective Equipment (PPE) and old clothing generated from the drilling and campsites. **Hazardous waste** hazardous waste to be generated includes mineral residue, hydrocarbon wastes (oil and liquid fuel wastes) and sewage waste. Mineral residue will include cores, muds and drilling chips generated during the drilling of the exploration boreholes. The mineral residue will be removed from the site and disposed of at a registered waste disposal site.

The following shall apply to the temporary storage of waste at source:

- The employer shall provide adequate and appropriate containers/receptacles for the temporary storage of waste at source;
- Adequate containers must be available to store different types of waste separately to allow for recycling and disposal according to the integrated waste management plan;
- Dedicated storage areas for various types of waste must be allocated and clearly demarcated;

- Waste collected at source shall be collected on a daily basis;
- Waste must be stored in such a manner that it can be safely accessed and loaded;
- Should waste be stored in containers, drums or skips care must be taken that:
 - Waste types (special vs. controlled vs. general waste) are not mixed.
 - Waste is not kept in a corroded or worn container.
 - The container is secure so as to prevent accidental spillage or leakage.
 - All waste skips and containers are labelled with their contents.
 - Skips or containers do not overflow.
 - Skips for special waste is always covered.
 - Skips for controlled waste is covered skips wherever possible.
- Waste must be kept in such a way as to prevent it falling while in storage or while it is being transported;
- Waste must be protected from scavenging by people and animals;
- Do not dispose of (burn, bury or treat) waste on site;
- Collection of waste must be scheduled and the site/location manager must be notified beforehand of collection times and type of waste to be collected; and
- Implement dust suppression measures, such as wetting of access routes and accumulated controller waste.

Mineral residue will include cores, muds and drilling chips generated during the drilling of the exploration boreholes. The mineral residue will be removed from the site and disposed of at a registered waste disposal site. During the drilling activities, limited quantities of diesel fuel, oil and lubricants will be stored on site. The only dangerous good that will be stored in any significant amount will be the diesel fuel. No more than 30 m³ will be stored above ground in diesel storage tank.

e) Policy and Legislative Context

TABLE 5: POLICY AND LEGISLATIVE CONTEXT

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT <i>(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)</i>	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT. <i>(E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)</i>
Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA)	Application for Prospecting in terms of Section 16	A prospecting right application was submitted to the DMR by the applicant on 26 June 2019.
National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)	The project may trigger the requirements under Section 38 of the NHRA. However, the requirements for the permits have not yet been established.	The BAR and EMPr has been submitted to the through the South African Heritage Resources Information System (SAHRIS) to determine whether or not any permits will be required
National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA)	This Basic Assessment Report (BAR) and EMPr	An application for an Environmental Authorisation was submitted to the DMR. The DMR requested the submission of the BAR and EMP
National Environmental Management: Waste Act (Act No. 59 of 2008) (NEM: WA)	EMPr and environmental awareness plan	Waste management on site.

National Water Act, 1998 (Act No. 36 of 1998)	Borehole drilling on the site	The SANBI National Wetlands database shows that there are a number of wetlands in the prospecting area. There are also watercourses and drainage lines that may be affected by the project. In terms of the NWA, any activities undertaken within 500 m of a wetland or within 100 m of a watercourse require a Section 21 (c) and (i) Water Use Licence (WUL). Should the impacts of the activities be of low significance, the activities may also be Generally Authorised (GA).
Municipal Integrated Development Plans (IDPs)	Land Claims	One of the key issues identified by the IDPs is to facilitate the land claims.

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).

Environmental desirability

The area is characterised by warm and temperate climate and weather, which are convenient to prospect throughout the year except for rainy seasons, hence even future mining will be favored. The topography of the proposed area is generally even, thus minimising the potential of runoff erosion from the operational site activities.

There are few shrubs or trees in the area; hence the site is easily accessible with low impact on the biodiversity.

Socio-economic desirability

Although prospecting activities are not labour intensive, few people will be hired to assist with general activities. The services required can also be sourced locally depending on their availability thus growing the economy of the area.

The dirt road will be refurbished and maintained to suitable construction road standards upgraded to the applicable standards which includes a gravel road leading into the mine.

Currently South Africa is faced with an outbreak of illegal mining at a national scale which is associated with death of illegal miners as a result of conflict, thus mining prospecting activities reduces the probability of these incidents and on other hand promoting the sustainable and regulated exploration of natural resources in an environmental friendly manner.

Additionally, the mineral prospecting activities will stimulate an income for the local minority that will be involved in the activity from site clearance, excavation to testing. The result will provide a gateway for the stimulation of sustainable income for local community at the operational stage of limestone mining.

Overall desirability

Assessment of the geological data available has determined that the area in question may have the proposed minerals. In order to ascertain the above and determine the nature, location and extent of the subject minerals within the proposed prospecting area, it will be necessary that prospecting be undertaken. The prospecting will also determine if there are any features that may have an impact on the economic extraction of the subject minerals. The mineral that will be prospected is Limestone .

A prospecting right allows a company to survey or investigate the area of land for the purpose of identifying an actual or probable mineral deposit. The data that will be obtained from the prospecting of the minerals being applied for will be necessary to determine how and where the minerals will be extracted and how much economically viable mineral reserves are available within the proposed prospecting area.

YSA (Pty) Ltd expects that substantial benefits from the project (should limestone mineral be found) will accrue to the immediate project area, the sub-region and the province of Limpopo. These benefits must be offset against the costs of the project, including the impacts to land owners.

Further to the above, it has been determined that the prospecting project activities will not have a conflict with the spatial development plans. The applicant further commits to ensure their contribution to environmental education and to their employees during the project life. The employees will be made aware of work that may be harmful to their health and the environment and of any work posing danger. This is undertaken in terms of the Mine Health and Safety Act, 1999 (Act 25 of 1999) and their regulations, which gives the employees the right to refuse work that is dangerous. The applicant will respect decisions of employees regarding the above and is committed to the protection of employees against any dangerous working environment. There is the potential for socio-economic impacts to surrounding communities, particularly farming communities, both positive and negative. Some local labour will be required during the construction phase. During the operational phase, unskilled and skilled labour will be required as the technicians must be experienced in mining operations.

This is how the mining activities will benefit the whole district and local municipality:

- Contribution to economic growth in the region (direct and indirect) – Gross Domestic Product Per Region (GDPR);

- Impact on regional development (business and other);
- Impact on infrastructure and resources in the region;
- Impact on employment and income - Potential employment opportunities may occur during the construction and operation phase of the proposed development. The communities, whom these employment opportunities are earmarked for, will be determined and assessed during the EIR phase of the project. The exact nature and significance of these impacts will however be determined and assessed during the EIR phase for a holistic approach and informed decision making; and
- Impact on social lives of local farming communities.

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

Pre-feasibility study was conducted before the application was lodged. The site have deemed desirable for prospecting and future mining. Hence, there is no alternatives. This project will result in several benefits both at the local and national levels. The local economy will also be boosted by the creation of job opportunities. Further to this, the national economy is also expected to benefit through the export of the final limestone product resulting in foreign revenue if ore project is viable. The proposed method of exploration for the limestone deposit which will be mainly drilling of planned boreholes allows easy access of drill rigs to the site using existing roads and does not require extensive machinery or any development for new structures as compared to other methods, making it feasible for one drill rig to be utilised for this type of project. This also reduces the overall costs, environmental and social impact associated with the exploration processes, thus allowing financial viability in prospecting activities.

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.)

Pre-feasibility study was conducted before the application was lodged. The site have deemed desirable for prospecting and future mining. Hence, there are no alternatives.

(i) Details of the development footprint alternatives considered

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

The property on which or location where it is proposed to undertake the activity

As mentioned above, that there is no alternative site. The prospecting activity is proposed to be executed on on Portion 1, 2, 3 and 4 of Farm Rietfontein 736 KS, Located in Limpopo within the administrative boundaries of Sekhukhune District Municipality (SDM) in Ephraim Mogale Local Municipality.

The type of activity to be undertaken

The application is for prospecting rights and no alternatives were established. The activity will be conducted in phases as described in Section (i) of this report.

The design or layout of the activity

The location of the infrastructure have been determined based on the accessibility of the area, distance and other environmental attributes. A layout map is provided above with the scope of the proposed overall activity.

The technology to be used in the activity

The proposed technologies have been chosen based on long term proven success in prospecting.

The operational aspects of the activity

No permanent services in terms of water supply, electricity, and or sewage facilities will be required. Temporary access roads will however be constructed in areas where there are no existing access routes.

The activities will commence with Phase 1, during which desktop studies will be conducted. After the desktop studies, geological mapping will be undertaken to ensure that all the targets with Limestone outcrop are mapped.

Mapping of drilling points and determining the exact drilling holes.

Phase 2, invasive prospecting drilling campaign where the extent of mineralisation will be defined and the geological continuity of the geological continuity of the mineralised zone will be determined. The drilling information will also be used to construct ore thickness, overburden thickness and basement elevation contour plans.

Phase 3 of the process will entail core sampling to establish the grade and viability of the Limestone for mining.

The option of not implementing the activity

The option of not implementing the activity will result in a loss of valuable information regarding the mineral status (Limestone) present on the affected properties. In addition to this, should economical reserves be present and the applicant does not have the opportunity to prospect, the opportunity to utilise the reserves will be lost and contribute to the growth of the country's economy.

(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)

The Public Participation Process (PPP) has been structured to provide I&AP's with an opportunity to gain more knowledge about the proposed project, to provide input through the review of documents/reports, and to voice any issues or concern at various stages throughout the EIA process. This process includes all I&AP's (e.g. directly affected landowners, national-, provincial- and local authorities, and local communities etc.).

The Public Participation Process (PPP) was conducted in terms of Chapter 6 of the National Environmental Management Act, 1998 (Act 107 of 1998).

The Public Participation Process results are summarised below, please refer to Appendix B for a detailed PPP Report.

TABLE 6: SUMMARY OF THE PPP UNDERTAKEN TO DATE

Task	Details	Date
I&AP notification		
I&AP identification	<p>An I&AP's database was developed for the project by establishing the jurisdiction of organisations, individuals and businesses in proximity to the project site or within an interest in the proposed development.</p> <p>The database of I&AP's includes the landowner, the adjacent landowners, relevant district and local municipal officials, relevant national and provincial government officials, and organisations. This database is being augmented via chain referral during the BA process and will be continually updated as new I&AP's are identified throughout the project lifecycle. The current list of potential I&AP's is attached in Appendix B</p>	Continuous process
Site notices	A2 Site notices were placed at strategic points to inform the general public of the proposed project and the PPP. Photos of the site notices have been included in Appendix B	28 July 2019
Media Adverts	The Newcastle Advertiser newspaper was used to advertise the proposed project	7 August 2019
Comments received	The comments received from the landowners to date, are captured in the stakeholder engagement report	See Appendix B

Comment on DBAR	All the relevant stakeholders will be furnished with the copy of DBAR to provide their comments	See Appendix B
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(iii) Summary of issues raised by I&Aps

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

TABLE 7: SUMMARY OF ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Company/person	Date	Contacts	Comment	Response
Tommy Bowman	29 July 2019	Bowman.tommy@gmail.com 076 573 4437	Once drilling program is available , I would want this prior to drilling: Full clarity and knowledge and drill pattern/plan on proposed site. Proof of comment is attached on the Appendices document	We acknowledged the receipt of the comments and we have registered. We have sent the details of the projects .
Krugel Heinsen Incorporated	14 August 2019	mandla@krugels.co.za	The Krugel Heinsen Incorporated acted on behalf of Mr I. G Gouws: Their client's (Mr Gouws) concerns remain reserved until the Draft of the Basic Assessment report is sent to them. Proof of comment is attached on the Appendices	We acknowledged the receipt of the comments and we have registered. We have sent the details of the projects.

LIST OF REGISTERED AND COMMENTS FRO STAKEHOLDERS		
Company/person	Contacts	Comment
Ephraim Mogale Local Municipality	Monica Mathebela Tel: 013 261 8401/ 013 261 8400 rkekana@emogalelm.gov.za	No comment. A copy of draft BAR & EMP will be sent to the stakeholder
Department of Mineral Resources LP	Tebogo Mangaba 015 287 4700 015 287 4736 Aaron.khrivhe.dmr.gov.za	No comment. A copy of draft BAR & EMP will be sent to the stakeholder
Department of Water Affairs and Sanitation (DWS) LP	015 290 1200	No comment. A copy of draft BAR & EMP will be sent to the stakeholder
Sekhukhune District Municipality	015 633 5104	No comment. A copy of draft BAR & EMP will be sent to the stakeholder
Department of Economic Development, Tourism and Environmental Affairs (EDTEA) LP	015 293 8300	No comment. A copy of draft BAR & EMP will be sent to the stakeholder
Heritage LP		No comment. A copy of draft BAR & EMP will be uploaded online.
Department of Agriculture, Forestry and Fisheries. LP	015 294 3147 www.id.gov.za	No comment. A copy of draft BAR & EMP will be sent to the stakeholder
Department of Rural Development and Land Reform. LP	015 297 3539 tinyiko.makamu@drdlr.gov.za	No comment. A copy of draft BAR & EMP will be sent to the stakeholder

(iv) The Environmental attributes associated with the alternatives

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

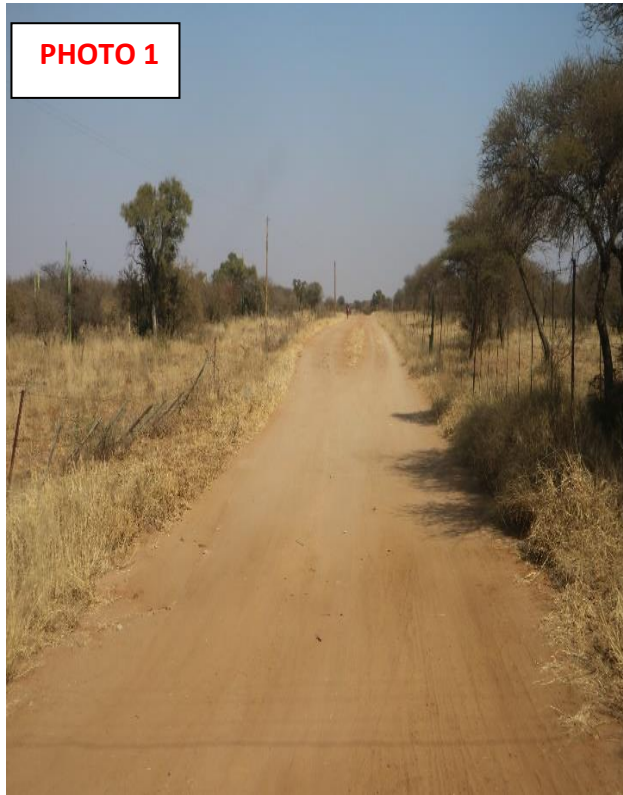
(1) Baseline Environment

The type of environment affected by the proposed activity

(its current geographical, physical, biological, socio-economic, cultural character)

Environmental and socio-economic conditions

The Ephraim Mogale Local Municipality has a relatively small economy, it is dependent on fiscal allocations from outside the province. The municipality is a major producer of citrus and table grapes. Cotton and vegetables production is also substantial. Cattle ownership among subsistence farmers is significant. Production areas are scenically attractive and, together with Flag Boshielo Dam; provide supply side opportunities for tourism development. The Schuindraai Nature Reserve, which is adjacent to Flag Boshielo Dam adds to this opportunity. Mining activity includes dolomite and dimesion stone. Marble Hall town has a very large, but underutilised industrial park. The only manufacturer of note is McCain foods and Tiger Brand Foods and Vegetable processing. Other tenants in the industrial park are mostly distributors and businesses that repair motor vehicle and other equipments. The local construction industry is very small, but is growing rapidly. Wholesale and retail trade development has always been overshadowed by facilities that are available in the adjacent Grobersdal. A large network of informal traders operates throughout the municipal area. With the current economic status of the municipal area prospecting activities will stimulate an income for the local minority that will be involved in the activity from site clearance, excavation to testing. The result will provide a gateway for the stimulation of sustainable income for local community.



As seen in Photos (1 &2) above, access through the site is by gravel roads. Roads closer or passing through the site are generally low quality gravel roads that were never properly planned and constructed, with no provision for storm water drainage. However, according to the Ephraim Mogale Local Municipality 2017/2018 annual report, the municipality will maintain all roads within the municipal area. Teams will be assigned to maintain gravel/dirt roads, surfaced roads including drainage and also do road markings.



The N11 passes through the proposed site. The R33 provincial route and the N11 national route are cosigned until the marble hall town.



There Eskom Powerlines observed on the proposed site



PHOTO 7



PHOTO 8



PHOTO 9



PHOTO 10

As observed in Photos (7 to 10) above, there are places that offer accommodation and a variety of recreation activities. The Kwekwe Game farm which is located south of the proposed site, Sabella Private Retreat on the western side of the proposed site, and Rhenosterfontein farm located further west. All the above mentioned places are located adjacent to the R33 route. The Kwekwe Game farm and Sabella Private Retreat offer activities such as game drives where animals such as Zebras, Rhinos, leopards, wildebeest, antelopes and many more are observed. Mountain biking and trail running are also offered in these lodges. For enthusiastic birdwatchers, the world renowned Nylsvley bird sanctuary is in relative close proximity to Sabella Retreat. The Nylsvley

Nature Reserve is a 40 km² protected area in the seasonal Nyl- and Magalakwena River flood plain.



A Man-made dam was observed closer to the site.



Photo 15, 16, and 17 show the type of vegetation that is found on the proposed site. As observed above, the area is characterised by brown shrubby grasslands and different species of acacia trees. There are several alien plants widely scattered in the proposed site. The vegetation found within the proposed site is clearly described below.

CURRENT LAND USE

The dominant land use surrounding the proposed prospecting area is agriculture as seen in figure 4 below. The municipality is a major producer of citrus and table grapes. Cotton and vegetable is also substantial. Cattle ownership among subsistence farmers is significant. Rhenosterfontein farm is located 8 km South West of the proposed prospecting area. Production areas are scenically attractive and provide opportunities for development. The Schuinsdraai Nature Reserve is approximately 17 km North East of the proposed site. The Arabie (Flag Boshielo Dam) is adjacent to the Schuinsdraai Nature Reserve. The Schuinsdraai eco-system that surrounds the Flag Boshielo covers 9037 hectares of land. The Schuinsdraai dam provides an ideal environment for the large crocodile population that inhabits the area. Other game that can be spotted at Schuinsdraai Nature Reserve includes kudu, impala, eland, warthog and rare roan antelope.

Marble Hall town is nearest to the proposed site, it has a very large but underutilized industrial park. The only manufacturer of note is McCain Foods SA and Tiger Brand Foods vegetable processing. Other tenants in the industrial park are mostly distributors and businesses that repair motor vehicles and other equipment. The local construction industry is very small, but is growing rapidly. Wholesale and retail trade development has always been overshadowed by facilities that are available in the adjacent Groblersdal. A large network of informal traders operates throughout the municipal area. Mining activity includes dolomite and dimension stones. Afrimat mine and Lyttleton Dolomite are located in Marble hall, the nearest town to the proposed area. In these mines, high levels of metallurgical dolomite and agricultural lime is produced at sustainable levels and supplied to the steel industry and agricultural industries. There are also places that offer accommodation and recreation activities such as the Kwekwe Game farm which is located south of the proposed site, Sebella Private Retreat on the western side of the proposed site, and Rhenosterfontein farm located further west. All the above mentioned places are located along the R33 route

The application for a Prospecting Right on Portion 1, 2, 3 & 4 of RIETFontein 736 KS, situated on Sekhukhune District Municipality, Ephraim Mogale Local Municipality, Ward no. 16, LIMPOPO PROVINCE.

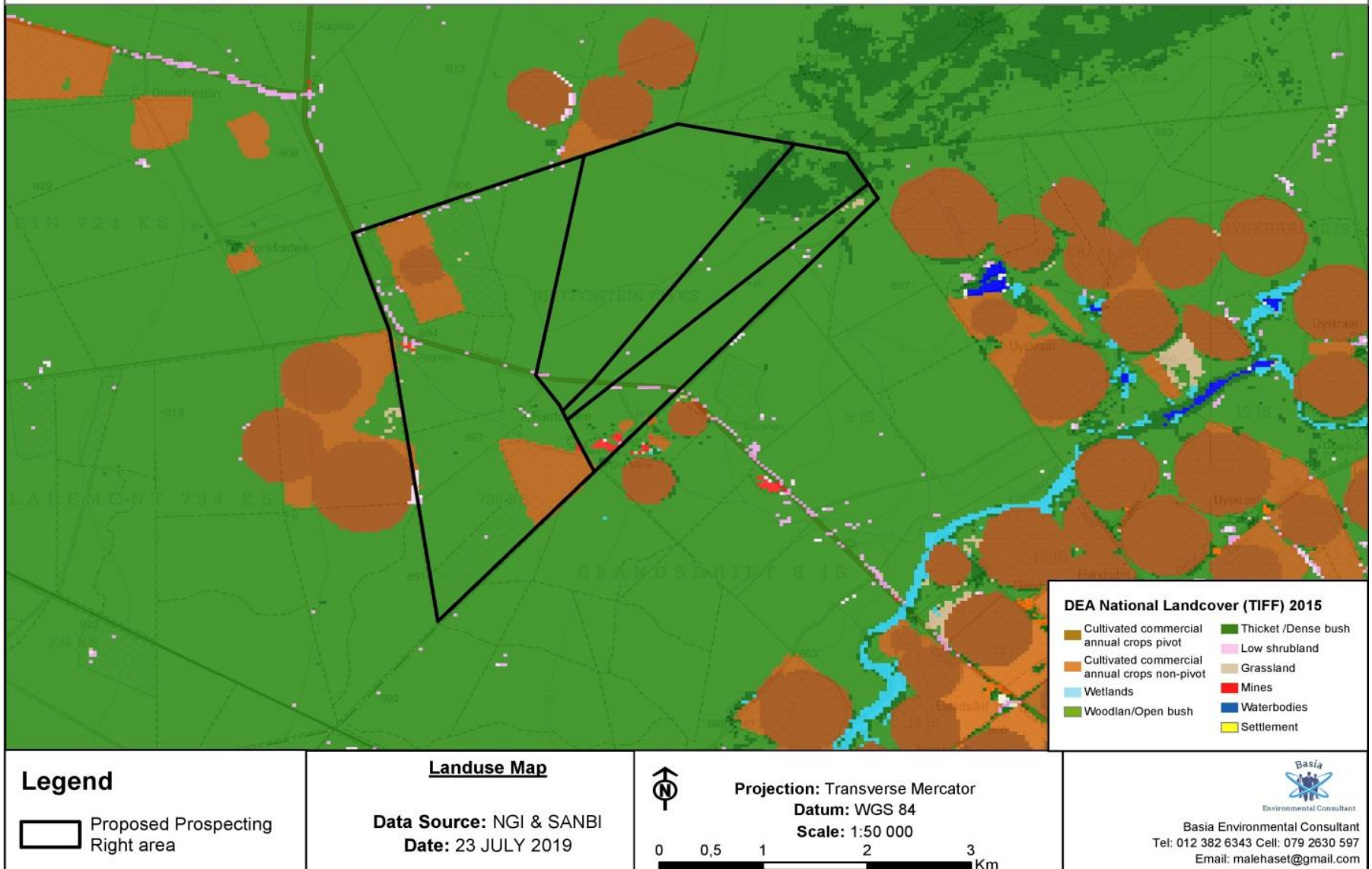


Figure 4: Landuse map of the proposed site

SURFACE WATER

The Hydrology map (Figure 5) demonstrates that the affected quaternary is B31J. Due to the predominately rural character of the municipality's area of jurisdiction there is no bulk water provided in most villages. Water is provided by means of water tanker trucks and boreholes. However one very large impoundment on the Olifants River, the Arabie Dam provide numerous water supplies to numerous small towns and settlements in the sub-escarpment, as well as large volumes of water for irrigation schemes along both banks of the Olifants River. Nine other medium sized dams are also located in this sub-escarpment and supply water for domestic use and for irrigation. Many of the mines and industries in this sub-escarpment, as well as numerous small villages and settlements, rely on water supplied from these ten dams, or use local boreholes or direct run-of-river abstraction from perennial rivers and streams. There are also over 500 small farm dams located in this sub-escarpment and these trap water for domestic purposes and for limited areas of small-scale irrigation, as well as livestock watering.

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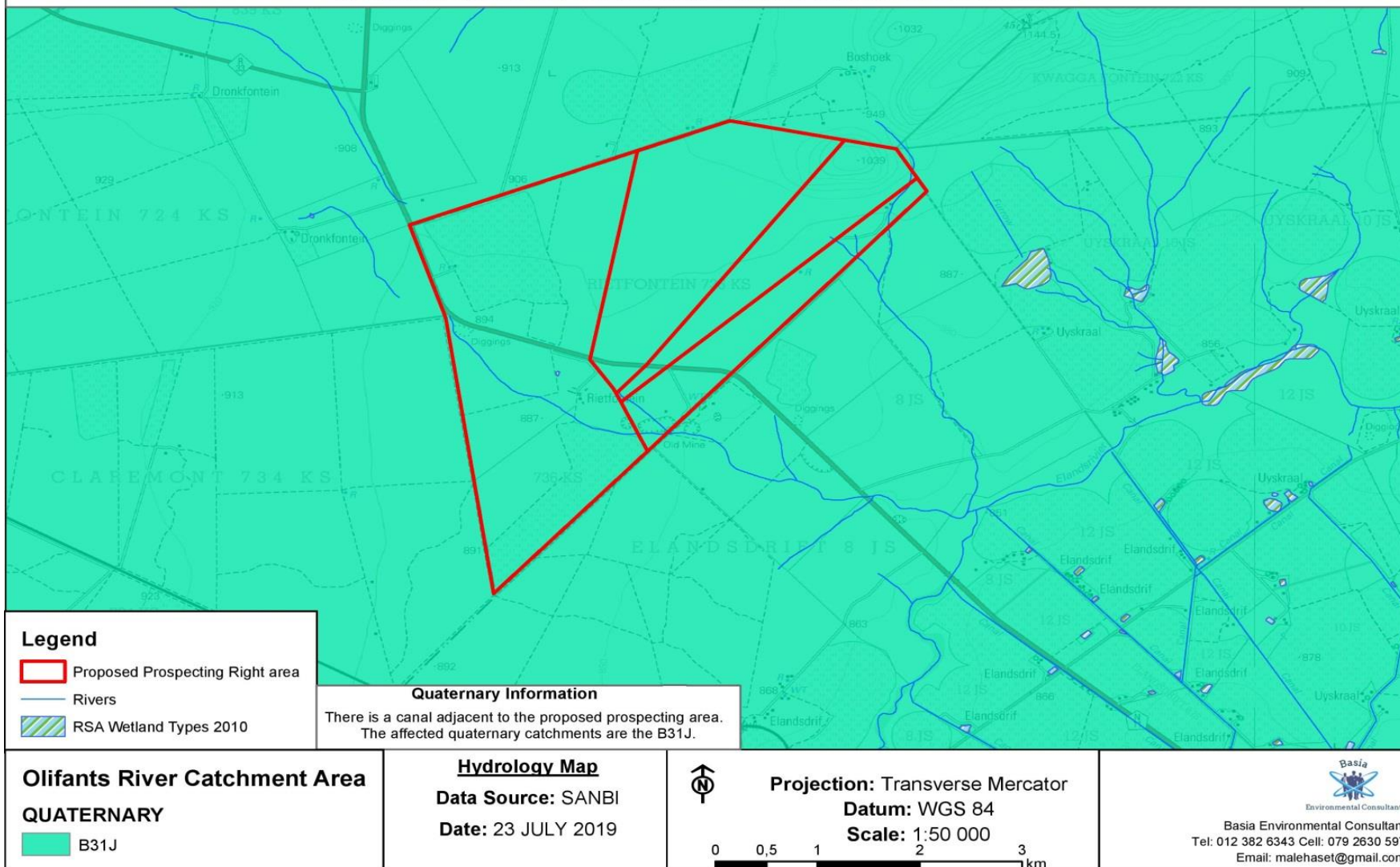


Figure 5: The hydrology map of the proposed area

Vegetation

The proposed site is located within the Central Sandy Bushveld of the Central Bushveld Bioregion and of the Savanna Biome, and the Springbokvlakte Thornveld of the Central Bushveld Bioregion and of the Savanna Biome which is a threatened species with a vulnerable status (see figure 6).

The Central Sandy Bushveld

The site is located in the central sandy bushveld. The conservation status of the central sandy bushveld vegetation type is considered as vulnerable by Mucina and Rutherford (2006), but is classified as least threatened by NEM:BA (2011). This vegetation occurs in low undulating areas, sometimes between mountains and sandy plains and catena supporting tall, deciduous woodlands *Terminalia sercia* and *Bureka Africana* woodland on deep sandy soils, low broad leaf *Combretum* woodland on shallow rocky or gravelly soils. Species of *Acacia*, *Ziziphus* and *Euclea* are found on the flats and lower slopes on eutrophic sands and some less sandy soils. *A. Tortillis* may dominate some areas on the valley. Grass-dominated herbaceous layer with relatively low basal cover on dystrophic sands. Much of the unit in the broad arc south of the Springbokvlakte is heavily populated by rural communities. Several alien plants are widely scattered but often at low densities; these include *Cereus jamaru*, *Eucalyptus* species, *Lantana camara*, *Melia azedarach*, *Opuntia ficus-indica* and *Sesbania punicea*.

The Springbokvlakte Thornveld

An open to dense, low thorn savanna dominated by *Acacia* species or shrubby grassland with a very low shrub layer. It occurs on flat to slightly undulating plains. Very scattered alien plants over wide areas include *Cereus jamaru*, *Eucalyptus* species, *Lantana camara*, *Melia azedarach*, *Opuntia ficus-indica* and *Sesbania punicea*.

The application for a Prospecting Right on Portion 1, 2, 3 & 4 of RIETFontein 736 KS, situated on Sekhukhune District Municipality, Ephraim Mogale Local Municipality, Ward no. 16, LIMPOPO PROVINCE.

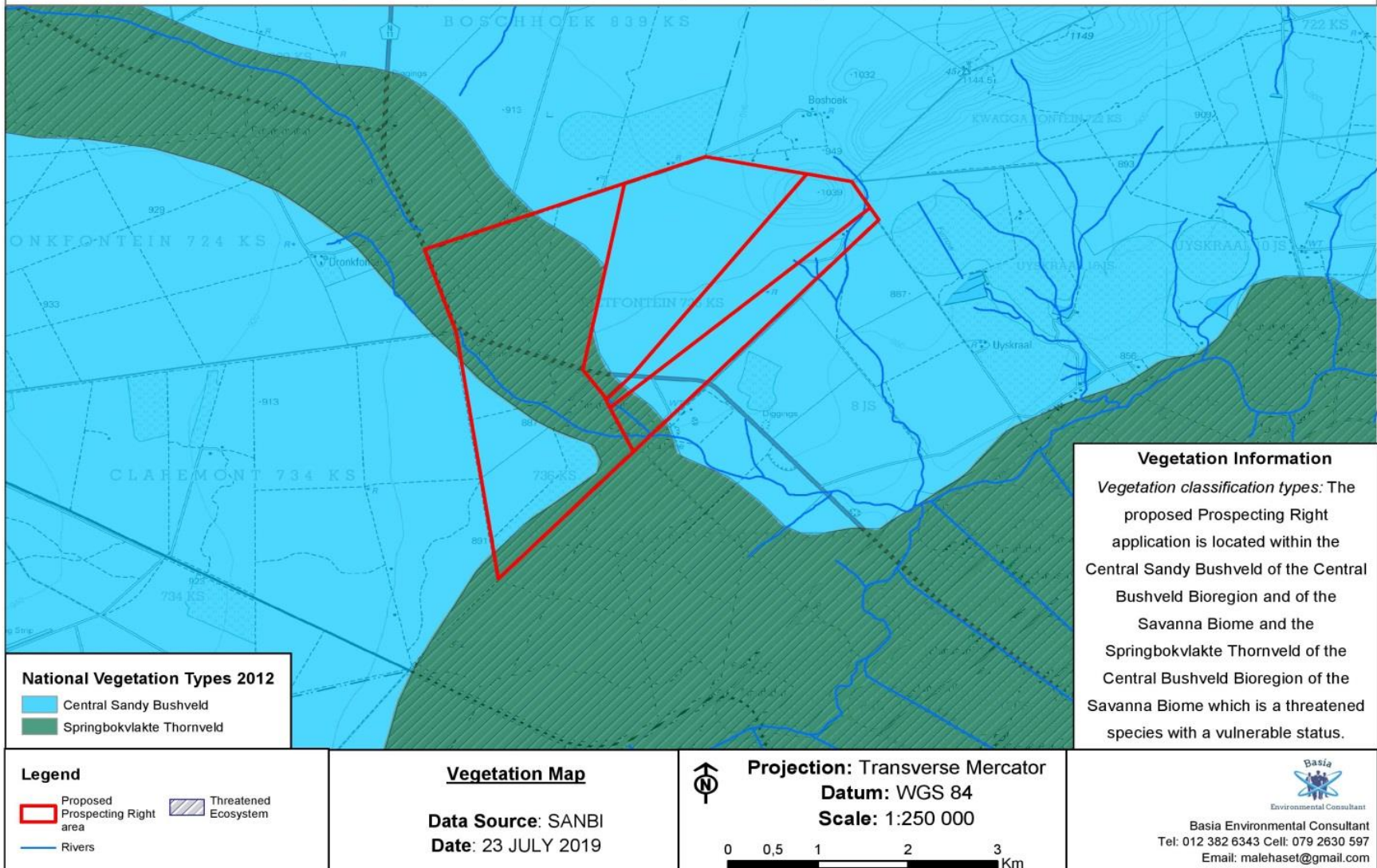


Figure 6: Vegetation Map of the proposed site

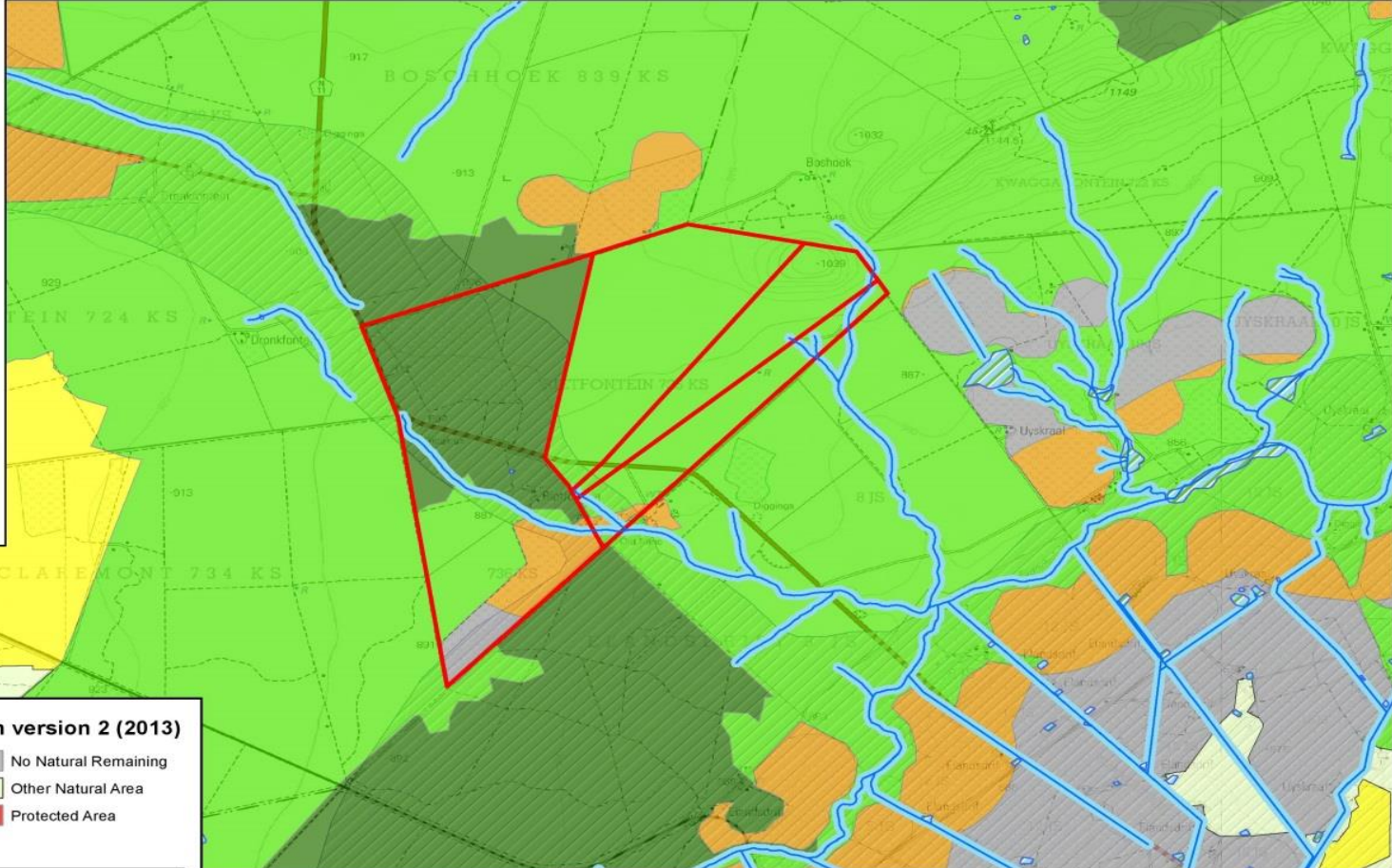
SENSITIVITY FEATURES

Figure 7 below demonstrates that there is a Critical Biodiversity Area 1 (CBA 1) and mostly CBA 2 located within the proposed area. There is also a small part of Ecological Support Area 2 (ESA 2) located within the proposed area. Vegetation has already been described above. The proposed site is located within the Central Sandy Bushveld of the Central Bushveld Bioregion and of the Savanna Biome, and the Springbokvlakte Thornveld of the Central Bushveld Bioregion of the Savanna Biome which is a threatened species with a vulnerable status. Threatened species with a vulnerable status are species which are vulnerable to endangerment in the near future. There is a river stream cutting through to the proposed site to join the nearby Elandsriver. The river bufferzone is 50 m. There are also major wetlands closeby. There is no formally protected area close to the proposed site.

The application for a Prospecting Right on Portion 1, 2, 3 & 4 of RIET FONTEIN 736 KS, situated on Sekhukhune District Municipality, Ephraim Mogale Local Municipality, Ward no. 16, LIMPOPO PROVINCE.

Sensitivity features

1. Rivers or wetlands: There is a river stream cutting through to proposed prospecting right area to join the nearby Elandsriver. There are also major wetlands closeby.
2. Critical Biodiversity area: There is a CBA1 and mostly CBA2 located within the proposed prospecting right application, there is also a small part of ESA2 located within the proposed area.
3. Buffer zones: The river bufferzone is 50m
4. Vegetation: The proposed Prospecting Right application is located within the Central Sandy Bushveld of the Central Bushveld Bioregion and of the Savanna Biome and the Springbokvlakte Thornveld of the Central Bushveld Bioregion of the Savanna Biome which is a threatened species with a vulnerable status.
5. Protected Area: There is no formally protected area close by.



Limpopo Conservation Plan version 2 (2013)

Critical Biodiversity Area 1	No Natural Remaining
Critical Biodiversity Area 2	Other Natural Area
Ecological Support Area 1	Protected Area
Ecological Support Area 2	

Legend

Rivers	River Bufferzone
Proposed Area	Threatened Ecosystem
RSA Wetland Types 2010	

Desktop Sensitivity Map

Data source: SANBI
Date: 23 JULY 2019

Projection: Transverse Mercator
Datum: WGS 84
Scale: 1:50 000

0 0,5 1 2 3 Km

Basia Environmental Consultant
 Tel: 012 382 6343 Cell: 079 2630 597
 Email: malehaset@gmail.com

Figure 7: Sensitivity map of the proposed area

CLIMATE

Marble Hall's climate is a local steppe climate. In Marble Hall, there is little rainfall throughout the year. The average temperature in Marble Hall is 19.9 °C. In a year, the average rainfall is 547 mm. Precipitation is the lowest in June, with an average of 4 mm. With an average of 104 mm, the most precipitation falls in December. At an average temperature of 24.3 °C, January is the hottest month of the year. June has the lowest average temperature of the year. It is 13.3 °C. Between the driest and wettest months, the difference in precipitation is 100 mm. During the year, the average temperatures vary by 11.0 °C. (see table 2)

Table 9: Monthly temperatures and Precipitation of Marble Hall

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	24.3	24.1	22.7	20	16.4	13.3	13.4	16	19.5	22.4	23.2	24.1
Min. Temperature (°C)	17.8	17.6	15.9	12.2	7.3	3.6	3.5	6.1	10.3	14.5	16.5	17.4
Max. Temperature (°C)	30.9	30.6	29.5	27.9	25.5	23.1	23.3	26	28.8	30.4	30	30.9
Avg. Temperature (°F)	75.7	75.4	72.9	68.0	61.5	55.9	56.1	60.8	67.1	72.3	73.8	75.4
Min. Temperature (°F)	64.0	63.7	60.6	54.0	45.1	38.5	38.3	43.0	50.5	58.1	61.7	63.3
Max. Temperature (°F)	87.6	87.1	85.1	82.2	77.9	73.6	73.9	78.8	83.8	86.7	86.0	87.6
Precipitation / Rainfall (mm)	83	83	59	40	13	4	4	5	16	45	91	104

TOPOGRAPHY

To the south-west of the municipal area, the Olifants River is located on an open flood plain area and to the north, the river is located in a valley surrounded by the Strydpoort Mountains (parallel hills and lowlands). Strips of erosion can be found in the valleys alongside most of the perennial and non-perennial rivers.

GEOLOGY AND SOIL

As observed in Figure 8 below, a major part of the proposed site falls within the Makeckaan formation. The Makeckaan formation preserved in the Stavoren Fragment comprises lower and upper fieldspathic sandstone members with large scale cross beds and ripple marks separated by nature, recrystallised quartzite sandstones and micaceous wackes or fluviodeltaic deposits (Schreiber, 1995). Hartzler (1994) described the Stavoren Fragment occupying a high-lying tract of the north and north-west of the Marble Hall dome as consisting of siliclastic sedimentary and volcanic rocks of the upper part of the Pretoria Group and the lower part of the Rooiberg Group. It is covered by Karoo rocks towards the north and east. Figure 8 below also shows that part of the proposed site falls within the Nebo Granite of the Lebowa Granite suite. The Nebo granite forms a regional sill like intrusive of A-type granite. It has an estimated thickness of some 2.5km (McCaskie, 1983). De Waal (1963), Snyman (1958) and Marlow (1976) described the main phase of this granite as red to grey in color, coarse grained. Granular K-feldspar perthite, quartz and plagioclase are major constituents. Accessory minerals include opaque minerals, zircon, rutile and fluorite. Local granophyric and aplitic varieties are developed. A small part of the proposed site falls within the ECCA group.

Soils occurring in the municipal area can be divided into the following groups: in the west, shallow to moderately deep sandy-clay loam soils on flat and undulating terrain overlying rocks of the Ecca Group, principally shales and silicified sandstones; in the east, deep, black, blocky vertisoils of the springbok flats, moderate to deep sandy loam soils lining long stretches of the Olifants River valley in its middle reaches. Most of the soils are

suitable for commercial agriculture when sufficient water is available. Virtually all of the areas with suitable soils, particularly the area downstream of the Loskop and Arabie Dam, are contained within the jurisdiction of formal irrigation boards or Government Water Control Areas. Further away from the river channels, land use is given over to small and medium scale livestock farming operations. A relatively wide variety of crops are produced on the irrigated and rain-fed areas, primarily maize, wheat, sorghum, cotton, tobacco, lucerne, potatoes, vegetables, sunflowers and soya bean.

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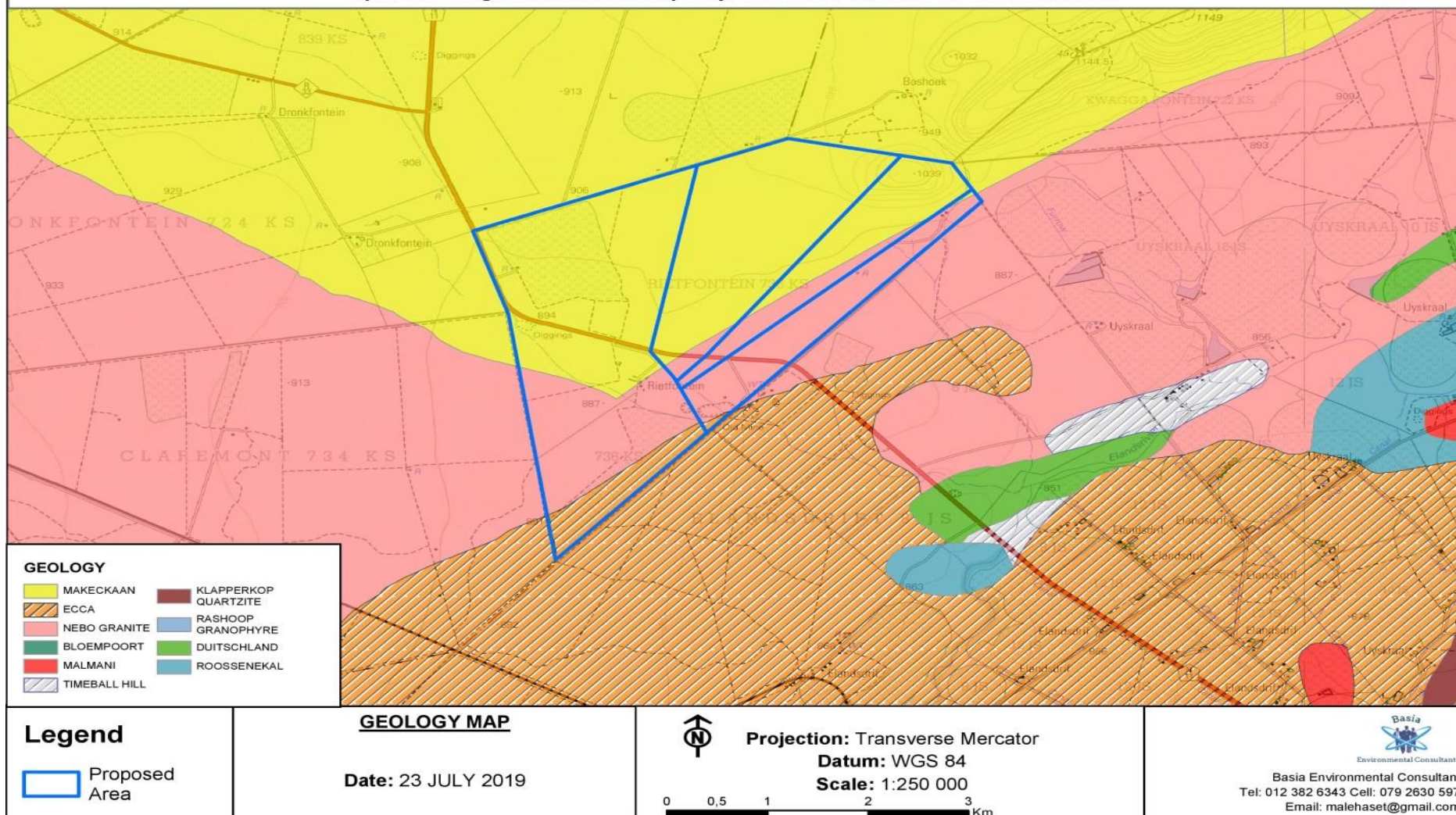


Figure 8: A geology map of the proposed area

TABLE 8: IMPACT ASSESSMENT TABLE FOR THE CONSTRUCTION PHASE

Environmental Aspect	Nature of potential impact/risk	Environmental Impact Significance Before Mitigation											Risk Rating
		Severity	Spatial Scale	Duration	Consequence	Frequency of Activity	Frequency of impact	Legal issues	Detection	Likelihood	Significance/risk		
Social	Influx of job seekers will have a negative social impact on the landowners and land occupiers.	2	1	3	6	4	2	5	1	12	72	Moderate	
	Unauthorised access to private property outside of the demarcated areas will result in conflict with landowners.	2	1	3	6	4	2	5	1	12	72	Moderate	
	Increased traffic in the area will increase the likelihood of accidents on the roads, posing a health and safety issue for the land owners and land occupiers.	2	1	3	6	4	2	5	1	12	72	Moderate	
	The influx of job seekers in the area may result in an	2	1	3	6	4	2	5	2	13	78	Moderate	

	blocking watercourses, resulting in flow impediment and pollution.												
	Contaminated dirty water runoff to surrounding areas resulting in the impact on local surface water quality.	2	3	2	6	4	2	5	1	12	78	Moderate	
	Increase of surface runoff and potentially contaminated water that needs to be maintained in the areas where site clearing occurred.	2	2	2	6	4	2	5	1	12	78	Moderate	
Aquatic Ecosystems	Localised changes to the riparian areas as a result of vegetation clearing.	3	3	3	9	4	2	5	1	12	108	Moderate	
	Loss of habitat and wetland ecological structure as a result of site clearance activities and uncontrolled wetland degradation.	3	3	3	9	4	2	5	1	12	108	Moderate	
	Increased runoff due to topsoil removal and vegetation clearance leading to possible erosion and sedimentation of water resources "cannals"	3	3	3	9	4	2	5	1	12	108	Moderate	

Heritage Resources Palaeontological Resources	The proposed project has the potential to impact on local graves within the area.	2	1	2	5	4	2	5	1	12	60	Moderate
	The proposed project has the potential to impact on sites of archaeological importance.	2	1	2	5	4	2	5	1	12	60	Moderate
	Drilling of exploratory boreholes has potential to impact on palaeontological resources	2	1	2	5	4	2	5	1	12	60	Moderate
Flora	Loss of localised biodiversity habitats within sensitive areas due to site clearance and establishment of drill sites.	2	1	2	5	4	2	5	1	12	60	Moderate
	Loss of localised floral species diversity including RDL and medicinal protected species due to site clearance and establishment of drill sites.	2	1	2	5	4	2	5	1	12	60	Moderate
	Potential spreading of alien invasive species as indigenous vegetation is removed and pioneer alien	2	1	2	5	4	2	5	1	12	60	Moderate

	species are provided with a chance to flourish.												
Fauna	Vegetation clearance may result in loss of faunal habitat ecological structure, species diversity and loss of species of conservation concern.	2	1	2	5	4	2	5	1	12	60	Moderate	
	Habitat fragmentation as a result of construction activities of the access roads leading to loss of floral diversity.	2	1	2	5	4	2	5	1	12	60	Moderate	
	Loss of faunal diversity and ecological integrity as a result of construction activities, erosion, poaching and faunal specie trapping.	2	1	2	5	4	2	5	1	12	60	Moderate	
	Movement of construction vehicles and machinery may result in collision with fauna, resulting in loss of fauna.	2	1	2	5	4	2	5	1	12	60	Moderate	
Air Quality	Possible increase in dust generation, PM10 and PM2.5 as a result of bulk earthworks, operation of heavy	2	1	2	5	4	2	5	1	12	60	Moderate	

	machinery, and material movement.													
	Increase in carbon emissions and ambient air pollutants (NO2 and SO2) as a result of movement of vehicles and operation of machinery/equipment.	2	2	2	6	4	2	5	1	12	78			Moderate
Visual	Scaring of the landscape as a result of the clearance of vegetation.	2	1	2	5	4	2	5	1	12	60			Moderate
	Visual intrusion as a result of the movement of machinery and the establishment of the required infrastructure.	2	2	2	6	4	2	5	1	12	78			Moderate
	Indirect visual impact due to dust generation as a result of the movement of vehicles and materials, to and from the site area.	2	2	2	6	4	2	5	1	12	78			Moderate
Noise	The use of vehicles and machinery during the construction phase may generate noise in the immediate vicinity.	2	2	2	6	4	2	5	1	12	78			Moderate
Soil, Land use	Localised chemical pollution of soils as a result of vehicle	2	1	2	6	4	2	5	1	12	78			Moderate

and Land Capability	hydrocarbon spillages and compaction.													
	Localised clearing of vegetation and compaction of the construction footprint will result in the soils being particularly more vulnerable to soil erosion.	2	1	2	6	4	2	5	1	12	78	Moderate		
	Localised loss of resource and its utilisation potential due to compaction over unprotected ground/soil.	2	1	2	6	4	2	5	1	12	78	Moderate		
	Localised loss of soil and land capability due to reduction in nutrient status - denitrification and leaching due to stripping and stockpiling footprint areas.	2	1	2	6	4	2	5	1	12	78	Moderate		
Traffic	Increase in traffic volumes as a result of pre-construction activities which may lead to an increase in traffic congestion along the roads as well as the farm roads around the prospecting area.	2	3	2	7	4	2	5	1	12	84	Moderate		

Climate	Emissions of Green House Gases as a result of the use of plant, heavy moving machinery, generators etc.	2	2	2	6	4	2	5	1	12	78	Moderate
Waste Management	Potential water and soil pollution as a result of inappropriate waste management practices.	2	3	2	6	4	2	5	1	12	78	Moderate

(v) 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)

All the identified potential impact were assessed according to the following Impact Assessment Methodology as described below. This methodology has been utilised for the assessment of environmental impacts where the consequence (severity of impact, spatial scope of impact and duration of impact) and likelihood (frequency of activity and frequency of impact) have been considered in parallel to provide an impact rating and hence an interpretation in terms of the level of environmental management required for each impact. The risk ratings and significance are indicated in the tables below.

TABLE 9: SEVERITY

How severe does the aspects impact on resource quality (flow regime, water quality, geomorphology, biota, habitat)?

Insignificant / non –harmful	1
Small / potentially harmful	2
Significant / slightly harmful	3
Great/ harmful	4
Disastrous / extremely harmful and /or wetland(s) involved	5
Where "or wetland(s) are involved" it means that the activity is located within the delineated boundary of any wetland. The score of 5 is only compulsory for the significance rating.	

TABLE 10: SPATIAL SCALE

How big is the area that the aspect is impacting on?

Area specific (at impact site)	1
Whole site (entire surface right)	2
Regional / neighbouring areas	3
National	4
Global (impacting beyond SA boundary)	5

TABLE 11: DURATION

How long does the aspect impact on the environment and resource quality?

One day to one month, PES, EIS and /or REC not impacted	1
One month to one year, PES, EIS and /or REC impacted but no change in status	2
One year to 10 years, PES, EIS and /or REC impacted to a lower status but can be improved over this period through mitigation	3
Life of the activity, PES, EIS and /or REC permanently lowered	4
More than life of the organisation /facility, PES and EIS scores, a E or F	5
PES and EIS (sensitivity) must be considered.	

TABLE 12: FREQUENCY OF THE ACTIVITY

How often do you do the specific activity?

Annually or less	1
6 monthly	2
Monthly	3
Weekly	4
Daily	5

TABLE 13: FREQUENCY OF THE INCIDENT/ IMPACT

How often does the activity impact on the environment?

Almost never / almost impossible / >20%	1
Very seldom / highly unlikely / >40%	2
Infrequent / unlikely / seldom / >60%	3
Often / regularly/ likely / possible / >80%	4
Daily / highly likely / definitely / >100%	5

TABLE 14: LEGAL ISSUES

How is the activity governed by legislation?

No legislation	1
Fully covered by legislation	5
Located within the regulated areas	

TABLE 15: DETECTION

How quickly can the impacts/risks of the activity be observed on the resource quality, people or property?

Immediately	1
Without much effort	2
Need some effort	3
Remote and difficult to observe	4
Covered	5

TABLE 16: RATING CLASSES

Rating	Class	Management description
1-55	(L) Low risk	Acceptable as is or consider requirements for mitigation. Impact to watercourses and resource quality small and easily mitigated

56-169	(M) Moderate risk	Risk and impact on watercourses are notably and require mitigation measures on a higher level, which costs more and require specialist input. Licence required.
170-300	(H) High risk	Watercourse(s) impacts by the activity are such that they impose a long-term threat on a large scale and lowering of the Reserve. Licence required.

A low risk class must be obtained for all activities to be considered for a GA

TABLE 17: CALCULATION

Consequence = Severity + Spatial Scale + Duration
Likelihood = Frequency of Activity + Frequency of Incident + Legal Issues + Detection
Significance \Risk = Consequence X Likelihood

TABLE 20: RATING CLASSES

Rating	Risk Class	Management Description
1-55	Low (L)	Acceptable as is or consider requirement for mitigation impact
56-169	Moderate (M)	Risk and impact on notably are required and mitigation measures on a higher level
170-300	High (H)	Impact on the environment has a long term impact.

TABLE 21: CALCULATION

Consequence = Severity + Spatial Scale + Duration
Likelihood = Frequency of Activity + Frequency of Incident + Legal Issues + Detection
Significance \Risk = Consequence X Likelihood

TABLE 22: RATING CLASSES

Rating	Risk Class	Management Description
1-55	Low (L)	Acceptable as is or consider requirement for mitigation impact
56-169	Moderate (M)	Risk and impact on notably are required and mitigation measures on a higher level
170-300	High (H)	Impact on the environment has a long term impact.

(vi) 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)

Several potential impacts of the activity are highlighted above. The impacts of the proposed activity have no alternative, but to be mitigated. The only available option is to keep required bufferzone from sensitive environments such as watercourses.

The positive impacts of the activities are the creation of employment, which is required in the region. Should Limestone be found in the project area, YSA (Pty) Ltd will be able to mine the available reserves. This will result in job creation and support to local businesses is continued. YSA (Pty) Ltd expect that substantial benefits from the project (should Limestone be found) will accrue to the immediate project area, the sub-region and the province of the Kwazulu-Natal. Limestone in South Africa is of important economic value. This prospecting activity has a potential to decrease level of unemployment rate in proposed areas and surroundings. This prospecting activity will bring revenue into the city and the province which will in turn boost the economy of the country. The project will also contribute in the supply of energy as Limestone is the primary source of energy in South Africa.

The proposed activities have medium to low significance impacts, which will be short term activities in nature. The probability of occurrence of an impact was determined and most of the activities can be controlled and impacts can be reduced or avoided. The probability was also determined based on other prospecting activities of similar

nature. It was found that generally prospecting activities have low impact on the environment.

(vii) The possible mitigation measures that could be applied and the level of risk

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

Please refer to Section B for the management and mitigation measures.

(viii) Motivation where no alternatives sites were considered

As discussed above, the site is located in an area where the geology is known for having Limestone deposits of good quality. There are no sensitive archeological, biodiversity (small portion) and water courses (small portion) in the proposed area. The site is therefore is regarded as the preferred site and there is no alternatives sites. The alternative drill sites and mining site will be identified based on the location of sensitive environments such as biodiversity and watercourses. Changes in the layout plan will be discussed and agreed on with the affected landowners.

(ix) Statement motivating the alternative development location within the overall site

The location and extent of the prospecting activities will be based on the information derived from the desktop surveys as well as the specialist studies. Where practicable, the drilling sites and location of infrastructure will be selected to avoid sensitive environments such as watercourses, biodiversity of conservation importance and heritage features.

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.)

In order to identify the potential impacts associated with the proposed prospecting activities, the following steps were undertaken:

- The stakeholder consultant process is currently being undertaken in a manner to be interactive, providing the landowners and identified stakeholders with an opportunity to provide input into the project. This is considered a key focus as the local residents have capabilities of providing site-specific information, which may not be available in desktop research material. Stakeholders were requested, as part of the notification letter, to provide their views on the project, and to state any potential concerns they may have. All comments and responses provide will be collated into the Comments and Responses Register, which will be attached to the final BAR, and will also be incorporated into the final impact assessment.
- A detailed desktop study was undertaken to determine the environmental setting in which the project is located. Based on the desktop investigations, various resources were used to determine the significance and sensitivity of the various environmental considerations. The desktop investigation involved the use of:
 - The South African National Biodiversity Institute (SANBI) Biodiversity Geographic Database LUDS System;
 - The Department of Environmental Affairs 2015 Landcover and Landuse Mapping Database;
 - Department of Water and Sanitation information documents such as the Internal Strategic Perspective (ISP) for the Vaal River and Groundwater Vulnerability Reports
 - Municipal Integrated Development Plans for Eliasa Motsoaledi Municipality; and
 - The Provincial Spatial Development Framework for the Limpopo Province.

The rating of the identified impacts was undertaken in a quantitative manner as provided in Section B (impact rating). The ratings were undertaken in a manner to calculate the significance of each of the impacts. The identification of management and mitigation measures was done based on the significance of the impacts and measures included are considered sufficient, appropriate and practical to protect the environment.

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 23: ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK

NAME OF ACTIVITY		POTENTIAL IMPACT (Including the potential impacts for cumulative impacts)	ASPECTS AFFECTED	PHASE In which impact is anticipated	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
Data Collection and Assessment	Desktop Study	None	N/A	Planning	N/A	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	N/A
Geological Mapping		None	N/A	Planning	N/A	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	N/A

Planning for Drilling Surveys		None	N/A	Planning	N/A	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	N/A
Access Roads	Establishment of access roads, campsite, physical surveying of the site and pegging of drilling boreholes	Loss of soils, erosion of the soils and impacts on landowners' livelihood.	Soils, Land capability and Land use	Construction	Low	Rehabilitation of areas cleared of vegetation and dust control	Low
Drill Sites		Contamination of groundwater from hydrocarbon spillages	Groundwater	Construction	Medium to Low	Control through management and monitoring of spillages. Where spillages occur, the soil must be stripped and disposed of as stipulated in the EMPr.	Low
Temporary Soil Storage Area		Contamination of surface water due to erosion of soils which will lead to increased turbidity as well as contamination from hydrocarbon spillages	Surface water	Construction	Medium to Low	Monitoring through rehabilitation and management of spoil sites	Low
Fence		Wetland contamination, destruction	Wetlands and aquatic ecosystems	Construction	Medium to Low	Control of access to	Low

		and loss of habitat				wetland areas and within the regulated 500 m buffer.	
Hydrocarbon storage area		Destruction of graves and cultural heritage sites	Heritage and archaeological resources	Construction	Low	Control through clear demarcation of prospecting areas to ensure avoidance of graves and other heritage sites	Low
Mobile office		Destruction of fossils	Palaeontological resources	Construction	Low	Management of drill sites. Should any fossils be discovered, operations must cease and SAHRA must be notified	Low
Ablution Facility		Loss of natural vegetation in the affected areas	Flora	Construction	Low	Rehabilitation of areas cleared of vegetation. Control of alien invasive plant species	Low
		Migration of fauna due to disturbance caused by the proposed project	Fauna	Construction	Low	Relocation of affected species of conservation importance	Low
		Air pollution through nuisance dust, PM 10 and PM2.5 as well as emissions from construction vehicles	Air quality	Construction	Low	Dust control measures	Low

		and machinery.					
		Increase in ambient noise due to movement of construction vehicles and machinery	Noise	Construction	Low	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers Control through the limiting of the activities to the day time and the implementation of an open and transparent channel of communication	Low
		Visual impacts as a result of vegetation clearance	Visual	Construction	Low	Rehabilitation of areas cleared of vegetation	Low
		Increased traffic on the roads due to additional construction vehicles	Traffic, Socio-economic	Construction	Medium to Low	Speed control and limitation of the times when construction vehicles may be on the roads	Low
		Impact of carbon dioxide (GHG) produced by construction vehicles on the local climate	Climate Change	Construction	Low	Control and keep to a minimal the number of vehicles used for construction.	Low

						Vehicles must be maintained to ensure efficient use of fuel.	
RC Drilling	Drilling and Soil Sampling	It is expected that during the operation phase the project will not result in the creation of employment as prospecting requires highly specialised personnel. The applicant will make use of qualified contractors for the drilling and sampling of the sites. The community will however continue to benefit as a result of the continued boost in small local businesses. Drilling has potential to affect the day to day operations by affected landowners	Socio-Economic	Operation	Low	Control of times during which operation activities will take place	Low
Core Drilling		The use of vehicles during the drilling of the exploration boreholes may result in the spillages of	Groundwater	Operation	Low	Rehabilitation of affected areas and control using bunds	Low

		hydrocarbons from vehicles and machinery. This will result in the contamination of soils and groundwater. The prospecting operations will require the drilling of boreholes, which may result in the drawdown, which may affect the yield to the surrounding groundwater users. Material used for backfilling boreholes may leach pollutants, which will result in the contamination of surrounding groundwater regime. This may spread beyond the backfilling site via plume migration.					
Soil Sampling		Drilling operations may result in the generation of surface water runoff contaminated with drill muds and cuttings should spillage occur. The sedimentation and possible	Surface Water	Operation	Low	Control through management and monitoring of surface runoff	Low

		contamination with carbonaceous material will have negative impacts on the water quality due to increase turbidity and an increase in acidity of the water in the streams. This will have an impact on aquatic habitats.					
			Wetlands	Operation	Medium to Low	Avoidance of wetland and riparian areas	Low
			Flora	Operation	Low	Rehabilitation of affected areas Monitoring of rehabilitated areas to ensure success.	Low
			Fauna	Operation	Low	Rehabilitation of affected areas Drill holes must be temporarily plugged immediately after drilling is completed and remain plugged until they are permanently plugged below ground to eliminate the risk posed to fauna by open drill holes.	Low

						Drill holes must be permanently capped as soon as is practicable	
		The use of vehicles during the drilling of the exploration boreholes may result in the spillages of hydrocarbons from the vehicles and machinery. This will result in the contamination of soils. The materials removed from the drilling sites will contain carbonaceous material, which has potential for contamination should it not be managed properly. The material from the drilling site may result in the contamination of soils, which may render the land not usable after backfilling operation.	Soils Land use and Land Capability	Operation	Low	Rehabilitation of affected areas	Low
		The movement of vehicles and drilling machinery will likely result in	Air Quality	Operation	Medium to Low	Dust control measures	Low

		an increase in nuisance dust, PM10 and PM2.5. There is also potential for increase in carbon emissions and ambient air pollution due to the movement of vehicles and construction machinery. It in the reduction in nuisance dust.					
		The drill rigs and towers used during the drilling operation phase will be visible from nearby locations, and will have visual impact on the local communities in close proximity to the prospecting area.	Visual	Operation	Medium to Low	Strategic location of rigs and towers to areas where there may be some tree cover, as far as practicable	Low
		The drilling operations may result in the destruction of graves and other heritage resources	Heritage Resources	Operation	Low	Operation Low Control through clear demarcation of prospecting areas to ensure avoidance of graves and other heritage sites	Low
		Earth moving activities may result in	Palaeontological Resources	Operation	Low	Management of drill sites.	Low

		the destruction of fossils (if any).				Should any fossils be discovered, operations must cease and SAHRA must be notified	
		The use of vehicles and machinery may result in an increase in noise in the immediate vicinity of the project. The drilling activities will also result in an increase in noise in the vicinity of the project.	Noise	Operation	Low	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers	Low
		The movement of vehicles in the project area will result in an increase in traffic on the roads.	Traffic	Operation	Low	Speed control and limitation of the times when construction vehicles may be on the roads	Low
		The movement of vehicles and machinery may result in the production of carbon dioxide (Green House Gas), which may have an impact on the climate in the area.	Climate	Operation	Low	Control and keep to a minimal the number of vehicles used for operations. Vehicles must be maintained to ensure efficient use of fuel.	Low
		Drilling ground vibrations may result	Drilling and Vibrations	Operation	Low	Drill sites must be located as far from	Low

		in possible damage to infrastructure.				infrastructure as is possible to avoid damage to infrastructure	
Data Analysis	Feasibility Studies	None	N/A	Operation	N/A	N/A	N/A
Feasibility Studies Report		None	N/A	Operation	N/A	N/A	N/A
Borehole capping	Closure and Rehabilitation of borehole and infrastructure sites	The removal of the campsite equipment and the rehabilitation of the drilling sites and associated access infrastructure will result in the affected soil and land use being restored. This will also result in the resumption of the use of the land since the infrastructure would have been removed.	Soils, Land Capability and Land Use	Decommissioning and Closure	N/A	N/A	N/A
Removal of equipment and infrastructure		Positive impacts will result due to the reduction in areas of disturbance and the return of land use of the affected areas and making available an area that was covered by the campsite and drilling sites.	Land Use	Decommissioning and Closure	N/A	N/A	N/A

		<p>The use of vehicles/machinery during the rehabilitation of the exploration sites may result compaction of soils and in the spillages of hydrocarbon liquids from the vehicles and machinery. This will result in the contamination and destruction of the vegetation cover and soils.</p>	Soils and Vegetation	Decommissioning and Closure	Low	<p>Control and prohibit access of vehicles and machinery to areas outside of established access tracks Control through the clear delineation of the prospecting area. Control through the implementation of environmental induction and toolbox talks, as well as the implementation of a fine system. Control through the implementation of a soil management programme in terms of the correct tops oil removal, stockpiling and rehabilitation practices as discussed in the EMPr.</p>	Low
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		During the decommissioning and closure phases equipment will be removed, stockpiled soils will be used for rehabilitation, remaining sumps will be backfilled, levelled, top soiled and the area re-seeded. During the process of rehabilitation surface water runoff from the rehabilitation site may have elevated silt load, which may cause pollution of the nearby water environment.	Surface Water	Decommissioning and Closure	Medium to Low	Control through the clear delineation of the prospecting area. Control through the implementation of environmental induction and toolbox talks, as well as the implementation of a fine system. Control through the implementation of the NWA GN 704 water management principles.	Low
		Rehabilitation and removal of the prospecting sites and equipment will require vehicular movement. This will result in the generation of dust by movement of vehicles and due to blowing winds. Vehicles and machinery will also generate diesel or petrol fumes. Generated dust will	Air Quality	Decommissioning and Closure	Low	Dust control measures and rehabilitation of areas stripped of vegetation	Low

		migrate towards the predominant wind direction and may settle on surrounding properties including nearby vegetation.					
		Noise will be generated during the removal of equipment and rehabilitation of the sites. This noise is not expected to exceed occupational noise limits and will be short lived	Noise	Decommissioning and Closure	Low	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers	Low

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):

No specialist studies were conducted as part of this application. Desktop information was used to compile the report and to conduct the impact assessment.

TABLE 24: 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.
No specialist studies have been undertaken	N/A. Specialist studies will be undertaken during the mining right application process.	N/A	N/A

l) Environmental Impact statement

(i) Summary of the key findings of the environmental impact assessment;

During the proposed prospecting operation impacts may occur on soils, natural vegetation, surface water, groundwater, sensitive landscapes, air quality, noise, visual aspects, and sites of archaeological and cultural importance should the EMPr not be adhered to.

YSA (Pty) Ltd will undertake measures to ensure that the identified impacts are minimised. Assessment of the impacts with the proposed mitigation measures has shown the significance of the impacts on all affected environmental aspects to be reduced from medium and low to low and negligible significance.

Land use will not change. Several landowners and land occupiers within the proposed project area may be affected although on a temporary basis due to the need to access the sites and the establishment and use of the campsite. Measures such as safety along the roads and dust suppression will be undertaken to ensure that the impacts on the land owners and land occupiers are minimised.

Storm water runoff from the dirty water areas of the drilling sites, its associated surface infrastructure (campsite) may have a detrimental impact on the surrounding water environment should this water be released to the environment. In order to prevent the occurrence of the above-mentioned impacts, dirty water collection sump will be used to collect all dirty water from the drilling site. The water collected from the sump will be re-used, evaporated and the sump will be rehabilitated once the drilling is finished. Sediments will be created from the site during the construction, operational and decommissioning phase, which may impact negatively on the surrounding water environment. The sediments will be treated should they contain hydrocarbon waste.

The employees will undergo training and will be given strict instruction not to undertake activities that will affect the environment and that may have an impact on the landowners. Waste generated from the site will be collected in proper

receptacles and disposed of in registered waste disposal sites.

Key findings of the environmental impact assessment include:

- All the identified impacts will be localised, short term and will have a medium and low significance. The significance of potential environmental impacts can be reduced to low and very low significance with implementation of mitigation measures and monitoring.
- Cumulative noise, visual and air quality (dust) impacts are deemed to not be significant (low) when proper mitigation measures are implemented.
- Vegetation loss is unavoidable during the construction phase of the project. This will however be limited to the footprint of the infrastructure (access road, camp, boreholes). Care must be taken to manage any species of special concern as well as the proliferation of alien invasive plant species.

(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

Please refer to Appendix C for the locality map which includes the environmental sensitive areas.

The final maps showing the layout of the proposed project will be submitted to the DMR on granting of the prospecting right. The map will be developed to superimpose the proposed prospecting project and associated infrastructure together with the environmentally sensitive areas such as heritage sites, wetland and riparian areas, water courses and Red Data Listed floral species within the proposed project site.

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

The proposed activities have medium and low significance and will be short term activities. The probability of occurrence of an impact was determined and most of these activities can be controlled and impacts can be reduced or avoided. Generally prospecting activities have low impact on the environment. The planned activities negative impacts can be controlled and avoided or minimised. Mitigation measures will be used to manage and control any potential impact. The main impacts will include:

- Increased ambient noise levels resulting from drilling activities and increased traffic movement;
- Potential water and soil pollution resulting from hydrocarbon spills and soil erosion which may impact on the water resources utilised by the communities and landowners;
- Potential water and soil pollution resulting from hydrocarbon spills and soil erosion which may impact on ecosystem functioning;
- Increased vehicle activity within the area resulting in potential destruction and disturbance of flora and fauna;
- Poor access control to farms may impact on cattle movement, breeding and grazing practices;
- Influx of job seekers to site may result in increased opportunistic crimes;
- Potential visual impacts by drilling activities as well as vegetation clearance;
- Prospecting will be undertaken by special sub-contractors and it is not anticipated that employment opportunities for local and/or regional communities will result from prospecting activities; and

- Short term boost for local businesses.

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.

The objectives of the EMPr will be to:

- Provide sufficient information to strategically plan the prospecting activities as to avoid unnecessary social and environmental impacts;
- Provide sufficient information and guidance to plan the prospecting activities in a manner that will reduce impacts (social, physical and biological) as far as is practically possible;
- Ensure an approach that will provide the necessary confidence in terms of environmental compliance; and
- Provide a management plan that is effective and practical for implementation.

Through the implementation of the identified proposed mitigation measures, it is anticipated that the identified impacts can be managed and mitigated effectively. All the impacts were assessed to have significance ranging between medium and low without the implementation of mitigation measures. All the identified impacts will have a reduced significance of low when the mitigation measures have been implemented.

n) Aspects for inclusion as conditions of Authorisation

Any aspects which must be made conditions of the Environmental Authorisation

The following conditions should be included in the Environmental Authorisation:

- A minimum distance of 500 m from any dwellings or infrastructure must be kept;
- Landowners as well as land occupiers must be re-consulted at least 30 days prior to any prospecting activities undertaken on their properties;

- A map detailing the drilling locations should be submitted to the relevant landowners, the DWS and DMR prior to the commencement of the prospecting activities;
- No activities may be undertaken within 500 m of wetlands and/or within 100 m of watercourses without approval from the DWS;
- No relocation of heritage resources may be undertaken without the approval of SAHRA; and
- Heritage Impact Assessment must be undertaken where infrastructure and drilling sites will be located, prior to commencement of the prospecting activities.

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

(Which relate to the assessment and mitigation measures proposed)

The following assumptions, uncertainties and gaps are applicable to this project:

- The Stakeholder Consultation is not yet complete. The Draft BAR will be updated once the 30- day public review and comment period has lapsed. Comments from the stakeholders will be incorporated into the Final BAR to be submitted to the DMR;
- Not all landowners were consulted with in person;
- Details on the Water Use Licence requirements are not available;
- No Heritage Impact Assessment was undertaken therefore details on the SAHRA permit requirement are not available;
- No wetland delineation was undertaken;
- No detailed site layout is currently available due to the nature of the prospecting activities. The impact assessment was undertaken as a holistic assessment for the overall site.

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

(i) Reasons why the activity should be authorized or not

The option of not approving the activities will result in a significant loss of valuable information regarding the mineral status (in terms of Limestone), present on the identified properties. In addition, should economical reserved be present and the

applicant does not have the opportunity to prospect the opportunity to utilize these reserves for future phases will be lost.

According to the impact assessment undertaken for the proposed project, the impacts of the project are considered to be of medium and low significance. The significance of the impacts can be reduced to low and very low when the mitigation measures are implemented.

The project will also have positive impacts due to the employment to be created although for a short term, as well as a short boost to local businesses.

The stakeholders will also be requested for their comments. All comments to be received during Public Participation Process will be included in this BAR and EMPr. These comments will be addressed the as far as possible to the satisfaction of the interested and affected parties.

The management of the impacts identified in the impact assessment for all phases of the proposed project will be undertaken through a range of programmes and plans contained in the EMPr. In consideration of the layout plan and the management and mitigation measures contained within the EMPr compiled for the project, which are expected to be effectively implemented, there will be significant reduction in the significance of potential impacts.

(ii) Conditions that must be included in the authorisation

See Section 6.6 of the BAR.

q) Period for which the Environmental Authorisation is required

The prospecting right has been applied for a period of five (5) years. The Environmental Authorisation should therefore allow for 5 year of prospecting.

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.

An undertaking by the EAP and the client is provided in Section 2 of the EMPr

s) Financial Provision

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

TABLE 25: THE CLOSURE COSTS WERE CALCULATED TO BE R 476,400.00 AS SHOWN IN TABLE BELOW

ACIVITY	YEAR 1 Expenditure (R`)	YEAR 2 Expenditure (R`)	YEAR 3 Expenditure (R`)	YEAR 4 Expenditure (R`)	YEAR 5 Expenditure (R`)
Phase 1 (Months 0 to 12)					
Literature surveys	R 2 500.00	R1 500.00			
Desk top studies	R 10 000.00	R 5 000.00			
Geophysical or geotechnical work	R 8 000.00	R 4 000.00			
Research and target identification		R 5 000.00			
Phase 2 (Months 13 to 24)					
Invasive work such as trenching, pitting, drilling and excavations		R 40 000.00	R 20 000.00	R 10 000.00	
Sampling work		R 25 000.00	R 15 000.00	R 9 000.00	R 5 000.00
Laboratory work		R 22 800.00	R 11 200.00	R 8 800.00	R 4 800.00
Analytical and modelling work			R 40 000.00	R 20 000.00	R 7 000.00
Infill work			R 25 000.00	R 15 000.00	
Bulk sampling and testing to be carried out			R 22 800.00	R10 800.00	
Phase3 (Months 25 to 60)					
EIA and EMP for mining right application				R 40 000.00	R 20 000.00
Pre-feasibility studies				R 25 000.00	R 10 000.00
Investment decision making application for mining rights				R 22 800.00	R 10 400.00
Annual Total	R 20,500.00	R103,300.00	R 134,000.00	R161,400.00	R 57,200.00
				Total Budget	R476,400.00

(i) Explain how the aforesaid amount was derived

The financial provision for the environmental rehabilitation and closure of any mine/prospecting and its associated operations forms an integral part of the MPRDA. Sections 41 (1) and, 41 (2), 41 (3) and 45 of the MPRDA deal with the financial provision for rehabilitation and closure. During 2012, the DMR made updated rate available for the calculation of the closure costs, where contractor's costs are not available, these apply.

The "Guideline Document for the Evaluation of Financial Provision made by the Mining Industry" was developed by the DMR in January 2005 in order to empower the personnel at Regional DMR offices to review the quantum determination for the rehabilitation and closure of mining sites. With the determination of the quantum for closure, it must be assumed that the infrastructure had no salvage value (clean closure). The closure cost estimate (clean closure) was determined in accordance with the DMR guidelines.

(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).

The amount required to cover the prospecting operation, including rehabilitation and closure is estimated to be **R 1 135 420.00** at this stage. YSA (Pty) Ltd will fund the operation. The applicant hereby confirms that the amount is anticipated to be an operating cost and is provided for as such in the Prospecting Work Programme.

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) .

No specific report was generated for the purposes of the socio-economic conditions. Current land uses inside the prospecting area, such as farming and grazing, may be temporarily impacted through the presence of the fenced areas that drill rigs will operate within. These will however, be small areas. These areas will be rehabilitated post drilling activities and the areas will once again become available for grazing. Other potential socio-economic impacts will include:

- Nuisance noise due to on site activities and drilling;
- Poor access control resulting in impacts on cattle movement, breeding and grazing practises;
- Influx of job-seekers to site, which may result in an increase in opportunistic crime;
- Uncontrolled access to private property outside of the demarcated boundaries; and
- Visual impact as a result of the vegetation clearance.

Prospecting will be undertaken by specialist sub-contractors and it is not anticipated that employment opportunities for local and/or regional communities will result from the prospecting activities during the drilling phases.

Management and mitigation measures must be implemented to prevent environmental pollution which may impact on environmental resources utilised by communities, landowners and other stakeholders. Measures to manage the potential impacts on communities, individuals or competing land uses in close proximity include;

Noise due to construction activities and drilling:

- Directly affected and adjacent landowners and land occupiers must be informed of the planned dates of the drilling activities and a grievance lodging mechanism must be made available to the stakeholders.
- Site activities shall be concluded during daytime hours (0700 to 1730), to avoid night time noise disturbances and night time collisions with fauna.

Poor access control resulting in impacts on cattle movement, breeding and grazing practices:

- Access control procedures must be agreed on with the farm owners and all on site personnel shall be trained on these procedures.

Influx of job seekers to the site which may result in increased opportunistic crime:

- Casual labour shall not be recruited at the site. This will eliminate the incentive for people to travel to site seeking employment. Where necessary, a recruitment centre may be established in the major town areas;
- The landowners shall be notified on unauthorised persons encountered on site; and
- Where necessary, the South African Police Service (SAPS) will be notified of unauthorized persons encountered on site.

Visual Impact:

- Wet dust suppression will be undertaken to manage nuisance dust from construction vehicle movements and other construction activities as and when necessary; The portable ablution facilities and any other infrastructure will be acquired with a consideration for colour. Natural earth, green and mat black options which blend with the surrounding must be favoured;
- A waste management system will be implemented, and sufficient waste bins will be provided for on site. A fine system must be implemented to further prohibit littering and poor housekeeping practices; and
- Vegetation cover shall be used where drill rigs will be located to minimise visual impacts.

(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).

As outlined in Section d (ii) of this report, prospecting will be undertaken in phases. The first phase will be a desktop study, which will be followed by ground surveys and soil sampling.

Based on the outcome of the activities, soil sampling and drill sites will be determined. Potential heritage impacts will only occur once the drilling sites have been identified. It is therefore recommended that the HIA be undertaken prior to the commencement of the drilling activities, and that the HIA be conducted over the identified localised drill sites and access routes, as opposed to the entire exploration area.

This recommendation will be submitted to the SAHRA for approval.

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).

Not applicable

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME

a) Details of the EAP.

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

Details of the EAP have already been included in Part A section 1(a)

b) 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 required)

The EAP hereby confirms 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) of this report as required

c) Composition Map

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

Refer to Appendix C for the composite map. The composition map covers the entire sensitive environmental site that have been identified on the proposed site.

d) Description of impact management objectives including management statements

(i) Determination of closure objectives.

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

As previously mentioned, each phase of the prospecting activities is dependent on the success of the preceding phase. Depending on the findings from Phase 1, Phase 2 will be initiated. The location and extent of the soil drill sites can therefore not be determined at this stage of the process.

The rehabilitation plan was developed on the basis that the rehabilitated areas will be made safe, stable as well as non-polluting and will be able to support self-sustaining ecosystems, similar to surrounding natural ecosystems. To ensure that the rehabilitation plan is aligned with the closure objective, high-level risk assessment of the prospecting components was undertaken to establish the potential risks associated with therewith disturbed areas.

The closure objectives are to:

- Eliminate any safety risks associated with drill holes and sump through adequate drill hole capping and backfilling;
- Remove and/or rehabilitate all pollution and pollution sources such as waste materials and spills;
- To establish rehabilitated areas to a state which with no susceptible to soil erosion which may result in loss of soil, pollution of water resources;
- Restore disturbed areas and re-vegetate these areas with plant species naturally occurring in the area to restore the ecological function of the affected areas as far as practicable; and
- Eliminate all alien invasive plant species from the

(ii) Volumes and rate of water use required for the operation

The rate of water use required for the operation is unknown at this stage

(iii) Has a water use licence has been applied for?

It is anticipated that discussions will be held with the DWS to determine whether or not abstraction of water will be required. Based on the outcomes of the discussions with the DWS, any potential abstraction of water due to drilling activities will be clarified. At this stage it is not anticipated that abstraction will be required. Furthermore, depending

on the DWS opinion of the sampling, potentially in the river beds, Section 21 (c) and (i) WUL may be required. This will also be clarified with the DWS. Should it be deemed necessary, on instruction by the DWS, the applicant will submit a water use licence application.

iv) Impacts to be mitigated in their respective phases

TABLE 26: MEASURE TO REHABILITATE THE ENVIRONMENTAL AFFECTED BY THE UNDERTAKING OF ANY LISTED ACTIVITY

ACTIVITIES (E.g. For prospecting-	PHASE (of operation in which activity will take place.	SIZE AND SCALE of disturbance (volumes, tonnages and hectares or m2)	MITIGATION MEASURES (describe how each of the recommendation in herein will remedy the cause of pollution or degradation and migration of pollutant)	COMPLIANCE WITH STANDARD (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 when required. With regards 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 the case may be
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, road, pipelines, power	State; Planning and design, Pre-Construction, Construction, Operational, Rehabilitation, Closure, Post closure).				

lines, conveyors, etc....etc...etc)					
<p>Site Establishment and clearing of vegetation (which includes site preparation and preparation and upgrade of access roads)</p> <ul style="list-style-type: none"> - Vegetation clearance - Topsoil stripping and stockpiling - Access roads - Site camp - Temporal portable toilets - Ablution facilities - Equipment storage - Temporal Site offices - Waste management <p><u>Drilling</u></p>	<p>Pre-construction phase, Construction Phase and Operational Phase</p>	<p>0.2 Ha per drill site</p>	<ul style="list-style-type: none"> • Vegetation clearance should be limited to the authorised directional drilling footprint only. • At all vertical borehole positions the footprint will be cleared by mowing the sections. No stripping of topsoil or clearing of vegetation will be required. • Dust will be suppressed at all times. Dust nuisance will be assessed visually, and complaints assessed and addressed. • All designated footprint areas will be secured and demarcated at all times while in use. • All areas outside of the authorised footprint should be regarded as no-go areas for any staff members. • Vegetation clearing shall only take place when the individual site is to commence with vertical drilling works, in order to retain vegetation cover for as long as possible. This would reduce the size of areas where 	<ul style="list-style-type: none"> ➤ All the recommendation and mitigation measures will ensure the preservation of top soli from erosion in order for it be used for rehabilitation and assist in reducing any environmental degradation to air quality or damage on heritage ➤ Heritage Act 	<p>During the Pre-construction phase, operational phase and decommissioning phase</p>

<ul style="list-style-type: none"> - Drill maintenance - Sample storage - Access roads - Waste Management - Drilling 			<p>dust can be generated and avoid erosion limiting the exposure of sediment runoff.</p> <ul style="list-style-type: none"> • Site clearance will encourage the introduction of alien invasive plant species. During site establishment it will be ensure that the area cleared is free of alien plants propagating at all times. <ul style="list-style-type: none"> • Undertake heritage study to survey the site activities to identify heritage features • A buffer zone of 50m from the heritage features should be maintained • Should archaeological features be uncovered during construction, work must be halted immediately • Old burial grounds (if found) will be reported to the ECO who will advise the contractor as to the mode of action, which will include informing either South Africa Heritage 		
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			Resources Agency (SAHRA)		
	Pre-construction phase, construction phase and Operational phase	0.2 Ha	<p>All sites disturbed by construction activities must be monitored for exotic or alien invasive plant species and weeds.</p> <ul style="list-style-type: none"> • Chemical or mechanical removal may be used. If chemical methods are used the method of use is to be undertaken in accordance with manufacturer's specification for the weeds and this method and management is to be approved by the EP. • Any eradicated exotic/invasive plant or weed vegetation must be removed from site and disposed of at an approved waste disposal facility or dried out and then burned, any method can be used to dispose of the alien invasive plants as long as it is within the law and the plants have no possibility of propagating. • During the process of stripping topsoil care should be 		During Pre-construction, Construction and operational phase

		0.2Ha	<p>taken to ensure that no topsoil is contaminated with oil and grease, foreign material or alien plants. The topsoil will be stored in a manner that will prevent any loss of topsoil via the natural elements. Topsoil is not to be double handled, it is to be stripped, stockpiled then once the area has been prepared for rehabilitation, the topsoil is will be replaced in its original position. The topsoil will be hand seeded with an indigenous Highveld grass seeds mix, approved by the Environmental Officer if more than 30% bare ground is seen after one rainy season.</p> <ul style="list-style-type: none"> • Alien Plant monitoring and eradication schedule will be implemented from the onset of construction and operation 		
	Pre-Construction phase, Construction phase and operational phase	0.2 Ha	<ul style="list-style-type: none"> • The drilling rig and other visible items on the proposed site will be located in consultation with the land owner • noise generation will be limited to working hours 	<ul style="list-style-type: none"> • SANS 10103 guideline 	Before and during drilling activities

			<p>08.00-17.00 and no equipment will be use during public holiday, Saturday and Sunday</p> <ul style="list-style-type: none"> • 500m buffer between the drilling site and dwellings will be maintained • Underneath the drill rig or any equipment or machine with a potential oil spillage shall be covered with a plastic material that will prevent soil and water contamination • Control through management and monitoring of spillage. Where spillages occur, the soil must be stripped and disposed 		
	Construction and operational phase	0.2 Ha	All operation will be carried out under the guidance of a qualified and experienced manager with proven skills in public consultation and conflict resolution, including environmental coordinator where applicable		

Impact Management Outcomes

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

TABLE 27: IMPACT MANAGEMENT OUTCOMES

NAME OF ACTIVITY		POTENTIAL IMPACT (Including the potential impacts for cumulative impacts)	ASPECTS AFFECTED	PHASE In which impact is anticipated	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
Data Collection and Assessment	Desktop Study	None	N/A	Planning	N/A	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	N/A
Geological Mapping		None	N/A	Planning	N/A	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	N/A
Planning for Drilling Surveys		None	N/A	Planning	N/A	Control potential deviations from the approved	N/A

						EMPr through the effective implementation of the data acquisition and desktop study.	
Access Roads	Establishment of access roads, campsite, physical surveying of the site and pegging of drilling boreholes	Loss of soils, erosion of the soils and impacts on landowners' livelihood.	Soils, Land capability and Land use	Construction	Low	Rehabilitation of areas cleared of vegetation and dust control	Low
Drill Sites		Contamination of groundwater from hydrocarbon spillages	Groundwater	Construction	Medium to Low	Control through management and monitoring of spillages. Where spillages occur, the soil must be stripped and disposed of as stipulated in the EMPr.	Low
Temporary Soil Storage Area		Contamination of surface water due to erosion of soils which will lead to increased turbidity as well as contamination from hydrocarbon spillages	Surface water	Construction	Medium to Low	Monitoring through rehabilitation and management of spoil sites	Low
Fence		Wetland contamination, destruction and loss of habitat	Wetlands and aquatic ecosystems	Construction	Medium to Low	Control of access to wetland areas and within the regulated 500 m buffer.	Low
Hydrocarbon storage area		Destruction of graves and cultural heritage sites	Heritage and archaeological resources	Construction	Low	Control through clear demarcation of	Low

						prospecting areas to ensure avoidance of graves and other heritage sites	
Mobile office		Destruction of fossils	Palaeontological resources	Construction	Low	Management of drill sites. Should any fossils be discovered, operations must cease and SAHRA must be notified	Low
Ablution Facility		Loss of natural vegetation in the affected areas	Flora	Construction	Low	Rehabilitation of areas cleared of vegetation. Control of alien invasive plant species	Low
		Migration of fauna due to disturbance caused by the proposed project	Fauna	Construction	Low	Relocation of affected species of conservation importance	Low
		Air pollution through nuisance dust, PM 10 and PM2.5 as well as emissions from construction vehicles and machinery.	Air quality	Construction	Low	Dust control measures	Low
		Increase in ambient noise due to movement of construction vehicles and machinery	Noise	Construction	Low	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers	Low

						Control through the limiting of the activities to the day time and the implementation of an open and transparent channel of communication	
		Visual impacts as a result of vegetation clearance	Visual	Construction	Low	Rehabilitation of areas cleared of vegetation	Low
		Increased traffic on the roads due to additional construction vehicles	Traffic, Socio-economic	Construction	Medium to Low	Speed control and limitation of the times when construction vehicles may be on the roads	Low
		Impact of carbon dioxide (GHG) produced by construction vehicles on the local climate	Climate Change	Construction	Low	Control and keep to a minimal the number of vehicles used for construction. Vehicles must be maintained to ensure efficient use of fuel.	Low
RC Drilling	Drilling and Soil Sampling	It is expected that during the operation phase the project will not result in the creation of employment as prospecting requires highly specialised personnel. The applicant	Socio-Economic	Operation	Low	Control of times during which operation activities will take place	Low

		will make use of qualified contractors for the drilling and sampling of the sites. The community will however continue to benefit as a result of the continued boost in small local businesses. Drilling has potential to affect the day to day operations by affected landowners					
Core Drilling		The use of vehicles during the drilling of the exploration boreholes may result in the spillages of hydrocarbons from vehicles and machinery. This will result in the contamination of soils and groundwater. The prospecting operations will require the drilling of boreholes, which may result in the drawdown, which may affect the yield	Groundwater	Operation	Low	Rehabilitation of affected areas and control using bunds	Low

		to the surrounding groundwater users. Material used for backfilling boreholes may leach pollutants, which will result in the contamination of surrounding groundwater regime. This may spread beyond the backfilling site via plume migration.					
Soil Sampling		Drilling operations may result in the generation of surface water runoff contaminated with drill muds and cuttings, should spillage occur. The sedimentation and possible contamination with carbonaceous material will have negative impacts on the water quality due to increase turbidity and an increase in acidity of the water in the streams. This will have an impact on aquatic habitats.	Surface Water	Operation	Low	Control through management and monitoring of surface runoff	Low

			Wetlands	Operation	Medium to Low	Avoidance of wetland and riparian areas	Low
			Flora	Operation	Low	Rehabilitation of affected areas Monitoring of rehabilitated areas to ensure success.	Low
			Fauna	Operation	Low	Rehabilitation of affected areas Drill holes must be temporarily plugged immediately after drilling is completed and remain plugged until they are permanently plugged below ground to eliminate the risk posed to fauna by open drill holes. Drill holes must be permanently capped as soon as is practicable	Low
		The use of vehicles during the drilling of the exploration boreholes may result in the spillages of hydrocarbons from the vehicles and machinery. This will result in the contamination of soils. The materials removed from the drilling sites will	Soils Land use and Land Capability	Operation	Low	Rehabilitation of affected areas	Low

		contain carbonaceous material, which has potential for contamination should it not be managed properly. The material from the drilling site may result in the contamination of soils, which may render the land not usable after backfilling operation.					
		The movement of vehicles and drilling machinery will likely result in an increase in nuisance dust, PM10 and PM2.5. There is also potential for increase in carbon emissions and ambient air pollution due to the movement of vehicles and construction machinery. It in the reduction in nuisance dust.	Air Quality	Operation	Medium to Low	Dust control measures	Low
		The drill rigs and towers used during	Visual	Operation	Medium to Low	Strategic location of rigs and towers to areas	Low

		the drilling operation phase will be visible from nearby locations, and will have visual impact on the local communities in close proximity to the prospecting area.				where there may be some tree cover, as far as practicable	
		The drilling operations may result in the destruction of graves and other heritage resources	Heritage Resources	Operation	Low	Operation Low Control through clear demarcation of prospecting areas to ensure avoidance of graves and other heritage sites	Low
		Earth moving activities may result in the destruction of fossils (if any).	Palaeontological Resources	Operation	Low	Management of drill sites. Should any fossils be discovered, operations must cease and SAHRA must be notified	Low
		The use of vehicles and machinery may result in an increase in noise in the immediate vicinity of the project. The drilling activities will also result in	Noise	Operation	Low	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers	Low

		an increase in noise in the vicinity of the project.					
		The movement of vehicles in the project area will result in an increase in traffic on the roads.	Traffic	Operation	Low	Speed control and limitation of the times when construction vehicles may be on the roads	Low
		The movement of vehicles and machinery may result in the production of carbon dioxide (Green House Gas), which may have an impact on the climate in the area.	Climate	Operation	Low	Control and keep to a minimal the number of vehicles used for operations. Vehicles must be maintained to ensure efficient use of fuel.	Low
		Drilling ground vibrations may result in possible damage to infrastructure.	Drilling and Vibrations	Operation	Low	Drill sites must be located as far from infrastructure as is possible to avoid damage to infrastructure	Low
Data Analysis	Feasibility Studies	None	N/A	Operation	N/A	N/A	N/A
Feasibility Studies Report		None	N/A	Operation	N/A	N/A	N/A
Borehole capping	Closure and Rehabilitation of borehole and infrastructure sites	The removal of the campsite equipment and the rehabilitation of the drilling sites and associated	Soils, Land Capability and Land Use	Decommissioning and Closure	N/A	N/A	N/A

		access infrastructure will result in the affected soil and land use being restored. This will also result in the resumption of the use of the land since the infrastructure would have been removed.					
Removal of equipment and infrastructure		Positive impacts will result due to the reduction in areas of disturbance and the return of land use of the affected areas and making available an area that was covered by the campsite and drilling sites.	Land Use	Decommissioning and Closure	N/A	N/A	N/A
		The use of vehicles/machinery during the rehabilitation of the exploration sites may result compaction of soils and in the spillages of hydrocarbon liquids from the vehicles and machinery. This will result in the contamination and destruction of the	Soils and Vegetation	Decommissioning and Closure	Low	Control and prohibit access of vehicles and machinery to areas outside of established access tracks Control through the clear delineation of the prospecting area. Control through the implementation of environmental induction and toolbox talks, as	Low

		vegetation cover and soils.				well as the implementation of a fine system. Control through the implementation of a soil management programme in terms of the correct tops oil removal, stockpiling and rehabilitation practices as discussed in the EMPr.	
		During the decommissioning and closure phases equipment will be removed, stockpiled soils will be used for rehabilitation, remaining sumps will be backfilled, levelled, top soiled and the area re-seeded. During the process of rehabilitation surface water runoff from the rehabilitation site may have elevated silt load, which may cause pollution of the	Surface Water	Decommissioning and Closure	Medium to Low	Control through the clear delineation of the prospecting area. Control through the implementation of environmental induction and toolbox talks, as well as the implementation of a fine system. Control through the implementation of the NWA GN 704 water management principles.	Low

		nearby water environment.					
		Rehabilitation and removal of the prospecting sites and equipment will require vehicular movement. This will result in the generation of dust by movement of vehicles and due to blowing winds. Vehicles and machinery will also generate diesel or petrol fumes. Generated dust will migrate towards the predominant wind direction and may settle on surrounding properties including nearby vegetation.	Air Quality	Decommissioning and Closure	Low	Dust control measures and rehabilitation of areas stripped of vegetation	Low
		Noise will be generated during the removal of equipment and rehabilitation of the sites. This noise is not expected to exceed occupational noise limits and will be short lived	Noise	Decommissioning and Closure	Low	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies e.g. noise mufflers	Low

F) 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).

TABLE 28: IMPACT MANAGEMENT OUTCOMES

NAME OF ACTIVITY		POTENTIAL IMPACT (Including the potential impacts for cumulative impacts)	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Data Collection and Assessment	Desktop Study	None	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	Planning	N/A
Geological Mapping		None	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	Planning	N/A
Planning for Drilling Surveys		None	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	Planning	Yes

Access Roads	Establishment of access roads, campsite, physical surveying of the site and pegging of drilling boreholes	Loss of soils, erosion of the soils and impacts on landowners' livelihood.	Rehabilitation of areas cleared of vegetation and dust control	Pre-construction , construction phase and operational phase	
Drill Sites		Contamination of groundwater from hydrocarbon spillages	Control through management and monitoring of spillages. Where spillages occur, the soil must be stripped and disposed of as stipulated in the EMPr.	Pre-construction phase and operational phase	Yes
Temporary Soil Storage Area		Contamination of surface water due to erosion of soils which will lead to increased turbidity as well as contamination from hydrocarbon spillages	Monitoring through rehabilitation and management of spoil sites	Construction phase	Yes
Fence		Wetland contamination, destruction and loss of habitat	Control of access to wetland areas and within the regulated 500 m buffer.	During the site establishment, construction phase and operational phase	Yes
Hydrocarbon storage area		Destruction of graves and cultural heritage sites	Control through clear demarcation of prospecting areas to ensure avoidance of graves and other heritage sites	Pre- construction, construction and operation phase	Yes

Mobile office		Destruction of fossils	Management of drill sites. Should any fossils be discovered, operations must cease and SAHRA must be notified	During drilling activities	
Ablution Facility		Loss of natural vegetation in the affected areas	Rehabilitation of areas cleared of vegetation. Control of alien invasive plant species	During drilling and decommission phase	Yes
		Migration of fauna due to disturbance caused by the proposed project	Relocation of affected species of conservation importance	Pre- construction, construction and operational phase	Yes
		Air pollution through nuisance dust, PM 10 and PM2.5 as well as emissions from construction vehicles and machinery.	Dust control measures		
		Increase in ambient noise due to movement of construction vehicles and machinery	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers Control through the limiting of the activities to the day time and the implementation of an open		

			and transparent channel of communication		
		Visual impacts as a result of vegetation clearance	Rehabilitation of areas cleared of vegetation		Yes
		Increased traffic on the roads due to additional construction vehicles	Speed control and limitation of the times when construction vehicles may be on the roads		
		Impact of carbon dioxide (GHG) produced by construction vehicles on the local climate	Control and keep to a minimal the number of vehicles used for construction. Vehicles must be maintained to ensure efficient use of fuel.		
RC Drilling	Drilling and Soil Sampling	It is expected that during the operation phase the project will not result in the creation of employment as prospecting requires highly specialised personnel. The applicant will make use of qualified contractors	Control of times during which operation activities will take place	Operational	Yes

		<p>for the drilling and sampling of the sites. The community will however continue to benefit as a result of the continued boost in small local businesses. Drilling has potential to affect the day to day operations by affected landowners</p>			
Core Drilling		<p>The use of vehicles during the drilling of the exploration boreholes may result in the spillages of hydrocarbons from vehicles and machinery. This will result in the contamination of soils and groundwater. The prospecting</p>	<p>Rehabilitation of affected areas and control using bunds</p>	Operation	Yes

		<p>operations will require the drilling of boreholes, which may result in the drawdown, which may affect the yield to the surrounding groundwater users. Material used for backfilling boreholes may leach pollutants, which will result in the contamination of surrounding groundwater regime. This may spread beyond the backfilling site via plume migration.</p>			
Soil Sampling		<p>Drilling operations may result in the generation of surface water runoff contaminated with drill muds and cuttings, should spillage occur. The</p>	Control through management and monitoring of surface runoff	Pre- construction, construction and operational phase	Yes

		sedimentation and possible contamination with carbonaceous material will have negative impacts on the water quality due to increase turbidity and an increase in acidity of the water in the streams. This will have an impact on aquatic habitats.			
			Avoidance of wetland and riparian areas		
			Rehabilitation of affected areas Monitoring of rehabilitated areas to ensure success.		
			Rehabilitation of affected areas Drill holes must be temporarily plugged immediately after drilling is completed and remain plugged until they are permanently plugged below ground to eliminate the risk posed to fauna by open drill holes.		

			Drill holes must be permanently capped as soon as is practicable		
		<p>The use of vehicles during the drilling of the exploration boreholes may result in the spillages of hydrocarbons from the vehicles and machinery. This will result in the contamination of soils. The materials removed from the drilling sites will contain carbonaceous material, which has potential for contamination should it not be managed properly. The material from the drilling site may result in the contamination of soils, which may render the land not usable</p>	Rehabilitation of affected areas		

		after backfilling operation.			
		The movement of vehicles and drilling machinery will likely result in an increase in nuisance dust, PM10 and PM2.5. There is also potential for increase in carbon emissions and ambient air pollution due to the movement of vehicles and construction machinery. It in the reduction in nuisance dust.	Dust control measures		
		The drill rigs and towers used during the drilling operation phase will be visible from nearby locations, and will have visual impact on the local	Strategic location of rigs and towers to areas where there may be some tree cover, as far as practicable		

		communities in close proximity to the prospecting area.			
		The drilling operations may result in the destruction of graves and other heritage resources	Operation Low Control through clear demarcation of prospecting areas to ensure avoidance of graves and other heritage sites		
		Earth moving activities may result in the destruction of fossils (if any).	Management of drill sites. Should any fossils be discovered, operations must cease and SAHRA must be notified		
		The use of vehicles and machinery may result in an increase in noise in the immediate vicinity of the project. The drilling activities will also result in an increase in noise in the vicinity of the project.	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers		

		The movement of vehicles in the project area will result in an increase in traffic on the roads.	Speed control and limitation of the times when construction vehicles may be on the roads		
		The movement of vehicles and machinery may result in the production of carbon dioxide (Green House Gas), which may have an impact on the climate in the area.	Control and keep to a minimal the number of vehicles used for operations. Vehicles must be maintained to ensure efficient use of fuel.		
		Drilling ground vibrations may result in possible damage to infrastructure.	Drill sites must be located as far from infrastructure as is possible to avoid damage to infrastructure		
Data Analysis	Feasibility Studies	None	N/A		
Feasibility Studies Report		None	N/A		
Borehole capping	Closure and Rehabilitation of borehole and	The removal of the campsite equipment and the rehabilitation of	N/A		

	infrastructure sites	the drilling sites and associated access infrastructure will result in the affected soil and land use being restored. This will also result in the resumption of the use of the land since the infrastructure would have been removed.			
Removal of equipment and infrastructure		Positive impacts will result due to the reduction in areas of disturbance and the return of land use of the affected areas and making available an area that was covered by the campsite and drilling sites.	N/A		
		The use of vehicles/machinery during the rehabilitation of the exploration	Control and prohibit access of vehicles and machinery to areas outside of established access tracks		

		<p>sites may result in compaction of soils and in the spillages of hydrocarbon liquids from the vehicles and machinery. This will result in the contamination and destruction of the vegetation cover and soils.</p>	<p>Control through the clear delineation of the prospecting area. Control through the implementation of environmental induction and toolbox talks, as well as the implementation of a fine system. Control through the implementation of a soil management programme in terms of the correct topsoil removal, stockpiling and rehabilitation practices as discussed in the EMPr.</p>		
		<p>During the decommissioning and closure phases equipment will be removed, stockpiled soils will be used for rehabilitation, remaining sumps will be backfilled, levelled, topsoiled and the area re-seeded. During the</p>	<p>Control through the clear delineation of the prospecting area. Control through the implementation of environmental induction and toolbox talks, as well as the implementation of a fine system. Control through the implementation of the NWA GN 704 water management principles.</p>		

		<p>process of rehabilitation surface water runoff from the rehabilitation site may have elevated silt load, which may cause pollution of the nearby water environment.</p>			
		<p>Rehabilitation and removal of the prospecting sites and equipment will require vehicular movement. This will result in the generation of dust by movement of vehicles and due to blowing winds. Vehicles and machinery will also generate diesel or petrol fumes. Generated dust will migrate towards the predominant</p>	<p>Dust control measures and rehabilitation of areas stripped of vegetation</p>		

		wind direction and may settle on surrounding properties including nearby vegetation.			
		Noise will be generated during the removal of equipment and rehabilitation of the sites. This noise is not expected to exceed occupational noise limits and will be short lived	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies e.g. noise mufflers		

i) Financial Provision

(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the regulation

The main closure objective is to ensure that the site is left close as possible to the pre-prospecting state after completion of the borehole drilling activities. Each phase of the prospecting activities is dependent on the success of the preceding phase. Depending on the outcome of the Desktop and geological mapping phase, the prospecting drilling will be initiated. The location and extent of the drill and infrastructure sites cannot be determined at this stage. Mapping of the actual prospecting activities cannot be undertaken. The rehabilitation plan was developed on the basis that the rehabilitated areas will be left safe, stable, non-polluting and able to support a self-sustaining ecosystem similar to the surrounding natural environment. To ensure that the rehabilitation plan is aligned with the closure objective, a high-level risk assessment of the prospecting components was undertaken to establish the potential risks associated therewith.

The following rehabilitation specification designed to meet closure objectives are to:

- Eliminate any safety risks associated with drill hole and sumps through adequate drill hole capping and backfilling;
- Rehabilitation would be undertaken in a phased manner after the completion of prospecting activities
- Remove and/or rehabilitate all pollution and pollution sources such as waste materials and spills;
- To establish a rehabilitated area that is not susceptible to soil erosion which may result in the loss of soil, degradation of water resources and aquatic environments;
- Restore disturbed areas and re-vegetate these areas with plant species naturally occurring the area to restore the ecological function of such areas, as far as is practicable; and to eradicate all alien invasive plant species that may colonise the areas that have been cleared of vegetation.

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

Land owners will be consulted with regard to closure plan, the rehabilitation plan is

attached in Appendix D. Comments on the closure and rehabilitation will be expected from landowners and I&As after the review of the DBAR. The comments that will be received will be updated on the final BAR and EMP report. All the issues raised by the I&As will be incorporated in the final BAR

(c) 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

Rehabilitation Plan is attached in Appendix D

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

Care and adherence to environmental issues is a priority (please see Rehabilitation Plan attached in Appendix D)

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

The financial provision for the environmental rehabilitation and closure of any mine/prospecting and its associated operations forms an integral part of the MPRDA. Section 41 (1) and 41(3) and 45 of the MPRDA deal with the financial provision for rehabilitation and closure. During 2012, the DMR made updated rate available for the calculation of the closure costs, where contractor's costs are not available these apply

The Guideline document for the evaluation of financial provision made by the Mining Industry was developed by the DMR in January 2005 in order to empower the personnel at Regional DMR offices to review the quantum determination for the rehabilitation and closure for mining sites.

With the determination of the quantum closure, it must be assumed that the infrastructure had no salvage value (clean closure). The closure costs were calculated to be **R476,400.00**.

(f) Confirm that the financial provision will be provided as

determined.

No.	Description	Unit	A	B	C	D	Amount (Rands)
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	13,77	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	181,45	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	267,39	1	1	0
3	Rehabilitation of access roads	m2	100	32,46	1	1	3246
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	315,14	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	172	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	363	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha		184693	1	1	0
7	Sealing of shafts adits and inclines	m3	0	97,5	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0	126822	1	1	0
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	157954	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	458771	1	1	0
9	Rehabilitation of subsided areas	ha	0	106194	1	1	0
10	General surface rehabilitation	ha	0,331	100464	1	1	33253,584
11	River diversions	ha	0	100464	1	1	0
12	Fencing	m	0	115	1	1	0
13	Water management	ha	0	38199	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0,3	13370	1	1	4011
15 (A)	Specialist study	Sum	0	100000	1	1	0
15 (B)	Specialist study	Sum	0	100000	1	1	0
						Sub Total 1	40510,584

1	Preliminary and General	4861,27008	weighting factor 2	4861,27008
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			1	
2	Contingencies		4051,0584	4051,0584
			Subtotal 2	49422,91
			VAT (14%)	6919,21
			Grand Total	56342

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

- g) Monitoring of impact Management Actions**
- h) Monitoring and reporting frequency**
- i) Responsible persons**
- j) Time period for implementing impact management actions**
- k) Mechanism for monitoring compliance**

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 IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Prospecting activities	All commitments that are in the BAR and EMP	Ensure that the commitment made within the approved EMP and BAR are being adhere to.	The Environmental control officer (ECO) the independent EAP	Submission of Environmental audit report at the DMR every 2 weeks
Drilling activities	<ul style="list-style-type: none"> - Cultural and Heritage resource - Dust fall - Noise - Soil and Vegetation - Soil, ground water and surface water - Social - Visual - Maintenance 	<ul style="list-style-type: none"> - Ensure that the site is proper surveyed for any cultural/ heritage artifacts that might be found on site and if any are found SAHRA must be contacted - The liberation of dust into the surrounding environment shall be effectively controlled by the use of, water spraying. -The speed of trucks and other vehicles must be strictly being controlled to 	Appointed drilling contractor	Everyday inspection on site

		<p>avoid dangerous conditions, excessive dust or deterioration of the road being used.</p> <ul style="list-style-type: none">- Construction and other noise generating activities should be restricted to between 07h00 and 17h00 Monday to Friday, unless otherwise approved by the appropriate competent person in consultation with adjacent landowners/affected persons and ECO.- During the operational phase all activities must take place in a manner that will allow as little noise as possible.- Activities, which are deemed to generate high levels of noise, will be restricted to normal working hours.- Submission of an operational plan for the construction phase indicating technical and		
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		<p>management measures to prevent soil erosion.</p> <ul style="list-style-type: none">- Stock piled topsoil should not be compacted and should be replaced as final soil layer.- Soil should be exposed for the minimum time possible once cleared of vegetation, i.e. the timing of clearing and grubbing should be co-ordinate as much as possible to avoid prolonged exposure of soils to wind and water erosion.- The A-horizon will be removed and used for rehabilitation purposes. The lower soil horizons will be used for construction activities. The A-horizon will be stockpiled in a responsible manner and replaced during rehabilitation.		
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		<ul style="list-style-type: none">- Ground water quality within 500m from drills will be monitored- Manage through the EMPr and develop a groundwater management programme.- Collection of baseline hydrochemistry samples for analysis		
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I) Indicate the frequency of the submission of the performance assessment/ environmental audit report

Annual environmental audits must be undertaken to ensure compliance with the EMPr and EA. The environmental audit reports must also include the financial provision. The reports must be submitted to the DMR

(m) Environmental Awareness Plan

1) MANNER IN WHICH THE APPLICANT INTENDS TO INFORM HIS OR HER EMPLOYEES OF ANY ENVIRONMENTAL RISK WHICH MAY RESULT FROM THEIR WORK.

Before the proposed project of prospecting commence, all the employees whom will be responsible for identifying environmental risks will go to training to get the insight information on how they will compile environmental risk study. It is a standard practice for all employees to attend induction training where environmental course will be explained in more detail related to the project. The training should cover the relevant part of the EMP which is formed as a guide to contractors and employees regarding environmental related issues and how to mitigate such issues

2) MANNER IN WHICH RISKS WILL BE DEALT WITH IN ORDER TO AVOID POLLUTION OR THE DEGRADATION OF THE ENVIRONMENT.

The Following Documents Will Be Used As Reference For Identifying And Managing Impacts:

- Approved Empr;
- Approved EA; And
- EMS.

The Applicant (YSA (Pty) Ltd) and contractors will be responsible for the implementation section 28 of NEMA at all times “duty of care” to mitigate any impacts in order to avoid pollution or degradation of the environment. appropriate implementation of the recommended mitigation measures specified in the EMPr will be monitored through monthly site audits by an EAP and annual EMP audits undertaken by a third party.

O) Specific information required by the Competent Authority

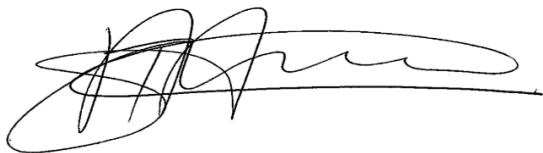
No specific information was required by the competent authority

N) UNDERTAKING

The EAP herewith confirms

- a) The correctness of the information provided in the reports
- b) The inclusion of comments and inputs from stakeholders and I&APs
- c) The inclusion of inputs and recommendations from the specialist reports where relevant
- d) 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

TSHIA MALEHASE



Signature of the Environmental Impact Practitioner

BASIA ENVIRONMNETAL CONSULTING

Name of Company

19 September 2019

Date